The Effect of Health Communication Anxiety on Healthcare Access

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GENERAL ABSTRACT

As communities worldwide become increasingly multicultural, the need to communicate in healthcare situations using one's second language (L2) has become increasingly common. This raises the question: Are there any special consequences of using—or even of anticipating having to use—one's L2 during a healthcare encounter? This dissertation addresses this issue by examining one potential barrier to healthcare access that people in a linguistic minority situation often experience, anxiety related to having to use an L2 to receive health services. The overarching goal of this thesis project is to examine the effects of second language (L2) health communication anxiety on willingness to use L2 services as well as the factors underlying this anxiety. Four empirical studies, reported in two manuscripts, have been conducted to achieve these research goals. In these studies, participants were members of Quebec's English-speaking minority.

Manuscript 1 reports on two studies looking at health communication anxieties associated with language-discordant situations, that is, where a patient has to communicate using an L2 with a health provider using a first language (L1) different from the patient's L1. Study 1 was concerned with developing a Health Communication Anxiety (HCA) scale for language-discordant situations, separately for physical and mental health contexts. Study 2 examined the

relationship of L2 health communication anxiety on willingness to use health services provided in the L2. Results from Study 1 and Study 2 indicate that the HCA scales provide valid and internally reliable measures of L2-*specific* forms of health-communication anxiety experienced in both physical and mental health contexts and these are associated with reluctance to use healthcare services in that language.

Manuscript 2 reports two studies examining the factors underlying the L2-specific health communication anxiety affecting willingness to use L2 services. Study 1 was concerned with indirect effects of health-focused anxiety – that is, of general worry about health in the link between L2 health communication anxiety and healthcare use. The results showed that there were no significant effects of general health-focused anxiety in the L2-specific effect of L2 health communication anxiety on willingness to use L2 health services. Study 2 continued investigating the indirect effects of *predictive uncertainty* and *predicted quality* of the medical service encounter as factors underlying this link. The results of this study indicate that uncertainty and predicted quality of encounters are important components in language-discordant communication anxiety in healthcare environments.

This dissertation identified L2-specific health communication anxiety, which predict reluctance to use L2 health services in both physical and mental health settings. More importantly, it demonstrated that the association between L2-specific health communication anxiety and willingness to use L2 health services is explained by the effects that L2-specific health communication anxiety influenced medical uncertainty, which in turn had a negative impact on predicted quality of medical encounter in L2.

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Contribution of Authors

This Ph.D. dissertation consists of two manuscripts containing four studies, as follows:

Manuscript 1, Study 1 (see Chapter 2)

Zhao, Y., Segalowitz, N., Chamoux, E., & Ryder, A.G. (submitted to *Health Communication*). Health communication anxiety specific to using a second language: a barrier to healthcare utilization for linguistic minorities?

Manuscript 1, Study 2 (see Chapter 3)

Zhao, Y., Segalowitz, N., Chamoux, E., & Ryder, A.G. (submitted to *Health Communication*). Health communication anxiety specific to using a second language: a barrier to healthcare utilization for linguistic minorities?

Manuscript 2, Study 1; Referred to as Study 3 in this dissertation (see Chapter 4)

Zhao, Y., Segalowitz, N., & Ryder, A.G. (in preparation for submission). Second language health communication anxiety as a barrier to healthcare utilization by linguistic minorities: What underlies the connection?

Manuscript 2, Study 2; Referred to as Study 4 in this dissertation (see Chapter 5)

Zhao, Y., Segalowitz, N., & Ryder, A.G. (in preparation for submission). Second language health communication anxiety as a barrier to healthcare utilization by linguistic minorities: What underlies the connection?

For ease of reference, throughout this dissertation studies, tables, appendices, etc. are numbered/labeled consecutively, regardless of how they are numbered in the original manuscripts. References for all studies are provided at the end of the dissertation, rather than at the end of each manuscript.

The relative contributions of the authors is the following:

The original idea for these studies was developed by Dr. Segalowitz, Dr. Ryder and myself. I developed the questionnaires and scales used in all the studies reported here and implemented them in the online format. I was responsible for all the data analyses and Dr. Segalowitz and Dr. Ryder contributed ideas regarding follow up analyses as needed. I was responsible for writing the first manuscript (Studies 1 and 2 in this dissertation) and submitting it to the journal *Health Communication,* with editorial input from Dr. Segalowitz, Dr. Ryder and Dr. Chamoux. Dr. Chamoux was also part of the team of Segalowitz, Ryder and Chamoux that secured the funding supporting the studies reported in Manuscript 1 (Studies 1 & 2). I am responsible for preparing the second manuscript (Studies 3 and 4 of this dissertation) and submitting it for publication, again with the involvement of Dr. Segalowitz and Dr. Ryder.

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CHAPTER 1

General Introduction

At the beginning of this millennium, it was estimated that there were approximately 244 million people living in countries different from the one in which they were born (United Nations, 2015). The resulting increase in ethnic and linguistic diversity has been accompanied by a great need for language access services in healthcare settings. In Canada, according to the 2011 Census of Population (Statistic Canada, 2011), more than 200 languages were reported as a home language or mother tongue, and 20.6% of Canadians (6.8 million people) speak an immigrant language (i.e., a language other than English, French, or an Aboriginal language).

There is increasing awareness that ethnic minority groups experience health inequalities in many countries including Canada (Harper, Lynch, Burris, & Davey, 2007; World Health Organization, 2008). Racial and ethnic disparities in the use of health services and in health outcomes have been well documented in the United States and the United Kingdom (Weinick, Zuvekas, & Cohen, 2000; Sproston, Pitson, & Walker, 2001; Yu, Huang, & Singh, 2004). Studies from both countries reported that Black, Hispanic, and Asian people are less likely to access healthcare and experience more barriers than Whites. In Canada, those who do not speak one of the official languages are also underserved by the health system (Statistics Canada, 2001). In some circumstances French speakers living outside Quebec, or English speakers within Quebec may also face similar difficulties. However, little research has focused on the effects of language barriers on health outcomes, service utilization, and patient satisfaction. In Canada, most research on health service utilization and health status has focused on the effects of socioeconomic factors and ethnic/cultural differences, and not on the effect of language barriers to health access (Quan, Fong, Coster, Wang, Musto, Noseworthy, & Ghali, 2006). The literature,

however, has reported studies that have attempted to separate the variables of ethnicity and immigration status from language proficiency. These studies reported that the primary factor associated with poorer health outcomes appears to be language, not ethnicity. For example, some U.S. studies have found greater disparities between Hispanics and Whites than between Blacks and Whites in access and treatment received, even when other potentially confounding variables are accounted for. When language is included as a variable, English-speaking Hispanics have outcomes similar to Whites, while Spanish-speaking Hispanics continue to have the worst outcomes (Fiscella, Franks, Doescher, & Saver, 2002; Jenkins, Le, McPhee, Stewart, & Ha, 1996; Weech-Maldonado, Morales, Elliott, Spritzer, Marshall, & Hays, 2003; Weinick & Krauss, 2000; Yu, Nyman, Kogan, Huang, & Schwalberg, 2004). Weech-Maldonado and colleagues (2003) found, in the United States, not only that linguistic minorities tended to report poorer care than did Whites, but also worse care than racial and ethnic minorities. On the other hand, many Canadian studies compare utilization and treatment outcomes among different ethnic groups, rather than comparing official language proficient with non-proficient patients. In addition, individuals who face language difficulties are often excluded from participation in service-based health system satisfaction and evaluation activities (Gayet-Ageron, Agoritsas, Schiesari, Kolly, & Perneger, 2011). This limits the comparison of the experience of official language proficient patients with those who have language difficulties.

The importance of good communication between providers and patients has long been recognized. Health communication has been identified as medicine's most essential technology for conducting its work (Jackson, 1998). It has been described that without language, the work of a healthcare provider and a veterinarian would be nearly identical (Clark, 1983). Reviews of the literature on patient-provider communication indicate that, in addition to effects on patient

satisfaction, there is a relationship between the quality of communication and specific patient health outcomes (e.g. pain, recovery from symptoms, anxiety, and physiological measure of blood pressure and blood glucose) (Kaplan, Greenfield, & Ware, 1989; Stewart, 1995; Stewart, Brown, Boon, Galajda, Meredith, & Sangster, 1999; Stewart, Brown, Donner, McWhinney, Oates, Weston, & Jordan, 2000; Teutch, 2003; Williams, Weinman, & Dale, 1998). Three basic communication processes have been identified as associated with improved health outcomes: a) amount of information communicated and exchanged, b) patient's control of the conversation, and c) clinical rapport established (Kaplan et al, 1989). All of these processes can be compromised in language discordant situations where patients and providers do not speak the same first language. It is generally agreed that the best communication is achieved where health care providers and patients speak the same language.

In Canada there are four constituencies who may face barriers to health care due to having a nonofficial first language: First Nations and Inuit communities, immigrants and refugees, deaf persons, and, depending on location of residence, speakers of one of Canada's official languages. Although recent challenges under the Canadian Charter of Rights and Freedoms have confirmed the rights of deaf persons to be provided with interpreters for health care, the rights of other minority language speakers are not clear.

The overarching goal of this thesis project is to examine the barriers associated with language-discordant health communication to healthcare access among linguistic minorities in Canada. Specifically, it focuses on investigating the effects of second language (L2) health communication anxiety on willingness to use L2 services as well as the factors underlying this anxiety. It also focuses on English-speakers in Quebec as a starting point to address these issues. The following sections will introduce a literature review on L2 health communication anxiety as

well as important issues relevant to communication anxiety and healthcare access, which informed the development of the present research. A summary of the empirical studies included in this thesis will follow this review.

Literature Review

L2 Health Communication

It is well documented that quality patient-provider health communication is central to patients' health outcomes as well as to the patient-provider relationship (Jacobs, Chen, Karliner, Agger-Gupta, & Mutha, 2006; O'Neill, 2005). Effective health communication is found to be associated with higher quality of medical information exchange, increased patient satisfaction with medical services, better treatment adherence, more knowledge about the available health services, and improved health outcomes, such as reduced symptoms, distress, and pain (Golin, DiMatteo, & Gelberg, 1996; Greenfield, Kaplan, & Ware, 1985). However, linguistic minority individuals may not fully benefit from effective medical communication because of language barriers that they face in the linguistic discordant settings. Such a language barrier can significantly compromise the quality of health care, adversely impact patients' access to health care or willingness to make use of the medical resources available, foster distrust in the quality of health-care received, minimize the likelihood that patients will receive appropriate follow-up treatment and can result in diagnostic errors or overall inappropriate treatment (Anderson et al., 2003; Woloshin, Bickell, Shwartz, Gany & Welch, 1995; Weinick & Krauss, 2000). Research has reported that populations with limited language abilities are particularly at risk for lower quality of healthcare (Dilworth, Mott, & Young, 2009). For example, Flores (2005) reported that

in the United States, parents who do not speak English well were more at risk for poorer parent and child health outcomes.

Health communication consists of not only simple exchanges of words about symptoms, diagnosis, medical process, and treatment procedures (Labov & Fanshel 1977), but also how people related with each other through their interactions (Gregg & Saha, 2007). Segalowitz (2003) proposed an approach to studying language barriers in healthcare by focusing on the social and emotional messages that the speakers attempt to convey. Speakers' goals can be seen, therefore, to be about more than delivering basic, semantic information about objects, events, and their attributes. Imagine, then, a healthcare professional intending to convey a strong social message of respect for a patient as a free agent capable of making decisions, but the patient's anxiety in the conversation may compromise this process. However, less research attention has focused on understanding how language proficiency interacts with and contributes to other barriers that individuals might encounter in the health context, such as anxieties associated with health communication.

Health Communication Anxiety in L2

Anxiety can be defined in a number of ways. McCroskey (1977) identified communication apprehension (also known as communication anxiety; see Booth-Butterfield & Gould, 1986) as the ‘‘level of fear or anxiety associated with either real or anticipated communication with another person or persons’’ (p. 78). Communication apprehension in a medical context (i.e., health communication anxiety) is a common experience among patients even when they speak in their native language (Bowden & Burstein, 1979). Health communication anxiety has been operationalized as the subjective discomfort that patients

experience when talking about health in medical contexts (Booth-Butterfield & Gould, 1986; Guntzviller, Jensen, King, and Davis). Patients may experience anxiety because they have to disclose personal information to a stranger who appears busy (Foley & Sharf, 1981). This anxiety is a common symptom of patients entering a doctors' office (Bowden & Burstein, 1979). Communication anxiety could also inhibit memory capacities (Ley, 1988), which could compromise compliance with doctors' instructions, leading to other medical problems. In addition, this communication anxiety may also inhibit the patient's participation in the medical process and even prevent individuals from using health services in the first place. For example, Wheeless (1984) reported that as communication anxiety with one's doctor increases, willingness to discuss medical topics decreases. This implies that anxious individuals may be more likely to avoid discussion of important health issues and therefore receive less appropriate treatment.

This medical communication apprehension can be more complex in language-discordant settings because of the additional anxiety associated with communication in a second language. Individuals often become anxious about communicating in another language because of the fears of being embarrassed about making mistakes, being perceived as incompetent in their language abilities, and stressed when they are not sure about what the other person is saying (Horwitz & Young, 1991). This general L2 communication anxiety has been found to be associated with increased difficulty with vocabulary and describing themselves (MacIntrye & Gardner, 1994), and less accurate comprehension in conversations (Ganschow, Sparks, 1996; MacIntrye & Gardner, 1994). Up to date, the effects of high L2 communication anxiety have been primarily studied in classroom settings with students learning a second language (e.g., Horwitz & Young, 1991). If these anxieties of health communication and L2 communication transfer to patients in

language-discordant health communication contexts, this L2 health communication anxiety may inhibit patients' ability to communicate and negatively impact on how the patient-provider communication unfolds. For example, patients may be less willing to provide information, less able to express or describe themselves, less able to interpreted information, and more reluctant to use L2 health service in the first place. While it is important to study this L2 health communication anxiety, it can nevertheless be challenging to study it. One of the challenges is the lack of validated measures to assess the anxiety specifically associated with L2 communication in medical settings.

Measurement of L2 Health Communication Anxiety

Valid and reliable research tools are essential in order to operationalize L2 health communication anxiety and examine its causes, effects, and outcomes related to healthcare. Research focusing specifically on health communication anxiety in language discordant settings requires controlling for a number of interrelated issues. For example, studies of L2 health communication anxiety have rarely controlled for health communication anxiety that people may experience even in concordant language situations where patients speak their native or first language (L1). This L1 health communication anxiety, of course, might also be expected to play a role in discordant language setting. In addition, communication anxiety as a personality trait may also interact with L2 health communication and influence how patients and providers interact and communicate. The literature has reported that individuals with a high level of communication anxiety tend to withdraw from verbal communication and minimize interactions (Lazarus & Averill, 1972). Individuals who experience anxiety in general social situations might also experience communication anxiety during doctor's visits and while engaging in medical

services interpersonally. For example, Booth-Butterfield, Chory, and Beynon (1997) found that participants who had high levels of general communication anxiety tended to ask fewer questions, had less accurate understanding of the conversation, and shorter medical contacting. Higher communication anxiety was also associated with a lower likelihood to seek health information, more negative descriptions of interactions with physicians. These findings suggest that communication anxiety as a personality variable may also negatively impact effective communication in health contexts. Finally, anxiety associated with non-medical communication in an L2 might interact with and contribute to health communication in L2. Many studies have examined apprehension about communicating in one's non-native language with students who are learning a second language. L2 communication anxiety was found to interact with general social communication apprehension and negatively affect language performance (MacIntyre & Gardner, 1989, 1994). This L2 communication anxiety might also affect L2 communication in medical settings. Without controlling for these variables, it is difficult to be sure that it is the language discordant aspect of the situation that is playing a role in establishing a barrier. Such measures, however, are lacking in current research literature. For example, Guntzviller, Jensen, King, and Davis (2011) did not control for the level of health communication anxiety in a first language in their Foreign Language Anxiety in a Medical Office Scale.

There may be several reasons for people to avoid healthcare services when they would have to use their L2 to communicate, reasons that are not necessarily specific to L2 healthcare communication anxiety. These factors need to be controlled for if one wants to identify linguistic barriers in healthcare settings that are associated specifically with discordant language situations. Few studies have examined how general communication anxiety interacts with language discordant health communication anxiety affecting healthcare utilization among linguistic

minorities (see Guntzviller, Jensen, King, & Davis, 2011). One of the goals of this present research is, therefore, to develop an instrument to assess communication anxiety in language discordant medical settings, controlling for L1 health communication anxiety, non-medical communication anxiety, and L2 non-medical communication anxiety. Once this measurement is established, the next steps of this research then, is to identify the effects of this L2 health communication anxiety and to explain the factors underlying this anxiety in order to understand and address the barriers to healthcare encountered by linguistic minority groups.

L2 Health Communication Anxiety and Willingness to Use L2 Health Services

Communication anxiety has been defined as "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (McCroskey, 1977, 1984; Richmond & Roach, 1992). General communication anxiety (i.e., non-medical communication anxiety) theories suggest that individuals with a high level of communication anxiety tend to avoid communication, withdraw from it, or experience disruptions in communication (McCroskey, 1977). Empirical studies also have reported that high communication anxiety is associated with a low willingness to communicate and avoidance of communication in a range of social, organizational, academic, and communicative situations (e.g., Daly & Stafford, 1984; Beatty, 1988; Richmond & Roach, 1992).

In a medical context, general health communication anxiety (i.e., L1 health communication anxiety) has been found to be associated with decreased quality of patient-provider communication, poor patient compliance, malpractice claims, and poor health behaviors (Booth-Butterfield, et al., 1997). Booth-Butterfield and colleagues found that individuals with a high level of communication anxiety reported decreased health information seeking from

interpersonal sources for medical problems (Booth-Butterfield, et al., 1997). These findings are consistent with communication anxiety research (e.g., McCroskey, 1984; Allen & Bourhis, 1996), which indicates that high communication anxiety is associated with minimized communication and interaction avoidance.

Informed by research findings of the link between communication anxiety and communication avoidance, it is then prudent to ask how patients approach medical care offered in their second language where such anxieties could be even more intense. Given the general importance of having access to healthcare services, there is a need to explore whether and why L2 health communication anxiety, as experienced by members of linguistic minority groups, impacts on peoples' willingness to use such services.

Factors underlying L2 Health Communication Anxiety

Although linguistic minority individuals might be at particular risk to health communication anxiety and its negative outcomes, research is still needed to explain why some linguistic minority individuals may manage the situation better than others and why L2 health communication anxiety impacts on people's willingness to use such services. The previous literature has reported theories and research findings on the relations between anxiety, uncertainty, and quality of communication in intercultural communication (Gudykunst, 1993, 1998; Stephan, Stephan, & Gudykunst, 1999). The Anxiety Uncertainty Management (AUM) theory (Gudykunst, 1993, 1998; Gudykunst & Ting-Toomey, 1988; Gudykunst, Ting-Toomey, Sudweeks, & Stewart, 1995) suggests that uncertainty and anxiety are central elements that influence the effectiveness of our communication with others in both interpersonal and intercultural communication. It argues that anxiety and uncertainty need to be maintained at the

optimal levels in order for effective communication to occur, with heightened anxiety and uncertainty leading to reduced willingness to interact. Stephan and Stephan (1985) suggest that when individuals communicate with members of other groups (e.g., encounters with strangers from a different culture), they often experience higher levels of anxiety than when communicating with members of their own group (e.g., encounters with strangers from the same culture). Study findings of Gudykunst and Shapiro (1996), Ickes (1984), and Word, Zanna, and Cooper (1974) support this argument. In addition, while some degree of uncertainty exists in all relationships, the uncertainty tends to be greater when people communicate and interact with members of different group than when they interact with members of their own groups (Gudykunst, 1985; Gudykunst & Shapiro, 1996; Lee & Boster, 1991). Studies have found that lowered certainty and heightened anxiety have a negative impact on willingness to interact with people from another group (Logan, Steel, & Hunt, 2016; Samochowiec & Florack, 2010). Moreover, the anxiety and uncertainty people experience when interacting with others usually leads to negative affect and negative anticipation of the situation. Gudykunst and colleagues (1986) reported uncertainty was negatively associated with perceived effectiveness of communication in Japanese and North American participants.

Communicating in linguistic discordant settings might be similar to intercultural communication because language and ethnic identity are intricately related to each other (Cho, 2000; Phinney, Romero, Nava, & Huang, 2001; Tse, 2000). In a medical context, the intercultural health communication uncertainty and anxiety may be even greater in language-discordant settings because of the anxiety associated with linguistic barriers, resulting in a higher level of reluctance to use the L2 health services. Accordingly, we assume that individuals who are highly anxious communicating health in a L2 would tend to avoid using L2 healthcare

services if they perceive the health interactions as uncertain and difficult to predict. To date, few studies have applied the intercultural communication theory in medical contexts with the consideration of how uncertainty and anticipated quality of intercultural encounters play a role in the association between anxiety and willingness to use L2 health services.

The Present Research

Although linguistic barriers in healthcare system have received increasing attention in research, there is a lack of understanding about the specific nature of language barriers as well as how and why the L2 communication affects healthcare among linguistic minorities. The above reviewed literature reveals several issues, which need to be investigated further. First, how language barriers are conceptualized needs to be clarified. Language barriers in healthcare is a multifaceted concept, involving not only a person's L2 proficiency, but also other L2 communication related psychological variables, such as anxieties that are associated with having to communicate in a language discordant situation (i.e., having to use an L2). This L2 health communication anxiety may negatively influence the medical communication processes, health outcomes, and even the person's willingness to use health services. Second, how L2 health communication anxiety is operationalized also needs to be refined. A valid and reliable measurement of L2 health communication anxiety requires vigorous controls in order to assess anxieties, which are specific to communicating about health in a second language. Health communication anxiety in one's native language, communication anxiety in a non-medical context, and communication anxiety in L2 are all common experiences and can contribute to and interact with L2-specific health communication anxiety. These variables all need to be controlled for when studying L2 health communication anxiety. Third, little is known about how and why

L2 health communication anxiety affects healthcare. Research needs to unpack factors that contribute to this L2 health communication anxiety in order to better understand linguistic minorities medical experiences and to reduce barriers to their healthcare access and treatment. This present thesis research attempts to address these gaps in the literature by investigating the impact of cross-linguistic health communication anxiety on willingness to use L2 health services among linguistic minorities in Canada.

The goal of this dissertation is three-fold. First, it aims to develop an instrument to assess communication anxiety in language discordant medical settings, controlling for communication anxiety in language concordant health situations and in non-medical situations. Second, it aims to examine whether and to what extent this discordant language health communication anxiety is related to willingness to use health services in the L2. Third, it aims to investigate the factors underlying this L2-*specific* health communication anxiety. Four empirical studies have been conducted to achieve these research goals.

Study 1 focuses on establishing a research tool for studying L2 health communication anxiety. It focused on developing and validating an instrument assessing health communication anxiety in discordant language situations in both physical and mental health contexts – the Health Communication Anxiety (HCA) scale. The HCA scale is developed based on a review of relevant literature (Guntzviller, et al., 2011; Wright, Frey, & Sopory, 2007). Factor analysis, measures of internal reliability, and measures of convergent and divergent validities are used in order to assess the psychometric properties of this scale. HCA in L1 and L2, referred to as HCA1 and HCA2 respectively, are assessed separately in order to control for L1 health communication anxiety.

Study 2 focuses on investigating the effects of L2 health communication anxiety on healthcare utilization. It aims to examine the influence of L2 health communication anxiety on willingness to use L2 health services in both physical and mental contexts. Health communication anxiety in L1 (HCA1), communication anxiety in non-medical settings, L2 communication anxiety, and L2 language proficiency variable are controlled for in order to assess this L2-specific health communication anxiety.

Study 3 focuses on examining factors underlying this L2-specific health communication anxiety. It aims to examine the role of health-focused anxiety, because of the high stakes nature of health in explaining this L2-specific anxiety in both physical and mental health contexts. Health-focused anxiety is proposed to provide indirect effects underlying this link between health communication anxiety and willingness to use L2 health services.

Study 4 follows up on Study 3 and further investigates the factors underlying second language health communication anxiety barriers to readiness of using healthcare services among linguistic minorities. It proposes that predictive uncertainty and predicted quality of medical encounter provide indirect effects in the relation between L2 health communication anxiety and willingness to use L2 service. It assesses a series of factors underlying the L2 health specific communication anxiety, with L2 predictive uncertainty being considered first, followed by predicted quality of medical encounter in L2. In addition, it anticipates that specific aspects of L2 predictive uncertainty and predicted quality of medical encounter would play different roles underlying the L2 health communication anxiety in physical and mental health contexts. Whereas the overall predictive uncertainty and predicted quality of encounter in L2 would be of great importance in physical health context, clinical rapport uncertainty and quality of clinical rapport in L2 would be essential in mental health context.

Together, these four studies contribute to the literature on improving the conceptualization and operationalization of language-discordant health communication anxiety in both physical and mental health contexts. As such, it is hoped that this dissertation will advance our understanding of cross-linguistic communication experiences among linguistic minorities in medical settings.

CHAPTER 2:

Health Communication Anxiety Specific to Using a Second Language:

A Barrier to Healthcare Utilization for Linguistic Minorities?

Study One (Study 1, manuscript 1)

ABSTRACT

We report two studies looking at health communication anxieties associated with language-discordant situations, that is, where patients have to communicate using their second language (L2) with a health provider using a first language (L1) different from the patient's L1. Study 1 was concerned with developing a Health Communication Anxiety (HCA) scale for language-discordant situations, separately for physical and mental health contexts. Study 2 examined the relationship of L2 health communication anxiety on willingness to use health services provided in the L2. Participants were recruited online from community and students living in Québec. All had English as their L1 or as their dominant language and French as their L2 (that is, any non-L1 language). Study 1 ($N = 200$) results showed that both the physical and mental HCA scales demonstrated high validity and internal reliability, as well as an underlying unidimensional structure. In Study 2 ($N = 114$), regression analysis revealed that L2 physical and mental health communication anxieties (ΔR^2-values =.08 and .10, p-values < .001, respectively) were independently related to willingness to use L2 health services, after controlling for L1 general health-communication anxiety (HCA not related to L2), general L2 communication anxiety (not related to health), experience using the health services in L1, and self-rated L2 proficiency. Results indicate that the HCA scales provide valid and internally reliable measures of L2-*specific* forms of health-communication anxiety experienced in both physical and mental

health contexts and these are associated with reluctance to use healthcare services in that language.

Introduction

As communities throughout the world become ever more culturally diverse and encounters between different linguistic and cultural groups more frequent, the need to communicate in healthcare situations using one's second language (L2) has become increasingly common. Are there any special consequences of using—or even of anticipating having to use—one's L2 during a healthcare encounter? We address this issue by examining a potential L2 health communication barrier to healthcare access that people in a linguistic minority situation often experience. To put this work into its larger context, we address health communication as it is perceived *by patients* (or potential patients) who must use their L2. This contrasts with health communication research that focuses on how various forms of communication *to patients* affects health behaviors (Schiavo, 2007) and with research that focuses on the linguistic and sociolinguistic details of how communication *between patients and providers* unfolds (Heritage & Maynard, 2006).

Minority racialized and ethnic groups experience health inequalities in many countries (Harper, Lynch, Burris, & Davey, 2007; World Health Organization, 2008). People from ethnic minorities in their own home countries also often report higher rates of disease, disability, and death, and lower rates of healthcare utilization. They tend to receive a lower quality of healthcare than non-minorities, even after controlling for access-related factors, such as insurance status, income, and socioeconomic status (American Medical Association, 2004; Fiscella, Franks, Doescher, & Saver, 2002). It is possible in some cases that poor health in the minority community is only superficially or partially associated with—and not causally linked to—cultural variations and results instead from linguistic factors that act as barriers to health

services. Thus the association might reflect linguistic obstacles that have an impact on health communication, thereby setting a minority linguistic community apart from the surrounding majority. In such cases, linguistic issues—including level of linguistic proficiency, ability to communicate nuances of health concerns, and other L2 communication barriers such as those resulting from communication anxiety—might play a direct role in healthcare, beyond the well-documented consequences of ethnocultural minority status. Few studies have considered possible *linguistic* sources that may underlie health inequalities, at least not in a systematic way. We attempt to do this by investigating the relationship between health communication anxiety and reluctance to make use of health services in the L2.

It is well recognized that quality of conversation is central to the provider-patient relationship, impacting diagnosis and treatment (Jacobs, Chen, Karliner, Agger-Gupta, & Mutha, 2006; O'Neill, 2005; Ong, de Haes, Hoos, & Lammes, 1995; Simpson et al., 1991). Effective and collaborative provider-patient communication has been associated with greater satisfaction with medical encounters, better treatment adherence, and improved health outcomes, such as symptom distress, pain, and stress (Golin, DiMatteo, & Gelberg, 1996; Greenfield, Kaplan, & Ware, 1985). For example, patients' increased participation in medical decision making during a physician visit is likely to improve their adherence to self-care by affecting their understanding of the treatment regimen or the fit of this regimen to their lifestyle. Increased patient involvement in care and in medical decision making with physicians resulted in improved physical activities and patients' greater satisfaction with the treatment they received (Golin et al., 1996).

Many linguistic minority patients, unfortunately, do not have the opportunity to engage in high quality communicative interactions with providers, and to thereby benefit from them, because of language barriers. Moreover, this situation is ever more likely due to increased

mobility of people with diverse language backgrounds, raising concerns about how to best meet the health needs of newcomers and of historically established linguistic minorities. In Canada for example, where both English and French are official languages, the majority of French-speakers living outside the province of Quebec (Bélanger, 2003; Bouchard & Leis, 2008) and English-speakers living in some areas of Quebec (Bélanger, 2003) lack access to at least some services in their first language. Similar patterns are reported for other countries and, increasingly around the world, with potentially serious consequences that can occur at different levels (e.g., Bowen, 2001). For example, hospital registration, triage, medical examination, providing informed consent, and being properly discharged from hospitals all crucially depend on how well patients and health professionals communicate with each other (Bowen, 2001; David & Rhee, 1998); the presence of L2 barriers will affect all of these facets of using the health system, in many cases with negative consequences.

Linguistic barriers in healthcare, especially those that arise when care is delivered in language-discordant situations—that is, when providers and patients speak different first languages—may affect various aspects of health disparities. For example, patients' limited proficiency with the main or official local language has been linked with poorer health outcomes, which can present a major challenge in healthcare delivery for many countries. According to survey findings reported by Wirthlin Worldwide (2001), one-fifth of Spanish-speaking Latinos living in the United States delayed or refused needed medical care because of anticipated language barriers. Lower levels of language proficiency can have a major impact on health and healthcare, including: impaired health status, a lower likelihood of having a usual or regular source of medical care (Hu & Covell, 1986; Kirkman-Liff & Mondragón, 1991; Weinick & Krauss, 2000); lower rates of preventive services (Woloshin, Schwartz, Katz, & Welch, 1997); a

greater likelihood of psychiatric diagnostic errors and leaving the hospital against medical advice among psychiatric patients (Baxter & Bucci, 1981); an increased risk of drug complications (Gandhi, Burstin, Cook, Puopolo, Haas, & Brennan, & Bates, 2000); and higher resource utilization for diagnostic testing (Hampers, Cha, Gutglass, Binns, & Krug, 1999). Individuals with low English language proficiency can have problems navigating a primarily English-speaking healthcare system (Clark, Sleath, & Rubin, 2004), have difficulty finding and interpreting health information (Vanderpool, Kornfeld, Rutten, & Squires, 2009), be less likely to participate in preventive care, have poorer patient satisfaction, and have less knowledge about available health services (Dilworth, Mott, & Young, 2009). In all these cases it is clear that low linguistic proficiency is associated with compromised health status for the minority population.

Beyond miscommunication problems arising from a patient's limited language proficiency, a patient's *anxiety* associated with having to communicate in a language-discordant situation (i.e., having to use an L2) may also impact negatively on how communication unfolds and even on willingness to use the healthcare system in the first place. Here we understand anxiety in the sense used by researchers concerned with foreign language anxiety in general (Guntzviller, Yale & Jensen, 2016; MacIntyre & Gardner, 1991) and with communicative apprehension in medical settings more specifically (Booth-Butterfield, Chory & Beynon, 1997; Guntzviller, Jensen, King & Davis, 2011; Logan, Steel & Hunt, 2016).

While it is important to study this anxiety, it can nevertheless be challenging to study its potential causes and effects. This is because research focusing specifically on health communication anxiety requires controlling for a number of interconnected variables. For example, studies of L2 health communication anxiety have rarely controlled for *general* healthcare communication anxiety that people may exhibit even in *concordant* language

situations (i.e., when both provider and patient are using their L1) and which, of course, might also be expected to play a role in discordant language situations. Without controlling for this, it is difficult to be sure that it is the language discordant aspect of the situation that is playing a role in establishing a barrier. Medical communication apprehension is a common experience among patients (Bowden & Burstein, 1979), and can influence how patients and physicians interact and communicate, as well as the patient's willingness to seek and provide health information (Booth-Butterfield, et al. 1997). Anxiety is the most common experience of patients entering a physician's office (Bowden & Burstein, 1979), because a patient has to reveal personal physical information to a stranger who appears busy (Foley & Sharf, 1981). Health communication anxiety can also inhibit memory and influence compliance with the physician's instructions (Ley, 1988). Individuals who are anxious communicating often withdraw from verbal communication (McCroskey, Beatty, Kearney & Plax, 1985) and attempt to shorten encounters (Lazarus & Averill, 1972). General health communication anxiety, because of its apparent link to poor patient compliance, to malpractice claims, and to poor health behaviors, therefore warrants inclusion as a control variable in studies of L2 health communication anxiety (Booth-Butterfield et al., 1997).

Similarly, one needs to control for individual differences in general communication anxiety (i.e., general communicative "shyness") found in non-medical settings, anxiety that could nonetheless also be involved in a discordant language situation in a health setting. Related to this, people may also be apprehensive about using the L2 in any situation, including non-medical contexts. Previous studies have found a strong link between individuals' apprehension about communicating in an L2 and their perception of their own communicative competence in that language. MacIntyre and Gardner (1991, 1994) posited that communication apprehension in an

L2 interacts with general trait-based communication apprehension and language performance. L2 speakers may feel embarrassed about appearing to make mistakes, about being incompetent in their language abilities, or anxious when they are not completely sure what the person with whom they are communicating is saying; such feelings could be all the more intense when that other person is a healthcare provider (Horwitz & Young, 1991). Thus, there may be several reasons for people to avoid healthcare services when they would have to use their L2 to communicate, reasons that are not necessarily specific to L2 healthcare communication anxiety. These factors need to be controlled for if one wants to identify linguistic barriers in healthcare settings that are associated specifically with discordant language situations.

Given the general importance of having access to healthcare services, there is a need to explore whether and why L2 health communication anxiety, as experienced by members of linguistic minority groups, impacts on peoples' willingness to use such services. Such studies need to include baseline controls such as L1 communication anxiety in medical settings, and communication anxiety related to non-medical contexts in both the L1 and L2. Valid and reliable measures of discordant language health communication anxiety are needed in order to examine its relation to healthcare outcomes and the usage of healthcare services. Such measures, however, are lacking in the research literature. The goal of the present studies, therefore, is threefold. First, we aim to develop an instrument to assess communication anxiety in language discordant medical settings, controlling for (not contaminated by) communication anxiety in language concordant health situations and in non-medical situations. We reasoned that language issues in health communication might depend to some extent on whether physical health (e.g., a physical injury or illness) or mental/emotional health issues (e.g., depression) are involved. On the one hand, all health communication requires to a certain extent patients and providers to be able to

handle linguistic subtleties, for example in describing pain (Lascaratou, 2007) or establishing rapport (Silverman, Kurtz & Draper, 2013). We reasoned, however, that with mental/emotional health issues, the use of language itself is often central to diagnosis and treatment in ways not always true regarding physical health. Because of this, language discordant situations might pose barriers not normally encountered in health communication dealing with physical injury or illness. To explore this possibility, we developed parallel scales for separately assessing health communication anxiety in physical and mental/emotional health contexts. Second, we aim to examine how this discordant language health communication anxiety might be related to willingness to use health services in the L2. Third, we aim to investigate to what extent the willingness to use L2 health services is influenced by an L2-*specific* health communication anxiety.

Two empirical studies are reported. In the first study, we developed a questionnaire for assessing health communication anxiety that is specifically relevant to discordant language situations. In the second study, we used the instrument with a different population to examine the relationship between discordant language communication anxiety and the willingness to use healthcare services in a second language.

STUDY 1

The goal of Study 1 was to develop and validate an instrument assessing health communication anxiety in discordant language situations, based on a review of relevant literature (Guntzviller et al., 2011; Wright, Frey, & Sopory, 2007). Given that the overall goal of this thesis project is to study health communication anxiety in four studies, using a reasonably short L2 health communication anxiety measurement (i.e., 7- to 10-item scale) is important for administration convenience. This L2 health communication anxiety scale was, therefore,

developed in two steps. The first step was to generate a large pool of items to ensure finding 7 to 10 items. Using the FLAMOS and WTCH measurements (Guntzviller et al., 2011; Wright, Frey, & Sopory, 2007) as a starting point, a 19-item L2 health communication anxiety scale was developed for the initial pool of items. In step two, 10 out of the 19 items were identified in the final L2 health communication anxiety scale. The following sections report the development of this instrument and the findings associated with its testing, followed by a discussion of its properties and potential uses.

Method

Participants

Potential participants were recruited by means of a snowball method through advertisement and contact with community organizations, and through a university participant pool. Participants had to meet the following inclusion criteria: (a) be 18 years or older; (b) have English as their first or dominant language; (c) live in the province of Quebec, a predominantly French-speaking region of Canada where healthcare is provided to varying degrees in English and in French; and (d) be able to speak at least some French as a second language. A total 718 people responded to the online questionnaire. Of these, 404 did not meet the participation criteria, did not complete all questions, or did not correctly answer an "honesty" question designed to detect mechanical responding; their data were excluded from analysis. Thus, a total of 314 community and student participants were included in the final samples for Study 1 and Study 2. In the sample, 78.34% reported being community participants and 21.66% students. For reporting purposes, the two sets of analyses were conducted with the data collected from the 314 participants are referred to as Study 1 and Study 2 respectively. The sample retained for Study 1 consisted of 200 participants selected randomly from the total of 314. This group included 153

females and 47 males, ranging in age of 18 to 80 years (M = 30.22, SD = 15.04).). These participants had self-reported proficiency ratings in French, their second language, of 3.32 (0.97) for speaking and of 3.71 (1.04) for listening, out of 5, where 1 = "little or no ability at all" and 5 = "native or native-like ability".

Procedure

Participants were asked to complete an online questionnaire using SelectSurvey (2014). By completing this survey, they became eligible for a $100 monetary prize determined by a random draw (one after every 100 new eligible participants had completed the questionnaire).

Measures

Healthcare Communication Anxiety (HCA) scales for L2 and L1 communication and for physical and mental health contexts. We adapted an existing health communication anxiety scale (FLAMOS; Guntzviller et al., 2011) and an L2 communication anxiety scale (WTCH; Wright et al., 2007) to develop the L2 Healthcare Communication Anxiety scale (HCA2) and its L1 counterpart (HCA1). These scales measure a person's communication anxiety in various healthcare settings, including medical and non-medical offices, and with healthcare and non-healthcare providers. The 19 items in the item source pool were re-worded from the original FLAMOS and WTCH sources as follows: they gave English and French as the languages of interest; they referred to hypothetical rather than actual past events (e.g., "If I had to use French I would feel …"); they generally referred to what one would *experience* rather than to behaviour (e.g., "I would feel/get/become nervous if …"; "I would panic if …"; I would feel confident if …"); they were cast in 7-point Likert-type format where "1" meant "strongly disagree" and "7" meant "strongly agree"; eight of the 19 items for each scale were in reverse-scored format ("7" indicating low healthcare communication anxiety instead of high anxiety). Each instrument

consisted of two versions – one for physical health and one for mental health to measure language communication anxiety in physical and mental health contexts, separately for L1 (HCA1p, HCA1m scales; English, concordant situations) and for L2 (HCA2p, HCA2m scales; French discordant situations), yielding four versions of the HCA scales. The 'p' and 'm' scales included similarly worded questions that differed only in terms of focus (on physical or mental health).

The four scales were developed in two steps. In Step One, each scale originally included 19 statements, to which participants indicated their agreement based on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Eight of the 19 items were presented in reverse scored format. In Step Two, the 19 items were reduced to 10 items (see Appendix A) in order to make this instrument shorter. Given the overarching goal of this thesis research is to study L2 health communication anxiety by using a valid instrument consistently in all four studies, a reasonably short scale is important for administration convenience.

Language Background Questionnaire (LBQ). This questionnaire included seven self-report items on language use and proficiency in L1, L2, and any other languages.

General Communication Anxiety (GCA) scale. A General Communication Anxiety (GCA) scale was created for this study as a measure of communication anxiety in general social settings in L1 and L2 (GCA1, GCA2; See Appendix B). The GCA scale consisted of a modified version of the Revised Cheek and Buss Shyness Scale (Cheek & Buss, 1981). This measure has been widely used to assess social anxiety regardless of language communication and has demonstrated high reliability (Cronbach's $\alpha = .90$, test-retest reliability = .88; Cheek & Buss, 1981). Our GCA scale included the following modifications: (a) additional items to measure communication related anxiety; (b) additional items to assess anxiety in both L1 and L2; and (c)

an expanded 1-7 rating scale (from 1-5) to allow for a greater dimensional assessment of anxiety (see Appendix B).

***Other Measures*.** The questionnaire also included single-item measures with strong face validity of: (a) willingness to use health services in L1 & L2; (b) frequency of using health services in L1 & L2; and (c) preference for using health services in L1 over L2 (see Appendix C).

Results

The SelectSurvey data were cleaned by removing data from ineligible participants and from incomplete questionnaires, a process that left data from 314 questionnaires for analysis. Next, data from 200 participants were randomly selected for analysis in this study, and the remainder was assigned to Study 2. For the Study 1 data we used SPSS (version 24) for a series of analyses to address the main hypotheses in turn, as follows.

Overview. We examined the reliability and validity of the Health Communication Anxiety scales for physical and mental health in L1 and L2 language contexts. Initially, we analyzed data from the 19-item scales, used the results to create shorter, easier to administer 10-item versions, and then reanalyzed the data from these shorter scales. We used Principal Axis Factor Analysis (PAFA) in an exploratory analysis to examine the psychometric properties of the L2 and L1 versions (discordant and concordant contexts). To create the 10-item scales, we selected 10 items from the 19-item scales that showed the highest factor loadings, all loadings > .35, and no cross loadings on other factors. It turned out that there were 10 items that met these criteria across the four scales (physical/mental health by L1/L2), allowing us to create four matching 10-item versions of the scales (see Appendix A).

We conducted correlational analyses to test convergent and divergent validities of the L2 versions, the language scales of primary interest. The results showed that data from all four HCA scales (in both the 19- and 10-item versions) demonstrated high reliability and validity. We report results mainly from the shorter 10-item versions due to space limitations. Similar analyses of the GCA data also revealed high reliability and validity.

Factor Analyses. The first research question concerned whether the health communication anxiety scales for L1 (concordant) and L2 (discordant) contexts and for physical and mental health (-p and -m) settings would reflect an underlying construct corresponding to health communication anxiety. For this purpose, we conducted four separate PAFA analyses with the L1/L2 (English/French) by physical/mental health versions of the HCA scales (HCA1p, HCA1m, HCA2p, HCA2m). First, scores for items in reverse scored format were reassigned non-reversed values. Then PAFA was used to extract the factors, with no restrictions placed on the number to be extracted. Factors were selected based on two criteria indicating the largest factors in the data set: an eigenvalue > 1.00 and the "above the elbow break-point" rule of the scree test. Promax rotation was then used to examine the factor structure as discussed below. In interpreting the rotated factor pattern, an item was considered to load on a given factor if the factor loading was .35 or greater for that factor and was less than .35 for the others.

In the PAFA analyses of the longer 19-item versions of the scales, the analyses yielded KMO measures of sampling adequacy $\geq .89$, and on each scale each one of the 19 items met the loading criteria just described. The analyses of the four 19-item scales each yielded two factors, with non-reverse scored items loading uniquely on Factor 1 and reverse scored items on Factor 2, and the two factors correlating with each other ($.58 \leq r \leq .76$). Given these patterns, we interpreted Factor 2 as a methods factor that really represented the same meaningful underlying

dimension as Factor 1. Guntzviller et al. (2016) also reported evidence for a single underlying unidimensional construct in a study using a general L2 communication anxiety questionnaire based on nearly identical items but not directed at a specific context.

Health communication anxiety for physical health. PAFA performed on the data from the 10-item scale for second language (French) health communication anxiety for physical health (HCA2p) revealed two factors explaining 61.59% (eigenvalue = 6.16), and 12.75% (eigenvalue = 1.28), with the cumulative contribution of the two factors = 74.33% (KMO = .91). The scree test also suggested two clear factors. Six items loaded strongly on Factor 1, two loaded strongly on Factor 2, and two cross-loaded on both factors. Promax rotation revealed that the two factors were correlated (r = .66). Because Factor 2 consisted solely of reverse scored items, the results were considered consistent with a unidimensional interpretation.

PAFA performed on the data from the 10-item scale for first language (English) health communication anxiety scale for physical health (HCA1p) yielded two factors, one explaining 48.87% (eigenvalue = 4.89) and the other 12.57% of the variance (eigenvalue = 1.26) with the cumulative contribution being 61.44% (KMO = .86). The scree test also suggested two factors. Promax rotation revealed that eight items uniquely loaded on Factor 1 (loadings > .35) and two non-reverse scored items loaded on Factor 2. The two factors were correlated (r = .62).

Health communication anxiety for mental health. PAFA performed on the data from the 10-item scale for second language (French) health communication anxiety scale for mental health (HCA2m) yielded two factors, explaining 64.43% (eigenvalue = 6.44) and 13.52% of the variance (eigenvalue = 1.35), respectively, with the cumulative contribution being 77.95% (KMO = .91). The scree test also suggested two factors. Promax rotation revealed that all non-

reverse scored items loaded uniquely on Factor 1 (loadings ≥ .70) and all reverse scored items loaded uniquely on Factor 2 (loadings ≥ .64). The two factors correlated r = .68.

PAFA performed on the data from the 10-item scale for first language (English) health communication anxiety scale for mental health (HCA1m) yielded two factors, explaining 46.00% (eigenvalue = 4.60) and 15.38% of the variance (eigenvalue = 1.54), respectively, for a total of 61.39% (KMO = .88). The scree test also suggested two factors. The non-reverse scored items loaded uniquely on Factor 1 (loadings >.61) and the reverse scored items loaded uniquely on Factor 2 (loadings ≥ .43). The two factors correlated r =.52.

Scale internal reliability. Data from both the physical and mental health context scales showed high reliabilities in both the L1 and L2 versions (L1- & HCA2p: Cronbach αs = .88 and .93, respectively; L1- & HCA2m: Cronbach αs = .86 and .94, respectively).

Validity of the L2 (discordant language context) HCA scales. We used correlational analysis to test the convergent validities of the L2 physical and mental health scales with respect to other measures in L2, including L2 speaking proficiency, general communication anxiety, frequency of using health services and willingness of using health services. The convergent validity results showed that L2 communication anxiety in relation to both physical and mental health contexts were significantly negatively related to L2 speaking proficiency (r = -.72 (*95%CI* [-.78, -.65]) and -.65 (*95%CI* [-.73, -.57]), p < .0001, respectively) and L2 general communication anxiety (r = .84 (*95%CI* [.79, .87]) and .82 (*95%CI* [.77, .86]), respectively, p < .0001), and significantly negatively related to preference in using health services in L2 (r = -.66 (*95%CI* [-.73, -.58]) and -.63 (*95%CI* [-.71, -.54]), p < .0001, respectively). However, neither L2 health communication anxiety scale (physical, mental health contexts) was significantly

correlated to health communication anxiety and general communication anxiety in the *first* language (all correlations were below $r < .13$, $p > .05$).

Reliability and convergent validity of the General Communication Anxiety (GCA) Scale. Finally, we examined the reliability and validity of the General Communication Anxiety scale as adapted for this study as a measure of communication anxiety in general social situations (Appendix B). The GCA scale demonstrated high internal reliabilities in L1 and L2 (Cronbach's $\alpha = .86$ and .95, respectively). We used correlational analysis to test convergent validity of the GCA2 scale in relation to L2 language proficiency. Results showed that general communication anxiety in the L2 was significantly negatively correlated with L2 proficiency ($r = -.74$, (*95%CI* [-.80, -.67]), $p < .001$), indicating greater GCA associated with weaker self-reported L2 proficiency. These results indicate that the L1 and L2 versions of the GCA scales developed as a control measure had the desired internal reliability and convergent validity.

Discussion

This study aimed to develop and validate an instrument that evaluates health communication anxiety specific to discordant language settings, that is, health communication anxiety when using a second language after controlling for health communication anxiety in a concordant (first) language setting. For this purpose, we created the scales described above for measuring healthcare communication anxiety in the L2 (discordant linguistic) settings in both physical and mental health contexts and corresponding L1 versions (for concordant linguistic settings). In order to control for nonhealth-related communication anxiety, we also developed GCA scales for measuring L1 and L2 communication anxiety in general social situations. Factor analyses were used to test the underlying structure of the scales. Cronbach's alphas and correlational analyses were used to test the reliability and validity of these scales. Results

provided evidence for the final, short versions of the scale as valid and internally reliable measurement tools for assessing individuals' communication anxiety when anticipating talking about health in their second language. Both physical and mental health communication anxiety scales (Appendix A) demonstrated predictive and convergent validity and had high internal reliability, as well as an underlying unidimensional construct. The L1 and L2 GCA scales (Appendix B) demonstrated high internal reliability and convergent validity. Taken together, these data support the use of the HCA2 scales to measure health communication anxiety in discordant language settings with members of a minority language community, with respect to physical and mental health contexts, and for using the HCA1 and the GCA1 and GCA2 scales as control measures. The scales are used in this way in Study 2.

Apart from establishing the psychometric properties of the newly constructed scales, the results of this study also indicated that, to a statistically significant extent, the measures of health communication anxiety were associated, as might be expected, with general L2 communication anxiety and with self-reported level of L2 speaking proficiency. They were also associated with reluctance to use health services in the L2 and with low frequency of experience using such health services, both in the context of communication about physical health and mental health. Interestingly, however, neither L2 health communication anxiety scale (physical, mental health contexts) was significantly related to health communication anxiety and general communication anxiety in the *first* language, suggesting that the L2 communication anxiety scales are measuring health communication apprehension specific to using the L2 (i.e., discordant language settings). The other significant correlations reported above do indicate the importance, therefore, of using control measures that are not specific to health communication in future studies, in order to determine whether L2 health communication anxiety is a case of simple L2 communication

anxiety (applicable to all L2 situations, including health) or whether there is something specific to health communication involved here, over and above any general communication effects.

The next step, therefore, was to proactively test the instruments with a new set of participants with the goal of establishing whether there is a form of communication anxiety that is specific to communicating in the L2 and that affects willingness to communicate in the L2 for the purpose of obtaining healthcare services. That is the goal of Study 2.

CHAPTER 3:

Health Communication Anxiety Specific to Using a Second Language: A Barrier to Healthcare Utilization for Linguistic Minorities?

Study Two (Study 2, manuscript 1)

The goals of Study Two were twofold. First, we aimed to re-examine the psychometric properties of the Health Communication Anxiety scales (HCA1p, HCA2p, HCA1m, and HCA2m) with a new population. Second, we aimed to assess the relation of L2 health communication anxiety to willingness to use healthcare services in the L2, this time controlling for L1 health communication anxiety, general communication anxiety in L1 and L2, L2 proficiency, and other general factors. In this way we examined the extent to which there is a form of communication anxiety *specific* to L2 health contexts. We hypothesized that:

(1) the HCA scales would again demonstrate high validity and reliability;

(2) L2 health communication anxiety would be significantly and negatively associated with willingness to use L2 healthcare services and, more specifically, that this relationship would hold after controlling for health communication anxiety in L1 and general communication anxiety in L1 and L2.

Method

Participants

Participants were those remaining in the total participant sample pool of 314 after 200 had been randomly assigned to Study 1. These 114 participants (98 females) ranged in age from

18 to 81 years (M = 31.2, SD = 14.51. Participants self-reported mean (SD) ratings of their French L2 proficiency were 3.35/5 (1.00) for speaking and 3.69/5 (1.10) for listening.

Procedure and Measures

These were the same as in Study 1 (data were collected at the same time for both studies).

Results

For these analyses, the SelectSurvey questionnaire data were first cleaned by removing data from ineligible participants and from incomplete questionnaires. For these data we used SPSS (version 24) for a series of analyses to address the main hypotheses in turn, as follows.

Overview. The reliability and validity of the Health Communication Anxiety scales for physical and mental health in L2 and L2 contexts were examined with this new population. We used PAFA to test the psychometric properties of these scales. We used correlational analyses to test the convergent validities of the L2 versions, the language scales of primary interest. Regression analysis was used to test the effect of L2 health communication anxiety on willingness of using L2 health services, controlling for L1 health communication anxiety, L2 general communication anxiety, L2 proficiency, and experience with using the health system. As in Study 1, the scales demonstrated good psychometric properties. Moreover, L2 health communication anxiety was negatively associated with willingness to use healthcare services, even after controlling for L2 language proficiency, health communication anxiety in the L1, and general communication anxiety in the L1 and L2.

Factor analysis. The first research question concerned whether the health communication anxiety scales for L1 (concordant) and L2 (discordant) contexts and for physical and mental health settings would, as in Study 1, reflect an underlying health communication anxiety construct. For this purpose, we used PAFA to analyze the underlying structure of the scales. We

conducted separate analyses with the L1/L2 (English/French) by physical/mental health versions of the scale (i.e., HCA1p, HCA1m, HCA2p, HCA2m). Scores for items in reverse scored format were reassigned non-reversed values. After factor extraction and rotation, two factors emerged in all four scales. In each case, Factor 1 consisted of the six items that had appeared in normal scoring format and Factor 2 consisted of the four items that had appeared in reverse scored format. As in Study 1, Promax rotation revealed these two factors to be highly correlated in each case ($.61 \leq r \leq .66$). Thus, as in Study 1, the results revealed an essentially unidimensional construct underlying each of the four scales.

Scale internal reliability. Both the physical and mental health context scales showed high reliabilities in both the L1 and L2 versions (HCA1p & HCA2p: Cronbach's αs = .87 and .93, respectively; HCA1m & HCA2m: Cronbach's αs = .89 and .94, respectively).

Validity of the L2 (discordant language context) Health Communication Anxiety (HCA) scales. We used correlational analysis to test the convergent validity of the L2 physical and mental health scales with respect to other L2 measures, including L2 speaking proficiency, general communication anxiety, frequency of using health services, and willingness to use health services. The convergent validity results showed that L2 health communication anxiety in relation to both physical and mental health were significantly positively related to L2 general communication anxiety (r = .82 (*95%CI* [.75, .87]) and .85 (*95%CI* [.79, .85]), respectively, $p <$ .0001), and significantly negatively related to the L2 speaking proficiency (r = -.66 (*95%CI* [-.75, -.64]) and -.63 (*95%CI* [-.73, -.51]), respectively, $p <$ .0001), to the preference of using health services in L2 (r = -.63 (*95%CI* [-.73, -.51]) and -.56 (*95%CI* [-.67, -.42]), respectively, all $p <$ .01), and to the willingness to use health services in L2 (r = -.65 (*95%CI* [-.75, -.53]) and

-.72 (*95%CI* [-.80, -.62]), respectively, $p < .01$). These results indicate that the HCA scales have high reliabilities and validities, replicating the results from Study 1.

Reliability and convergent validity of the General Communication Anxiety (GCA) Scale. We again tested the reliability and validity of the GCA scale that had been used in Study 1. The GCA2 scale demonstrated high reliability (Cronbach $\alpha = .93$). Correlational analysis used to test convergent validity showed that data on the GCA2 were significantly negatively correlated with self-rated L2 proficiency ($r = -.70$ (*95%CI* [-.78, -.59]), $p < .0001$). These results replicate the Study 1 finding that the GCA2 scale developed as a control measure for this study had the desired internal reliability and convergent validity.

L2 Health Communication Anxieties and L2 Health Utilization. The next question concerns whether L2 health communication anxiety predicts willingness to use healthcare services. For this purpose, we used correlational analysis to test the association between health communication anxiety and willingness to use L2 health services. We found that L2 health communication anxieties for both physical and mental health significantly negatively predicted the frequency of using health services in L2 ($r = -.28$ (*95%CI* [-.44, -.10]) and -.24 (*95%CI* [-.41, -.06]), *ps* < .01, respectively) and willingness to use health services in the L2 ($r = -.65$ (*95%CI* [-.74, -.53]) and -.72 (*95%CI* [-.80, -.62]), *ps* < .0001 respectively) (See Table 1).

L2-specific Health Communication Anxieties on L2 health utilization. The central research question in this study was to what extent does L2-*specific* health communication anxieties affect willingness to use L2 health services. To address this, we used regression analysis to examine the effect of L2 health communication anxieties on willingness to use L2 healthcare services, controlling for L1 health communication anxiety, L2 general communication anxiety, frequency of using health services in L2, and self-rated L2 speaking proficiency.

In the physical health context, the results showed that the control variables—L1 health communication anxiety, L2 general communication anxiety, frequency of using health services in L2, and L2 speaking proficiency—together explained 39.2% of the variance in predicting willingness to use L2 health services. After controlling for these variables, L2 health communication anxiety was still significantly related to willingness to use L2 health services ($p < .001$). Regression analysis examining health communication anxiety in the mental health context revealed similar results as in the physical health context. Specifically, the control variables explained 46.3% of the variance of willingness to use L2 health services. After controlling for these variables, L2 health communication anxiety remained significantly related to willingness to use L2 health services ($p < .001$) in both physical and mental health contexts, accounting for 7.3% and 9.2% of the variance, respectively (see Table 2).

Discussion

The goals of Study 2 were twofold. First, we re-examined the reliability and validity of the HCA scale in a new population. Consistent with Study 1, the HCA scales again captured a unidimensional construct assessing health communication anxiety. This instrument demonstrated high internal reliability and high validity for both physical and mental health contexts.

Second, we examined the extent to which the relation between L2 health communication anxiety and willingness to use L2 healthcare services is specific to the discordant language situation. Correlational analysis was used to examine the effect of L2 health communication anxiety on healthcare utilization. The results revealed that that L2 health communication anxiety negatively predicted willingness to use health services in L2 in both physical and mental health settings. This suggests that individuals who have a higher level of L2 heath communication

anxiety are less willing and more reluctance to use L2 physical and mental health services, compared to individuals with a lower level of L2 health communication anxiety. In addition, regression analyses were used to examine the association between L2 health communication anxiety and willingness to use L2 healthcare services, after controlling for health communication anxiety in L1 (i.e., general health communication anxiety), general communication anxiety in L1 and L2, L2 proficiency, and experience using healthcare services. As seen in Study 1, health communication anxiety in the L2 had a negative relationship on willingness to use L2 healthcare services in both physical and mental health contexts. The control variables of health communication anxiety in L1, general communication anxiety in L1 and L2, L2 proficiency, and frequency of using health services in L2 all significantly predicted willingness to use L2 healthcare services. However, the effects of L2 health communication anxiety on willingness to use L2 healthcare services were not fully explained by these factors, as they explained an additional 9-11% of the variance in willingness to use L2 services. The results thus reveal a form of communication anxiety specific to language discordant situations, which could affect physical and mental healthcare access among linguistic minority groups.

General Discussion

Language barriers among linguistic minorities are present in a variety of health settings, yet little empirical research has investigated these barriers to healthcare utilization. One reason for this dearth of research is that very few measures have been developed to assess the construct of L2 health communication anxiety specific to discordant language contexts. Until now, there has been no examination of the effect of *L2-specific* health communication anxiety on

willingness to use L2 healthcare services that has included the appropriate controls for baseline communication anxieties.

The results from the two present studies demonstrated and confirmed that the HCA2 scales provide reliable and valid unidimensional measures of second language communication anxiety for both physical and mental health contexts. The findings reported here also indicated that members of a linguistic minority do experience communication anxiety when anticipating using their L2 to obtain healthcare services, an anxiety significantly associated with reduced willingness to use those services. Moreover, this pattern held true even after controlling for factors that might normally be thought to fully explain this reduced willingness, namely low proficiency in the L2, general discomfort using the L2, general communication anxiety, general discomfort talking about health, and lack of familiarity with using L2 healthcare services. These results are noteworthy because they suggest there is something special about using one's L2 to talk about health issues, including both physical and mental health, that goes beyond the anxiety normally experienced when talking in a first language about health or due to limited L2 proficiency or general social anxiety.

This L2-specificity finding raises a number of important questions that need further investigation. First, the nature of the factors linking this L2-specific health communication anxiety leading to reluctance to use L2 healthcare services needs to be examined more deeply. One possibility to consider is that general anxiety about the high stakes nature of health may have an indirect effect on this link. Because health is essential to survival, concern about health serves is an adaptive function as it motivates one to attend closely to bodily and psychological symptoms to ensure issues are dealt with in a timely fashion. In other words, health-focused anxiety may explain the L2-specificity of this communication anxiety because of special concern

regarding possible failure to deal effectively with health issues in a language discordant situation. In this way, L2-specific health communication anxiety may be an antecedent of avoidance of health seeking behavior. For example, patients with a high level of health-focused anxiety may experience higher levels of anxiety when speaking with healthcare professionals in their second language, and this in turn may result in reluctance to use L2 health services.

Second, it is also important to consider the anxieties aroused in the context of uncertainties that characterize medical encounters. These anxieties may become even more problematic in language discordant communication settings. Uncertainty is common in medicine. It may be due to ambiguous patient presentations, multiple diagnoses and treatment possibilities, variation in treatment efficacy across individuals, and poor health professional-patient communication (Atkinson, 1984; Balsa, Seiler, McGuire, & Seiler, 2003). There is considerable evidence that ethnic minorities experience poorer communication with physicians than majority patients (Ghods et al., 2008; Johnson, Roter, Powe, & Cooper, 2004). Patients from minority groups may be less likely to trust healthcare professional and confide in them (Corbie-Smith, Thomas, & George, 2002; Doescher, Saver, Franks, & Fiscella, 2000) and physicians have lower levels of trust in minorities than in the majority whites in the United States (Moskowitz et al., 2011). If patients' experience greater uncertainty in visits with linguistically and/or ethnically different healthcare professionals, and if reactions to uncertainty systematically lead to different physician behaviors and choices (Lutfey, Link, Grant, Marceau, & McKinlay, 2009; Seaburn et al., 2005), then linguistic minority patients might well be reluctant to use healthcare services delivered in a second language.

Finally, the emotional distance that has been associated with communicating in the L2 may also contribute to L2-specific health communication anxiety. Research has shown that most

bilinguals do not generally process L2 words as automatically as L1 words (Segalowitz & Hulstijn, 2005) and, more specifically, it is possible that in the L2 they do not automatically experience the positive or negative valence that some words convey. In other words, L2 words may not feel as compellingly positive or negative even though their meanings and valence can be correctly recognized. Such cross-language differences in the way L2 users "feel the affect" in words and expressions that are intended to convey affective meanings (Pavlenko, 2005; Segalowitz, Trofimovich, Gatbonton, & Sokolovskaya, 2008) may be implicated in the factors underlying this L2-specific health communication anxiety.

The present findings addressed the situation for English-speaking minorities in French-speaking Quebec but future research should explore the generality of health communication anxiety as a language barrier in other linguistic minorities, including those where different social, historical, and political dimensions prevail, and for other populations such as international travellers, migrants, and historically established local minorities, such as aboriginal groups. As the results show, there is a health communication anxiety that is specific to discordant contexts and this can lower patient willingness to use L2 health services. This in turn may help explain inequalities, where they exist, in access to healthcare services for linguistic minorities. Understanding the factors underlying these barriers that operate in language-discordant situations will, hopefully, help in developing effective interventions to reduce such barriers to healthcare services for linguistic minorities.

Table 1. Zero-order Spearman inter-correlations for the main variables analyzed in Study 2. *N=114.*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 HCA1p	—	.10	.52***	.06	.43***	.01	-.13*	-.42***	-.14*	-.37***	-.04	-.14*	.05	-.05	.08
2 HCA2p		—	.12*	.88***	.06	.81***	-.67***	.05	-.65***	.04	-.63***	.13*	.12*	-.28**	-.16**
3 HCA1m			—	.11*	.52***	.04	-.22***	-.29***	-.14*	-.50***	-.11*	-.08	-.10	-.11*	-.04
4 HCA2m				—	.02	.81***	-.61***	.07	-.59***	.09	-.72***	.13*	.10	-.34***	-.24**
5 GCA1					—	.02	-.15**	-.34***	-.10	-.35***	.04	-.04	.04	-.03	.12*
6 GCA2						—	-.67***	.12	-.59***	.10	-.61***	.11	.08	-.37***	-.18**
7 SpkL2							—	.04	.58***	.08	.49***	-.13*	-.08	.44***	.13*
8 Will1p								—	.07	.50***	-.01	.05	-.09	-.02	-.05
9 Will2p									—	.09	.72***	-.08	-.05	.42***	.11
10 Will1m										—	.05	.09	-.02	-.04	-.11*
11 Will2m											—	-.12*	-.07	.38***	.23***
12UseFreq1p												—	.29***	.12*	.04
13UseFreq1m													—	.13*	.37***
14UseFreq2p														—	.38***
15UseFreq2m															—

Note: The variables listed are: HCA1p, HCA2p = L1 and L2 health communication anxiety for physical health, respectively; HCA1m, HCA2m = L1 and L2 health communication anxiety for mental health, respectively; GCA1, GCA2 = L1 and L2 general communication anxiety, respectively; SpkL2 = L2 speaking ability; Will1p, Will2p = L1 and L2 willingness to use physical health services, respectively; Will1m, Will2m = L1 and L2 willingness to use mental health services, respectively; UseFreq1p, UseFreq2p = L1 and L2 frequency of using physical health services, respectively; UseFreq1m, UseFreq2m = L1 and L2 frequency of using mental health services, respectively.
* p < .05, ** p < .01, *** p < .001

Table 2. Hierarchical regression summary for L2 health communication anxiety predicting willingness to use L2 Health Services for physical (Will2p) and mental health (Will2m) (*N = 114*).

	Model 1: Control Variables only		Model 2: Control + Independent Variable	
Variable	*B*	*t*	*β*	*t*
PHYSICAL HEALTH				
Will1p	.08	.84	.06	.75
HCA1p	-.12	-1.17	-.08	-.87
GCA1	.00	.00	-.02	-.26
GCA2	-.38	-3.37 **	-.03	-.24
UseFreq1p	-.03	-.43	.03	.44
UseFreq2p	.13	1.62	.07	.95
SpkL2	.23	2.08 *	.16	1.49
HCA2p			-.51	-3.81***
	R^2 = .39,F(7, 107) for ΔR^2 =9.86 ***		R^2 = .47, F(1, 106) for ΔR^2 =14.49***	
MENTAL HEALTH				
Will1m	.01	.11	.13	1.66
HCA1m	-.22	-2.23*	-.07	-.72
GCA1	.17	1.83	.11	1.32
GCA2	-.46	-4.46***	-.00	-.02
UseFreq1m	-.13	-1.45	-.01	-.07
UseFreq2m	.16	1.75	.02	.19
SpkL2	.16	1.58	.10	1.01
HCA2m			-.66	-4.68***
	R^2=.46, F(7,107) for ΔR^2 =13.16***		R^2 = .56, F(1, 106) for ΔR^2 = 21.93***	

Note: The dependent measures are willingness to use L2 health services (Will2p and Will2m in the Physical and Mental Health panels, respectively). Control variables are L1 health communication anxiety (HCA1p, HCA1m in the Physical and Mental Health panels, respectively), general communication anxiety in L1 and L2 (GCA1, GCA2), frequency of usage of the health services in L1 and L2 (UseFreq1, UseFreq2), and self-rated ability to speak in the L2 (SpkL2). The independent variable (predictor) is L2 health communication anxiety (HCA2p and HCA2m in the Physical and Mental Health panels, respectively).

Transition

Language barriers have long been recognized as a major obstacle to effective health care communication among linguistic minorities (Feinberg, Swartz, Zaslavsky, Gardner, Walker, 2002; Jang, Lee, & Woo, 1998; Harlan, Bernstein, & Kessler, 1991; Hu & Covell, 1986). Literature has primarily focused on language proficiency as a limit to healthcare utilization and treatment outcomes. However, communication gaps in healthcare go beyond literacy competency. A better understanding of specific communication gaps can direct clinicians to anticipate the obstacle and implement strategies to help patients better access health systems. Manuscript 1 raised important issues concerning the impact of health communication anxiety L2 on healthcare access. It developed a valid and reliable research tool – Health Communication Anxiety (HCA) scale – for measuring communication anxiety in language discordant situations, separately for physical and mental health contexts. The HCA scale evaluates health communication anxiety when using a second language after controlling for health communication anxiety in concordant language (first) settings.

Apart from establishing this new measurement, Manuscript 1 also highlighted the impact of L2 health communication anxiety on healthcare utilization among linguistic minorities. The research results revealed that there is an anxiety specific to L2 health communication, in both physical and mental health contexts, which have a negative impact on willingness to use L2 healthcare services among linguistic minorities. This anxiety cannot be fully explained by L2 proficiency, general health communication anxiety in L1, and general social communication anxiety.

Manuscript 1 has set up the first step examining the importance of L2 health communication anxiety in healthcare access. Manuscript 2 examines the nature of the factors

underlying this L2 specific health communication anxiety affecting healthcare use. Specifically, it examines indirect effects in health-focused anxiety (in Study 3), and perceived medical uncertainty and medical encounters (Study 4) in two separate studies.

CHAPTER 4:

Manuscript 2: Second language health communication anxiety as a barrier to healthcare utilization by linguistic minorities: What underlies the connection?

Study Three (Study 1, manuscript 2)

ABSTRACT

Two studies are reported in order to examine the factors underlying the L2-specific health communication anxiety affecting willingness to use L2 services. Study 3 was concerned with the effect of health-focused anxiety – that is, of general worry about health underlying the link between L2 health communication anxiety and healthcare use. Study 2 continued investigating the effects of *predictive uncertainty* and *predicted quality* of the medical service encounter as factors underlying this link. Participants were recruited from online community and students living in Québec. All had English as their L1 or dominant language and French as their L2 or third language. Study 3 ($N = 47$) results revealed that after controlling for health-focused anxiety, L2 health communication anxiety was still significantly related to willingness of using L2 health services. Similar results were found in both physical and mental health contexts. These results suggested that there were no significant importance of general health-focused anxiety in the L2-*specific* effect of L2 health communication anxiety on willingness to use L2 health services. In Study 4 ($N = 117$), PROCESS analysis that was used for studying indirect effects revealed that in the physical context, the indirect effect of L2-*specific* health communication anxiety on willingness to use L2 health services was significant (unstandardized coefficient = -.09, (*95%CI* [-.24, -.01]), through the multiple series factors of the overall predictive uncertainty and

predicted quality of service encounter. In the mental health context, the indirect effect of L2-*specific* health communication anxiety on willingness to use L2 health services was significant (unstandardized coefficient = -.05, (*95%CI* [-.16, -.01]), through the multiple series factor of clinical rapport uncertainty and predicted quality of clinical rapport in L2. The results of this study indicate that uncertainty and predicted quality of encounters are the key components in language-discordant communication anxiety in healthcare environments.

Introduction

In many situations involving encounters between patients and health service providers, providers and patients speak different first languages. These are known as language discordant health communication situations (Jacobs, Chen, Karliner, Agger-Gupta, & Mutha (2006); Segalowitz & Kehayia, 2011). For example, discordant situations arise frequently for linguistic minorities, such as official language minorities (e.g., French-speaking Canadians living in predominantly English-speaking regions of Canada), non-official language minority communities (e.g., Spanish-speakers in the United States), immigrants (e.g., Arabic-speaking refugees in the UK), and aboriginal groups who typically form tiny minorities within their respective countries. This research is concerned with health communication in discordant settings from the perspective of the patient—that is, with factors at play when the patient must use a second language to communicate with a health provider. In this sense, the research is different from, but complements, other research in health communication that focuses on how best to communicate information to patients and to the general public (Schavio, 2007) and from studies that examine the fine-grained details of health communication dialogues (e.g., Heritage & Maynard, 2006).

An example of a language discordant situation would be, for example, when the physician is French-speaking and the patient English-speaking but speaks some French, and consequently the patient must use French, his or her weaker second language (L2), to communicate. This potentially involves a language barrier that could have negative effects for the patient (Jacobs et al., 2006; Segalowitz & Kehayia, 2011).

Zhao, Segalowitz, Chamoux, and Ryder (submitted) [Chapter 3 of this dissertation] reported a study with minority English-speaking Canadians living in a predominantly French-speaking region. Participants were asked to imagine encounters with a health professional in which they, as patients, would have to communicate in French, their second and weaker language. Zhao et al. (submitted) assessed the participants' level of health communication anxiety in such situations. They found that after taking into account individual differences in general L2 communication apprehension, in general health communication anxiety including in the first language (L1), and in other general factors such as experience with the health system and in L2 proficiency, there remained a significant association between reluctance to use health services given in the L2 and degree of L2 health communication anxiety. In other words, there exists a form of health communication anxiety that is specific to *second language* health communication situations. Our goal in the studies reported here is to investigate what underlies this L2-specific form of health communication anxiety. This goal is important because research has shown that increasing access to quality healthcare systems, especially primary and preventive services, can decrease medical problems and its related financial burden through facilitating early detection and treatment of disease (Macinko, Starfield, & Shi, 2003; Starfield, Shi, & Macinko, 2005). Linguistic minority groups, however, are found to have a generally lower access rate to healthcare compared to their majority counterparts (Wilson, Chen, Grumbach, Wang, & Fernandez, 2005). It is important, therefore, to understand the healthcare needs of linguistic minority populations where L2 barriers will affect many facets of using the health system.

The nature of language barriers to healthcare utilization, however, remains unclear. While low language proficiency are often associated with a lower rate of healthcare utilization (Clark,

Sleath, & Rubin, 2004), language barriers in health settings appear to display beyond L2 ability per se. Of particular relevance to this study, it is important to investigate the influence of communication anxiety in discordant language settings on willingness to use L2 healthcare services. Communication anxiety in a medical context is a common experience among patients even when speaking in their L1 (Bowden & Burstein, 1979), because patients have to reveal personal information to a stranger who is also an authority figure (Foley & Sharf, 1981). This communication apprehension can affect interactions between patients and healthcare providers, and the patient's willingness to seek medical help and provide health information (Booth-Butterfield, Chory, & Beynon 1997). A patient's health communication anxiety could be exacerbated in language *discordant* settings because of fears of making mistakes, being judged on his or her language abilities, or feeling unsure about the information he or she receives (Horwitz & Young, 1991).

In order to focus specifically on the role played by L2-related health communication anxiety in language discordant settings, it is necessary to control for a number of factors which can be deeply interconnected, such as L1 communication anxiety in general social situations, L1 health communication anxiety, and general L2 communication anxiety in non-medical settings. All of these can contribute to communication anxiety even though none is specific to a language discordant health communication setting. Zhao et al. (submitted) did use such controls and found that beyond concerns arising from a person's limited L2 language proficiency, the *anxiety* that is associated with communicating about health in the L2 also has a negative impact on the person's willingness to use the healthcare system in the first place, for both physical and mental health issues. The findings indicated that members of a linguistic minority do experience communication anxiety when anticipating using their L2 to obtain physical or mental healthcare

services, and that this anxiety is associated with reluctance to use those services. Moreover, these effects held true even after controlling for factors that might normally be considered to fully explain this anxiety, namely low L2 proficiency, general anxiety using the L2, general discomfort talking about health in L1, and lack of experiences with using L2 healthcare services. This is striking because it suggests there is something special about using a second language to talk about health issues, including both physical and mental health, which is beyond the anxiety that a person might normally experience when talking in their first language about health, and would experience due to limited L2 proficiency, and would experience due to general social anxiety. The anxiety appears to be L2-specific health communication anxiety.

This specificity finding raises an important question that needs to be investigated further. That is, what is the nature of this L2-specific health communication anxiety? What are the factors underlying this L2-specific health communication anxiety affecting willingness to use such services? One factor to consider is health-focused anxiety—general worry and concern about health—which might be involved in the link between L2 health communication anxiety and healthcare use. Performing tasks under unfavorable conditions could result in anxiety about doing them. Having to use the L2 to communicate is usually an unfavorable condition compared to using the L1 (Horwitz & Young, 1991). Anxiety, however, does not necessarily arise with such performance under unfavorable conditions if the performance does not have an important meaning in the person's cognition. That is, if individuals do not perceive certain tasks as having a significant cognitive significance for them, performing such tasks under unfavorable conditions will not result in a great level of anxiety. Performing tasks, however, under unfavorable conditions will cause anxiety to the extent that the tasks are of importance to us. Because health is essential to survival, health concerns serve an adaptive function as they motivate the person to

attend closely to bodily and psychological symptoms so that issues are dealt in a timely fashion (Looper & Kirmayer, 2001). Health-focused anxiety, because of the high stakes nature of health, may explain why L2-*specific* communication anxiety may be an antecedent to avoidance of health seeking behavior. For example, readiness to enter into discourse at a particular place with a specific person can be affected by various factors, such as attitude toward the behavior (here, entering into the discourse) and perceived behavioral control (Ajzen, 1988) (here, being able to accomplish one's goals). Particular attitudes can arise from beliefs about the consequences of the behavior entered into and from the desire to experience those consequences. Perceived behavioral control is the belief that one can successfully perform an action that will bring about desirable consequences (Ajzen, 1988). When people communicate about health in their L2, compared to using their L1, they may have less positive beliefs about the consequences of such communication and feel a lowered sense of control in ensuring that the conversation will bring them desirable outcomes. For example, doctors make many strategic decisions, including what to tell their patients and what to leave out (Graugaard, Eide, & Finset, 2003). Having to converse with health professionals in an L2 may intensify people's fears about lacking control over one's own health, and thus diminish willingness to seek health services in the L2 in the future. In other words, patients who have a high level of health-focused anxiety may experience a higher level of health communication anxiety when using their L2 to speak with healthcare professionals, which in turn, may result in reluctance to use L2 health services.

Given the universal importance of having access to healthcare services, there is a need to identify L2 health communication barriers to seeking healthcare services in language discordant situations and to understand the factors involved in such barriers. The goal of this research, therefore, is two fold. First, it aims to replicate the findings of Zhao et al. (submitted) regarding

L2-*specific* health communication anxiety as experienced by members of linguistic minority groups and its association with willingness (reluctance) to use L2 health services. This step is necessary in order to ensure that phenomenon whose underlying factors are to be studied is present. Second, this research aims to examine effects of health-focused anxiety (worry about health) underlying the association between L2-*specific* health communication anxiety and willingness to use L2 health services.

To accomplish these goals we needed a scale to measure general health anxiety. For this, we administered the Short Health Anxiety Inventory (SHAI) (Salkovskis, Rimes, Warwick, & Clark, 2002) to test the hypothesis that health anxiety is involved in indirect effects in the association between L2 health communication anxiety and willingness to use L2 health services. Health anxiety exists on a continuum from mild concern about health at one end to severe anxiety at the other (Ferguson, 2009; Salkovskis & Warwick, 1986). The SHAI has been shown to yield valid and reliable measurements assessing health anxiety independently of participants' actual health status and it is sensitive across the full range of intensities of health anxiety.

Finally, we decided to use a non-patient population (not explicitly identified currently as being patients) because doing so provides an opportunity to understand how health anxiety may impact on people with normal health-related experiences (e.g., Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994) and their willingness to use health services delivered in their L2.

The main aim of this study is to examine the link between L2-specific health communication anxiety and healthcare service utilization in linguistic minorities. Specifically, the study examines the role of health anxiety, that is, concern about the high stakes nature of health, as a possible consideration underlying barriers to using healthcare services in a second language. The present study had several goals. A first was to re-examine the phenomenon of an

L2-specific health communication anxiety that was found to be associated with reluctance to use healthcare services in the L2, as reported in Zhao et al. (submitted). Zhao et al. observed this effect even after controlling for health communication anxiety in L1, general communication anxiety in L1 and L2, L2 proficiency, and other general factors. A second goal was to assess the role of health anxiety—that is, concern about one's own health status—in the relationship between L2-specific health communication anxiety and reluctance to use L2 health services, this time controlling for health anxiety in addition to other variables. We hypothesized that individuals with a higher level of anxiety or worries regarding their health status would experience a higher level of L2-specific communication anxiety when talking about health in their L2 with healthcare providers compared to individuals with a lower level of health worries. A high level of communication anxiety was expected in turn to have a negative impact on willingness to use health services in the L2. Thus, it was hypothesized that

(1) L2 health communication anxiety (HCA) would be significantly and negatively associated with willingness to use L2 healthcare services, even after controlling for L1 health communication anxiety and general communication anxiety in L1 and L2 (replicating the L2-specific effects reported by Zhao et al., submitted); and

(2) after controlling for health anxiety, L2 health communication anxiety would no longer be significantly associated with willingness to use L2 healthcare services, indicating that health anxiety is involved in the relationship between L2-specific health communication anxiety and willingness to use L2 healthcare services.

Method

Participants

Participants were recruited to take part in the online questionnaire through a university participant pool. Participants had to meet the following inclusion criteria: (a) be 18 years or older; (b) have English as their first or dominant language; (c) live in the province of Quebec (Canada), where French is the official and dominant language and where healthcare is provided to varying degrees in English in addition to being provided in French; and (c) be able to speak at least some French as a second language. A total of 85 people responded to the online questionnaire. Of these, 47 completed all questions, met the inclusion criteria, and correctly answered an "honesty" question designed to detect mechanical responding. Only their data were included in the analysis. The subjects included 34 females and 14 males, ranging in age from 18 to 53 years (M = 29.83, SD = 10.05).). These participants had self-report proficiency ratings in their second language, French, of 3.30 (1.14) for speaking and of 3.60 (1.25) for listening. The rating was based on a 5-point Likert scale, where 1 = "little or no ability at all" and 5 = "native or native-like ability".

Measures

L1 and L2 Healthcare Communication Anxiety (HCA) scales for physical and mental health contexts. The HCA scales for this study were taken from Zhao et al. (submitted). These scales measure a person's health communication anxiety (HCA) in various healthcare settings, including medical and non-medical offices, and with healthcare and non-healthcare providers. There are four versions of the instrument: one for communication regarding physical (p) health and one for mental (m) health, each having a version for communication in one's L1 (here, in English, corresponding to language concordant situations) and one's L2 (in French corresponding to language discordant situations): the HCA1p ; HCA1m, HCA2p and HCA2m scales. The p and

-m scales included similarly worded items that differed only in terms of the contextual focus (on physical or mental health). The four scales included 10 statements to be rated on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Four of the 10 items were presented in reverse scored format. All four HCA scales previously yielded high measures of construct validity and internal reliability (Cronbach's α ranging from .87 to .94) and construct validity (*r*-values ranging from .63 to .82, with $p < .01$) (Zhao, et al., submitted).

Short Health Anxiety Inventory (SHAI). The Short Health Anxiety Inventory (Salkovskis et al., 2002) is an 18-item self- report measure assessing health anxiety independently of physical health status (Cronbach's α = .90).

Language Background Questionnaire (LBQ). The language background questionnaire (LBQ) (e.g., as in Taube-Schiff & Segalowitz, 2005) included seven items measuring self-report language communication exposure and language proficiency in L1, L2 and any other languages that might apply.

General Communication Anxiety (GCA) scale. The General Communication Anxiety (GCA) scale used in Zhao et al. (submitted) was used here as a measure of communication anxiety in general social contexts in L1 and L2. The GCA scale consists of a modified version of the Revised Cheek and Buss Shyness Scale (Cheek & Buss, 1981). This Shyness Scale has been widely used to assess social anxiety regardless of language communication (Cronbach's α=.90, test-retest reliability=.88). The GCA scale, as modified from the Shyness Scale by Zhao et al. (submitted), was reported by them to have high internal reliabilities in both the L1 and L2 versions (Cronbach's α = .86 and .95, respectively).

Other Measures. Three other single-item measures were used, also taken from Zhao et al. (submitted). One assessed willingness to use health services in L1 & L2 with responses to the

statement *If I had to obtain health services to deal with a health problem/emotional difficulties, I would be willing to do this in English (French)* on a 7-point Likert-type scale ranging from *Strongly Disagree* to *Strongly Agree*. The second assessed frequency of using health services in L1 & L2 (7-point Likert-type scale with times ranging from *never* to *16 or more,* plus an option to not answer. The third item asked about preference for using health services in L1 over L2.

The final questionnaire was created by putting together all the above scales, in separate sections, formatted for presentation online using SelectSurvey (2014).

Procedure

Participants were asked to complete an online questionnaire using Select Survey (2014). By completing this survey, they became eligible for gaining one university course credit.

Results

After the Select Survey questionnaire data were downloaded and cleaned, data from participants who did not meet the eligibility criteria or whose responses were incomplete were eliminated, leaving data from 48 participants. We used SPSS (version 24) for the analysis.

Overview. The first set of analyses concerned the scales' psychometric properties. Cronbach's alpha coefficient analysis revealed that data from the HCA scales reflected a high level of internal reliability and correlational analyses supported the convergent and divergent validity of the HCA2 scale data, the scales of primary interest. Cronbach's alpha analyses also supported the internal reliability of the GCA data. Next, the main hypotheses were tested using regression analyses, with results supporting the first hypothesis regarding the L2-*specificity* of L2-health communication anxiety and its relation to willingness to use L2 healthcare services, as

in the study by Zhao, et al. (submitted). However, the second hypothesis was not supported, that is, controlling for health anxiety did not significantly affect the association between L2 health communication anxiety and willingness to use L2 healthcare services. These results are discussed in fuller detail next.

Psychometric properties of the scales used. Data from the three L2 scales—HCA2p, HCA2m, and GCA2 scales—showed strong internal reliability, with Cronbach's α = .95, .96, and .96, respectively. Correlational analysis was used to test the convergent and divergent validities of the L2 HCA scales in relation to other L2 measures, including speaking proficiency, general communication anxiety, frequency of using health services, and willingness to use health services in the L2. The results showed that measures of L2 communication anxiety, in relation to both physical and mental health contexts, were significantly and positively related to general communication anxiety (r = .82 (*95%CI* [.75, .87]) and .85 (*95%CI* [.79, .85]), both $p < .0001$), and significantly negatively related to self-rated language speaking proficiency (r = -.66 (*95%CI* [-.75, -.64]) and -.63 (*95%CI* [-.73, -.51]), both $p < .0001$), to the preference of using health services in L2 (r = -.63 (*95%CI* [-.73, -.51]) and -.56 (*95%CI* [-.67, -.42]), both $p < .01$), and to the willingness to use health services in L2 (r = -.65 (*95%CI* [-.75, -.53]) and -.72 (*95%CI* [-.80, -.62]), both $p < .01$). These results are consistent with findings reported by Zhao et al. (submitted). The next sections present results regarding the two hypotheses.

L2 health communication anxieties and L2 health utilization. The first hypothesis was that L2 health communication anxiety would predict willingness (reluctance) to use L2 health services, even after controlling for L1 health communication anxiety, for general L2 communication anxiety, L2 proficiency, and frequency of use of the health services. Before including these controls in the analyses, results showed that L2 health communication anxieties

regarding both physical and mental health issues were significantly and negatively associated with the frequency of health service usage (r = -.46 (*95%CI* [-.96, -.31]) and -.37 (*95%CI* [-.98, -.15]), both $p < .01$) and willingness to use health services in the L2 (r = -.73 (*95%CI* [-.73, -.44]) and -.68 (*95%CI* [-.70, -.37]), both $p < .001$) (See Table 3). Next, the analyses were re-done by first including the control variables listed above. For the data in the physical health context, the results showed that the control variables L1 health communication anxiety, L2 general communication anxiety, frequency of using health services in L2, and L2 speaking proficiency explained 50.6% of the variance in predicting willingness to use L2 health services and that after controlling for these variables, L2 health communication anxiety was still significantly related to willingness to use L2 health services, accounting for a further 14.8% of the variance ($p < .001$). Regression analyses revealed a similar pattern with the mental health data, with the control variables explaining 62.1% of the variance of willingness to use L2 health services and L2 health communication anxiety subsequently explaining a further 5.5% of the variance ($p < .05$). These results replicate the patterns reported by Zhao et al. (submitted) and indicate the presence of an L2-specific form of health communication anxiety that is negatively associated with willingness to use healthcare services delivered in the L2 (see Table 4).

Health anxiety and the link between L2 health communication anxiety and L2 health utilization. The second hypothesis in this study concerned whether general health-focused anxiety plays a role in the link between L2 health communication anxiety and health utilization. For this purpose, regression analysis was used to examine the relation between L2 health communication anxiety and willingness to use L2 healthcare services, controlling for health anxiety, in addition to other control variables.

As seen earlier, in the physical health context, the results showed that this *L2-specific* health communication anxiety (e.g., after controlling for the basic variables) explained 13.4% of the variance in predicting willingness of using L2 health services. Now, after controlling for the additional variable of health anxiety, L2-*specific* health communication anxiety was still significantly related to willingness of using L2 health services ($p < .01$), accounting for 10.2% of the variance (see Table 5). In the mental health context, regression analysis revealed similar results as in the physical health context. Again, as seen before, L2-*specific* health communication anxiety (e.g., after controlling for the basic variables) explained 9.3% of the variance in predicting willingness of using L2 health services. After controlling for the additional variable of health anxiety, L2 health communication anxiety remained significantly related to willingness to use L2 health services ($p < .05$), accounting for 6.2% of the variance (see Table 6).

Table 3. Zero-order Spearman inter-correlations for the main variables analyzed in Study 3. *N=47.*

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1 HCA1p	—	-.26*	.65***	-.07	.45***	-.21	.28	-.69***	.07	-.55***	.14	-.42***	-.23	.07	-.06
2 HCA2p		—	-.02	.86***	-.09	.83***	-.71***	.25	-.73***	.34*	-.72***	.07	.07	-.46***	-.35**
3 HCA1m			—	.03	.68***	.06	.07	-.44***	-.16	-.56***	-.10	-.30*	-.21	-.26	-.16
4 HCA2m				—	-.13	.82***	-.67***	.22	-.63***	.27	-.71***	-.04	-.01	-.47***	-.37**
5 GCA1					—	-.05	.14	-.43**	-.01	-.42**	.02	-.22	.11	-.06	.07
6 GCA2						—	-.81***	.26	-.64***	.25	-.65***	-.00	-.06	-.62***	-.41**
7 SpkL2							—	-.32*	.53***	-.26	.60***	-.02	.02	.57***	.40**
8 Will1p								—	-.01	.79***	-.19	.32*	.17	-.02	-.06
9 Will2p									—	-.21	.89***	-.18	-.07	.44***	.34*
10 Will1m										—	-.26	.34*	.22	.08	-.09
11 Will2m											—	-.06	-.04	.44**	.46***
12UseFreq1p												—	.36**	.28*	.15
13UseFreq1m													—	.01	.28*
14UseFreq2p														—	.49***
15UseFreq2m															—

Note: The variables listed are: HCA1p, HCA2p = L1 and L2 health communication anxiety for physical health, respectively; HCA1m, HCA2m = L1 and L2 health communication anxiety for mental health, respectively; GCA1, GCA2 = L1 and L2 general communication anxiety, respectively; SpkL2 = L2 speaking ability; Will1p, Will2p = L1 and L2 willingness to use physical health services, respectively; Will1m, Will2m = L1 and L2 willingness to use mental health services, respectively; UseFreq1p, UseFreq2p = L1 and L2 frequency of using physical health services, respectively; UseFreq1m, UseFreq2m = L1 and L2 frequency of using mental health services, respectively.
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4. Hierarchical regression summary for L2 health communication anxiety predicting willingness to use L2 Health Services for physical (Will2p) and mental health (Will2m) (*N = 47*).

	Model 1: Control Variables only		Model 2: Control + Independent Variable	
Variable	*β*	*t*	*β*	*t*
PHYSICAL HEALTH				
Will1p	-.00	-.01	.04	.17
HCA1p	.13	.49	.14	.60
GCA2	-.79	-3.77 **	-.08	-.31
UseFreq1p	-.05	-.33	-.02	-.13
UseFreq2p	-.12	-.60	-.10	-.55
SpkL2	-.08	-.39	-.15	-.89
HCA2p			-.86	-4.10***
	R^2=.51, F(6,40) for ΔR^2=6.83***		R^2 =.66, F(1,39) for ΔR^2=16.76***	
MENTAL HEALTH				
Will1m	-.13	-.92	-.12	-.93
HCA1m	-.10	-.66	-.08	-.64
GCA2	-.58	-3.18**	-.12	-.48
UseFreq1m	-.05	-.54	.00	-.05
UseFreq2m	.24	2.32*	.15	1.42
SpkL2	.10	.54**	.13	.78
HCA2m			-.53	-2.58*
	R^2=.62, F(6,40) for ΔR^2 =10.93***		R^2 = .68, F(1, 39) for ΔR^2 = 6.66*	

Note: The dependent measures are willingness to use L2 health services (Will2p and Will2m in the Physical and Mental Health panels, respectively). Control variables are L1 health communication anxiety (HCA1p, HCA1m in the Physical and Mental Health panels, respectively), general communication anxiety in L1 and L2 (GCA1, GCA2), frequency of usage of the health services in L1 and L2 (UseFreq1, UseFreq2), and self-rated ability to speak in the L2 (SpkL2). The independent variable (predictor) is L2 health communication anxiety (HCA2p and HCA2m in the Physical and Mental Health panels, respectively).

Table 5. The effect of health anxiety on the association between L2-specific health communication anxiety and willingness to use physical health services in L2.

Variable	β	t	ΔR^2	Sig. F Change
Dependent Variable: Willingness to Use Physical Health Service in L2				
L2 Physical Health Comm. Anxiety [a]	-.84	-3.78	.13	.001
L2 Physical Health Comm. Anxiety [b]	-.81	-3.26	.10	.002

Note. [a:] *Control variables first entered: L1 health communication anxiety; L2 general communication anxiety; frequency of use of L1 health services, L2 speaking & understanding.*

[b:] *Additional control variable: Health Anxiety.*

Table 6. The effect of health anxiety on the association between L2-specific health communication anxiety and willingness to use mental health services in L2.

Variable	β	*t*	ΔR^2	Sig. F Change
Dependent Variable: Willingness to Use Mental Health Service in L2				
L2 Mental Health Comm. Anxiety [a]	-.63	-3.27	.09	.002
L2 Mental Health Comm. Anxiety [b]	-.58	-2.60	.06	.013

Note. [a:] *Control variables first entered: L1 health communication anxiety; L2 general communication anxiety; frequency of use of L1 health services, L2 speaking & understanding.* [b:] *Additional control variable: Health Anxiety.*

Discussion

The main objective of this study was to examine the factors underlying L2 health communication anxiety. It has been found that the *anxiety* that is associated with communicating about health in the L2 negatively impacts on the person's willingness to use the L2 healthcare system (Zhao et al., submitted). The nature of this L2 anxiety, however, is not understood. The present study examined whether there would be an indirect effect of health anxiety, because of the high stake nature of health, in the association between L2 health communication anxiety and willingness to use L2 services. Individuals can experience anxiety when performing tasks, which have a significant meaning to them. This anxiety tends to increase when performing such tasks under unfavorable conditions. Communicating in one's L2 is often considered as an unfavorable condition compared to using L1, resulting in elevated anxiety (Horwitz & Young, 1991). However, anxiety does not necessary arise if the tasks do not have a significant meaning for the person. In other words, individuals do not necessarily become anxious if the consequences of performing such tasks do not matter very much to them. So health communication in the L2 might be seen to lead to increased anxiety compared to using L1 because health is of central importance to survival and well-being. Anxiety can rise when individuals perceive their health status is at risk of being compromised (Taylor, 2004). When people communicate about health in their L2, compared to using their L1, they may therefore have less positive anticipation about the consequences of such communication and feel less in control over their own health status, and thus are reluctant to access to health services in the L2 in the first place. The goal of this study, therefore, was to see whether individuals who have a high level of health-focused anxiety would experience elevated health communication anxieties when using their L2 to speak with healthcare professionals which, in turn, resulted in reduced willingness to use L2 health services.

This first step was to make sure that the basic phenomenon of L2-*specific* health communication anxiety predicting reluctance to use healthcare services in the L2, as reported in Zhao et al. (2006) would replicate and would therefore make the hypotheses of this study relevant. The results showed that indeed the HCA scale demonstrated high levels of internal reliability and validity in both physical and mental contexts. In addition, regression analyses revealed that the L2 health communication anxiety was significantly associated with reluctance to use both L2 physical and mental services, after controlling for L1 health communication anxiety, general communication anxiety, L2 proficiency, and other general variables. Moreover, the results suggested there is an anxiety specifically related to L2 health communication, which leads to reluctance to use L2 services.

The major focus of the present study was to assess indirect effects of health anxiety—that is, concern about one's own health status—in the relationship between L2-*specific* health communication anxiety and reluctance to use L2 health services. The underlying idea was this. The link between L2 health communication anxiety and willingness (reluctance) to use L2 health services was hypothesized to be related to the meaningfulness (how important) communicating about health is to the person. The more a person's level of anxiety or worry about health is, the more important the communication event will be, and hence the more impact the health communication anxiety will have on willingness to use health services. Therefore, it is this health-focused anxiety that is responsible for the L2-specific link between communication anxiety in the L2 and willingness (reluctance) to use L2 health services. The hypothesis, then, was that this significance or meaningfulness to the person of health communication is responsible for the link between L2 health communication anxiety and reluctance to use L2 health services. However, the results failed to support this hypothesis. That is, controlling for

health anxiety—hypothesized to underlie this link—did not significantly affect the association between L2 health communication anxiety and willingness to use L2 healthcare services, in either physical or mental health settings.

The factors underlying this L2-specific health communication anxiety thus remain unclear. While health-focused anxiety might not have an indirect effect on the link between L2 health communication anxiety and willingness to use L2 service, there are related ideas, such as anticipated consequence of L2 health communication that may nevertheless have significant implications for people thinking about using L2 health services. For example, the uncertainty that people commonly experience in medical settings may be amplified when medical communication is delivered in language discordance contexts, and this may result in high level of anxiety. Patients commonly experience uncertainty when seeking medical services for many reasons, such as ambiguous symptom presentations, various diagnoses and treatment possibilities, difference in treatment efficacy across individuals, and poor health professional-patient communication (Atkinson, 1984; Balsa, Seiler, McGuire, & Seiler, 2003). When physician-patient communication takes place in linguistic discordant settings, patients from linguistic minority groups may experience a greater level of uncertainty about the treatment they will receive and be less likely to trust healthcare professionals and confide in them, compared to majorities (Corbie-Smith, Thomas, & George, 2002; Doescher, Saver, Franks & Fiscella, 2000). As a consequence, they may have less positive anticipation about the quality of medical encounter they will experience, which in turn negatively affects their willingness to seek medical services in a second language.

The next study, therefore, was designed to follow up on these notions in order to further examine factors that can explain this L2-specific health communication anxiety. Study 2 aims to

investigate effects of uncertainty and predicted quality of medical encounters in the association between L2 health communication anxiety and willingness to use L2 services.

CHAPTER 5:

Second language health communication anxiety as a barrier to healthcare utilization by linguistic minorities: What underlies the connection?

Study Four (Study 2, manuscript 2)

Introduction

In this study we explored another possible link between healthcare communication anxieties and reluctance to use healthcare services in language-discordant settings. Specifically, we looked at whether there are indirect effects of *predictive uncertainty* and *predicted quality* of the medical service encounter in the association between L2 health communication anxiety and willingness to use L2 health services. The idea here is that when a person enters into a health communication situation, they can anticipate that there will be a great deal of uncertainty about how things will turn out, and they may also have misgivings about how well they are likely to be treated or have been treated. In general, anxieties related to the uncertainties inherent in medical encounters and to perceptions of the quality of services received have been recognized as important within the context of health communication anxieties, but they have been little studied, especially as it relates to L2 health communication encounters (Simpson, Buckman, Stewart, Maguire, Lipkin, Novack, & Till, 1991; Logan, Steel, & Hunt, 2016). The present study addresses this directly by using a methodology that builds on Study 1. First, however, it is important to elaborate upon what is meant by anxiety that is related to uncertainty in a language discordant healthcare context.

Communicating in language discordant settings might be similar in some respects to intercultural communication insofar as language and ethnic identity are intricately related to each

other (Cho, 2000; Phinney, Romero, Nava, & Huang, 2001; Tse, 2000). Anxiety/uncertainty management (AUM) theory is used to explain the process whereby anxiety and uncertainty play a role in interpersonal (intragroup) and intercultural (intergroup) communication (Gudykunst, 1993, 1998; Gudykunst & Ting-Toomey; 1988; Gudykunst, Ting-Tommey, Sudweeks, & Stewart, 1995). AUM theory suggests that uncertainty management and anxiety are essential processes that influence the effectiveness of an individual's communication and interactions with others. Gudykunst and Nishida (2001) argued that, in order for effective communication to occur, anxiety and uncertainty need to be maintained at a moderate level. More recently, anxiety and uncertainty have been investigated empirically, with findings suggesting that high levels of anxiety and uncertainty result in avoidance of communication and hindrance of intercultural engagement (Duronto, Nishida, & Nakayama, 2005). Research has also found that uncertainty directly impacts willingness to interact (Logan, et al. 2016) and this impact is greater when anxiety is high (Samochowiec & Florack, 2010) or the quality of the contact is low (Rohman, Florack, Samochowiec, & Simonett, 2014). To date, however, few studies have applied intercultural communication theory to health settings where cross-cultural and cross-linguistic interactions occur. Research applying intercultural communication theory to healthcare contexts would be advantageous for a better understanding of how discordant-language communication impacts on cross-linguistic healthcare utilization, such as a patient's willingness to use healthcare services in the L2.

Researchers have argued that anxiety plays an important role in intercultural relations (Barna, 1983; Dijker, 1987; Glick, DeMorest, & Hotze, 1988; Wilder, 1993). When people who come from different groups interact, they often experience a number of concerns, such as perceived social incompetence, untrustworthiness, miscommunication, and misunderstanding of

social rules (Stephan, Stephan, & Gudykunst, 1999). These concerns may result in anxiety, which in turn can create further difficulties in their interpersonal relationships. In addition, anxiety can also arise with interactions in new situations such as communication between strangers (Gudykunst & Nishida, 2001; Stephan & Stephan, 1985). Herman and Schield (1961) point out that ‘‘the immediate psychological result of being in a new situation is lack of security. Ignorance of the potentialities inherent in the situation, of the means to reach a goal, and of the probable outcomes of an intended action causes insecurity’’ (p. 165). Health communication resembles communication in a relatively novel situation in that patients will often need to talk with healthcare professionals with whom they have not had much previous contact (e.g., different personnel at the health institution; perhaps only infrequent visits with a particular physician). In the case of L2 health communication, the anxiety may be even greater because of additional concerns associated with intergroup interactions (interaction with a person from another linguistic group).

The uncertainty referred to in the AUM theory is the predictive uncertainty that people have about predicting others' attitudes, feelings, and behaviors (Berger & Calabrese, 1975). Attributional confidence is the inverse of predictive uncertainty (Gudykunst, 2001). Thus for example, upon entering a new situation, a person may experience predictive uncertainty if they are unsure about how other people would behave, react, and the values others hold; in contrast, they would experience attribution confidence if they can be confident in predicting others' attitudes, intentions, and behaviors as well as feeling being understood by others (Clatterbuck, 1979). While some degree of uncertainty exists in all relationship, the uncertainty tends to be greater when people communicate and interact with members of a different group than when they interact with members of their own groups (Gudykunst, 1985; Gudykunst & Shapiro, 1996;

Lee & Boster, 1991). When in-group members know very little about the out-group, they are likely to think that the other group is dissimilar to them and its members probably dislike them (Stephan & Stephan, 1985, 1989a, 1989b, 1992). The fear in this case is a fear of the unknown or the unfamiliar. Thus, in-group members are most likely to be anxious interacting with out-group members when they lack knowledge of the other group's beliefs, values, norms, and behaviors (Stephan & Stephan, 1985, 1989a, 1989b, 1992). AUM theory proposes that uncertainty in intercultural settings results in avoidance of intercultural contact when individuals feel uncertainty is too high to manage (Gudykunst, 2005). In line with the AUM theory, studies have reported that lowered predictability (as a measure of certainty) and heightened anxiety have a negative impact on willingness to interact with people from another group (Logan et al., 2016; Samochowiec & Florack, 2010). Samochowiec and Florack found that individuals were more likely to approach unpredictable intercultural contacts when anxiety was low compared to when it was high. More interestingly, the study found that anxiety had no effect on the avoidance of intercultural interactions when participants perceived the potential interactions as predictable. These findings highlight the importance of uncertainty affecting behavioral outcome of avoidance in anxiety provoking situations.

In the context of health services, literature suggests that intercultural issues are especially challenging, because health beliefs about illness etiology, treatment approach, and attitudes associated with health seeking behaviours vary across cultures (Kleinman, Eisenberg, & Good, 1978; Sheikh & Furnham, 2000; Spector, 2002). These factors may lead to miscommunication, increased anxiety and uncertainty in intercultural health communication and interactions (Kim, 2008). In an experimental study, Logan and colleagues (Logan, et al., 2016) have found that anxiety directly influences predictive uncertainty of interactions with a health professional from

another cultural background, which lead to avoidance of intercultural contacts. This finding supports the application of the AUM theory to health settings. The intercultural health communication uncertainty and anxiety may be even greater in language discordant settings because of the anxiety associated with linguistic barriers, resulting in a higher level of reluctance to use the L2 health services. Accordingly, we assume that individuals who are highly anxious communicating health in a L2 would tend to avoid using L2 healthcare services if they perceive the health interactions as uncertain and difficult to predict. The study of Logan et al. (2016) did not test issues associated with language-discordant variables.

In addition, the anxiety and uncertainty people experience when interacting with others usually lead to negative affect and negative anticipation of the situation. Demerath's (1993) knowledge-based affect theory argues that greater perceived certainty about a person or an object leads to positive affect, whereas less certainty and reduced predictive capacity leads to negative affect. Turner's (1987) theory of motivation suggests that lack of predictability leads to anxiety and lack of trust. AUM theory proposes that the management of uncertainty directly influences the effectiveness of intergroup communication and interactions. Stephan and Stephan (1985) propose that people fear negative consequences of the anxiety when interacting with out-group members. In line with these theoretical proposals, empirical studies found that anxiety and uncertainty are related negatively to effectiveness of communication and perceived quality of interactions in interpersonal and intergroup relationships. Gudykunst, Nishida, and Chua (1986) reported a positive relationship between attributional confidence (the inverse of uncertainty) and perceived effectiveness of communication in Japanese and North American participants. Research has also found that anxiety and uncertainty both predict perceived quality of communication in both interpersonal and intergroup relationships, with a higher level of

correlation in intergroup relationships (Gudyhunst & Shapiro, 1996; Hubbert, Gudykunst, & Guerrero, 1999).

In medical settings, the interactions between patients and healthcare providers can have important effects on patients' evaluation of the healthcare process they experience. Greater patient satisfaction with their interactions and communication with healthcare providers leads to improved treatment adherence and health outcomes (Joos, Hickam, Gordon, & Baker, 1996; Brown, Boles, Mullooly, & Levinson, 1999). Chang, Chen, and Lan (Chang, Chen, & Lan, 2013) found that interpersonal-based medical service encounters positively influence perceived quality of service, and patient trust in and satisfaction with the healthcare system. Patient-healthcare provider relationships are particularly important in mental health settings. Therapeutic alliance is a consistent predictor of psychotherapy outcomes (Horvath & Bedi, 2002; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000), leading many researchers to conclude that it is an essential aspect of therapy (Norcross, 2002). Health interactions in language discordant settings, however, may be more complex because, in those settings, patient-provider relationships involve not only interpersonal but very likely also intercultural and interlinguistic encounters. Studies have reported members of ethnic minority groups within the United States rate their visits with physicians as less participatory, leaving them feeling unsatisfied with their medical treatment (Cooper-Patrick, Gallo, Gonzales, Vu, Powe, Nelson, & Ford, 1999; Young & Klingle, 1996). However, the specific variables influencing the process of intercultural health interactions have not been explored in a community representative sample. Our study attempts to bridge such a gap by examining how communication anxiety, predictive uncertainty, and predicted quality of medical encounter affect healthcare utilization in health settings where patients and providers do not speak the same L1. Predicted quality of medical encounter is defined as how people

anticipate the quality of interactions and medical experiences in the health services to actually be, regardless of how certain or uncertain they feel about their ability to make such a prediction.

In this study, we aim to apply AUM intercultural communication theory to physical and mental healthcare language discordant contexts in order to better understand these interlinguistic issues as barriers to healthcare access among linguistic minorities. In both physical and mental health contexts, we predicted that there would be a significant indirect effect of L2-*specific* health communication anxiety on willingness to use L2 healthcare services with mediating variables involved being predictive uncertainty and predicted quality of medical encounter in L2. However, the specific aspects of predictive uncertainty and predicted quality of medical encounter may vary in different health contexts, and for that reason we examined this issue separately for physical and mental health. In the physical health context, the overall predictive uncertainty and predicted quality of service encounter across various situations may play a central role underlying the link between L2-*specific* health communication anxiety and willingness to use L2 services. Moreover, given that therapeutic alliance is a strong predictor of psychotherapy outcomes (Horvath & Bedi, 2002; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000), we further hypothesized that predictive uncertainty of clinical rapport and predicted quality of rapport (as measured by the single items in the *PredUnc* and *PredQual* scales) would be especially relevant in mental health contexts. The specific hypotheses were as the following:

More specifically, we hypothesized that

(1) In both physical and mental health contexts, L2 health communication anxiety (HCA) would be significantly and negatively associated with willingness to use L2 healthcare services, even after controlling for L1 health communication anxiety and

general communication anxiety in L1 and L2 (replicating the L2-specific effects reported by Zhao et al., submitted);

(2) In the physical health context, it was hypothesized that *L2-specific* health communication anxiety would have an indirect effect on willingness to use L2 healthcare services, through the mediating variables of the overall predictive uncertainty about medical situations and predicted quality of service encounter across various settings (as measured by the 6-item *PredUnc* and *PredQual* scales across all items).

(3) In the mental health context, it was hypothesized that *L2-specific* health communication anxiety would have an indirect effect on willingness to use L2 healthcare services, through the mediating variables of the overall predicted uncertainty and predicted quality of service encounter (as measured by the 6-item *PredUnc* and *PredQual* scales across all items).

(4) In the mental health context, it was hypothesized that *L2-specific* health communication anxiety would have an indirect effect on willingness to use L2 healthcare services, through the mediating variables of predictive uncertainty of clinical rapport and predicted quality of rapport (as measured by the single rapport-related items in the *PredUnc* and *PredQual* scales).

Method

Participants

Potential participants were recruited through a snowball method through advertisement and community organizations. Participants had to meet the following inclusion criteria: (a) be 18

years or older; (b) have English as their first or dominant language; (c) live in the province of Quebec, a predominantly French-speaking region of Canada where healthcare is provided to varying degrees in English and in French; and (c) be able to speak at least some French as a second language. A total 194 people responded to the online questionnaire. Of these, 77 did not meet the inclusion criteria or did not complete all questions or correctly answer an "honesty" question. Thus, a total of 117 community participants were included in the final samples for the present study. The study sample included 86 females and 31 males, ranging in age of 18 to 82 years (M = 53.00, SD = 18.94). These participants had self-report proficiency ratings in French, their second language, of 3.35 (.94) for speaking and of 3.45 (1.01) for listening, out of 5, where 1 = "little or no ability at all" and 5 = "native or native-like ability".

Measures

The following scales were the same as those used in Study 1: *Healthcare Communication Anxiety (HCA) scales for L2 and L1 communication in physical and mental health contexts: HCA2p, HCA2m, HCA1p, HCA1m*; *Language Background Questionnaire (LBQ)*; *General Communication Anxiety (GCA) scale*; *Short Health Anxiety Inventory (SHAI)* (Salkovskis et al., 2002).

Predictive Uncertainty (PredUnc) for L2 and for L1 for Physical and Mental Health Contexts. This scale to assess predictive uncertainty in health communication contexts was created by modifying for our L1/L2 by physical/mental health contexts Clatterbuck's (1979) measure of attributional confidence (e.g., "How confident are you in your general ability to predict how he/she will behave?"). This predictive uncertainty scale consisted of six items assessing a person's confidence in predicting various aspects of medical situations they would

encounter in both physical and mental health contexts, including quality of rapport, ease of building rapport, navigation through service, quality of treatment, quality of services, and self-image perceived by others. Responses are made on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). The higher the score, the lower the uncertainty (the greater the attributional confidence) is. We created four PredUnc scales corresponding to L1/L2 by physical (p)/mental (m) health context combinations: PredUnc1p; PredUnc1m (where L1 was English, corresponding to concordant language situations) and PredUnc2p; PredUnc2m (French, discordant language situations) (See Appendix D).

Predicted Quality of service encounter (PredQual) for L2 and for L1 for Physical and Mental Health Contexts. Predicted quality of service encounter was measured by six items assessing what a person would predict to be the likely outcomes in various medical situations in physical and mental health contexts under L1 and L2 communication conditions, including quality of rapport, ease of building rapport, navigation through service, quality of treatment, quality of services, and self-image perceived by others. Each of the six items follows each predictive uncertainty item, but this time asking what the actual outcome they predict would be. The response scale was a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). The higher the score, the more positive the predicted quality of services is. The instrument consisted of two versions: one for L1 and one for L2 to measure predicted quality of service encounter in physical and mental health contexts, separately for L1 (PredQual1p; PredQual1m; English, concordant language situations) and for L2 (PredQual2p; PredQual2m; French, discordant language situations). Predicted quality of services and interactions in physical and mental health contexts were also measured by similarly worded questions that differed only in terms of focus (on physical or mental health) (See Appendix D).

Other Measures. The questionnaire also included the same single-item measures used in Study 1 for (a) Willingness to use health services in L1 & L2; (b) Frequency of using health services in L1 & L2; and (c) Preference for using health services in L1 over L2.

Procedure

Participants were asked to complete an online questionnaire using Select Survey (2014). By completing this survey, they became eligible for a $100 random draw (one draw after every 100 new eligible participants had completed the questionnaire).

Results

The Select Survey questionnaire data were downloaded and cleaned by removing data from ineligible participants and from incomplete questionnaires, a process that left data from 117 questionnaires for analysis. For these data, we used SPSS and SPSS PROCESS (Hayes, 2013) for a series of analyses to address the main hypotheses in turn, as follows.

Overview. The reliability and validity of the 6-item predictive medical uncertainty and predicted quality service encounter were examined. In both instruments, exploratory factor analysis was used to test the psychometric properties of the L2 and L1 versions (for discordant and concordant contexts), and Cronbach's alpha coefficient analysis was used to test internal reliability of each instrument. The results showed that the PredUnc and PredQual scales demonstrated good psychometric properties and high reliability. The effects of health communication anxiety on willingness to use L2 health services were re-examined with this new population. Correlational analysis was used to test the relation between L2 health communication anxieties on willingness to use L2 healthcare services. The indirect effects of predictive medical uncertainty and predicted quality of service encounter were examined by using Hayes and Preacher (2014) bootstrapping analysis of multiple serial mediation model (i.e., PROCESS

Model 6). Statistical controlling variables included L2 speaking proficiency, L2 understanding proficiency, L1 and L2 general communication anxiety, health anxiety, L1 predictive uncertainty, and L1 predicted quality of service encounter. By way of summary, the results showed that, just as in the previous studies, L2 health communication anxiety was negatively associated with willingness to use healthcare services, and in addition this was so even after controlling for L2 language proficiency, health communication anxiety in the L1, general communication anxiety in the L1 and L2, L1 predictive uncertainty, and L1 predicted quality of service encounter. In the physical health context, there was an indirect effect in the association between L2 health communication anxiety and willingness to use L2 healthcare services by the overall predictive uncertainty in L2 and overall predicted L2 quality of service encounter, as measured by the 6-item PredUnc and PredQual scales. In the mental health context, this indirect effect involved the particular aspects of predictive uncertainty and predicted quality of service encounter, namely the uncertainty about building clinical rapport in L2 and predicted quality of clinical rapport in L2 services, as measured by the single item in the PredUnc and PredQual scales.

Psychometric properties of the scales used

Factor Analysis and Internal reliabilities of the PredUnc scales. Factor analyses revealed that all items loaded 0.57 or greater on the first factor in the analyses for both physical and mental health contexts in both L1 and L2, suggesting a single factor on each of the four scales. The combination of the six items yielded a reliable scale for both physical and mental health contexts and in both L1 and L2 versions (PredUnc1p- & PredUnc2p: Cronbach's α values = .79 and .91, respectively; PredUnc1m- & PredUnc2m: Cronbach's α = .83 and .91, respectively).

Factor Analysis and Internal reliabilities of the PredQual scales. Factor analyses revealed that all items loaded 0.60 or greater on the first factor in both physical and mental health in both L1 and L2, suggesting a single factor. The combination of the six items yielded a reliable scale for both physical and mental health contexts and in both L1 and L2 versions (PredQual1p & PredQual2p: Cronbach's α values = .88 and .90, respectively; PredQual1m & PredQual2m: Cronbach's α values = .88 and .90, respectively). The next sections present results regarding the two hypotheses.

L2 Health Communication Anxieties and L2 Health Utilization

Before examining the effects of predictive uncertainty and predicted quality of service encounter, it was important to establish that there was evidence of L2-*specific* health communication anxiety. That is, would these data replicate the effects reported in Zhao et al. (submitted) concerning the existence of an L2-*specific* form of health communication anxiety that is negatively associated with willingness to use L2 healthcare services. Confirming this link was necessary to justify interest in asking the question about whether predictive uncertainty and predicted quality of services play a role in this association. The first hypothesis, therefore, was that L2 health communication anxiety would predict willingness (reluctance) to use L2 health services, even after controlling for L1 health communication anxiety, for general L2 communication anxiety, L2 proficiency, frequency of use of the health services. For this purpose, as we did in Studies 2 and 3, regression analysis was used to test the association between health communication anxieties and willingness to use L2 health services after controlling for L1 health communication anxiety, general communication anxiety, frequency of use L2 health services, and L2 proficiency. The result confirmed the L2-specificity of the link. Correlational analysis

results showed that L2 health communication anxieties regarding both physical and mental health issues were significantly and negatively associated with willingness to use health services in the L2 (See Table 7). The regression analysis results showed that, in both physical and mental health contexts, L2 health communication anxieties were still significantly related to willingness to use L2 health services even after controlling for the related variables. That is, this anxiety cannot be fully explained by one's L2 proficiency, willingness to use L1 health services, general communication anxiety, frequency of using L2 services (physical health: overall R^2 = .36, F(6, 110) for ΔR^2 = 10.27 and the L2-specific effect R^2 = .44, F(1, 109) for ΔR^2 = 15.91; mental health: overall R^2 = .40, F(6, 110) for ΔR^2 = 12.40 and the L2-specific effect R^2 = .48, F(1, 109) for ΔR^2 = 14.78, all ps < .001). This finding has now been consistently demonstrated in three empirical studies, including in Study 2 (Zhao et al., submitted), in Study 3, and in the present study.

Effects of predictive uncertainty and predicted quality of service encounter in physical health context. The second hypothesis concerns whether there was an indirect effect of L2-*specific* health communication anxiety on willingness to use L2 healthcare, through the overall predictive uncertainty (PredUnc) and predicted quality (PredQual) of service encounter (as measured by the 6-item *PredUnc* and *PredQual* scales across all items). For this purpose, Hayes' (2013) bootstrapping analysis of multiple serial mediation model (i.e., PROCESS Model 6) was used to examine the effects of overall predictive uncertainty and the overall predicted quality of service in explaining the indirect effect of L2-*specific* health communication anxiety on willingness to use L2 physical health services. 5000 bootstrapping samples were used in this analysis. In this model, L2-*specific* mental health communication anxiety was entered as the independent variable

(i.e., X), and willingness to use L2 physical health services as the dependent variable (i.e., Y). Overall predictive uncertainty was entered as the first factor (i.e., M1) and predicted quality of service encounter was entered second (i.e., M2), based on the theoretical arguments and research findings that highly anxious people tend to predict that the outcome would be negative when situations are unclear (Gudyhunst & Shapiro, 1996; Hubbert et al., 1999). As a result, such people tend to avoid these situations because of the ambiguities and negative expectations (Gudykunst & Nishida, 2001; Stephan, Stephan, & Gudykunst, 1999). Statistical controlling variables included L2 speaking proficiency, L2 understanding proficiency, L1 and L2 general communication anxiety, health anxiety, willingness to use L1 services, L1 predictive uncertainty, and L1 predicted quality of service encounter.

The results showed a significant total effect of L2-*specific* health communication anxiety on willingness to use L2 health services (unstandardized coefficient = -0.71, $p<.001$, *95%CI* [-1.03, -0.39]). The indirect effect of L2-*specific* health communication anxiety on willingness to use L2 health services is significant (unstandardized coefficient = -0.09, *95%CI* [-0.24, -0.01]), through the multiple series variables of overall predictive uncertainty and predicted quality of service encounter. The direct effect of L2-specific health communication anxiety on willingness to use L2 physical health services was also significant (unstandardized coefficient = -0.54, $p<.01$, *95%CI* [-0.89, -0.19]). Although both direct and indirect effects of L2-*specific* health communication anxiety are of interest in the analysis, the most central is the indirect effect of L2-*specific* health communication anxiety (Hayes & Preacher, 2014). This indirect effect is interpreted as the amount by which two cases that differ by one unit on L2-*specific* health communication anxiety (i.e., X) are estimated to differ on willingness to use L2 physical health services (i.e., Y), as a result of the effect of L2-*specific* health communication anxiety (i.e., X) on

the overall predictive uncertainty (i.e., M1) and the overall predicted quality of service encounter (i.e., M2). This in turn affects willingness to use L2 physical health services (i.e., Y). The direct effect quantifies how much two cases who differ by one unit on L2-specific health communication anxiety (i.e., X) but who are equal on predictive uncertainty (i.e., M1) and predicted quality of service encounter (i.e., M2) are estimated to differ on willingness to use L2 physical health services (i.e., Y) (Hayes & Preacher, 2014).

When looking into individual effects in this model, it revealed that L2-*specific* health communication anxiety had a significant effect on predictive uncertainty (unstandardized coefficient = -0.36, $p<.001$, *95%CI* [-0.52, -0.19]), which in turn significantly affected predicted quality of service encounter (unstandardized coefficient = 0.51, $p<.001$ *95%CI* [0.37, 0.65]). The effect of the overall predicted quality of service encounter on willingness to use health services was not significant. (See Figure 1).

The results suggest that individuals with a higher level of anxiety communicating about health issues in a linguistic discordant situation, tend to be more uncertain about L2 medical services, are more likely to anticipate their medical experiences (including interactions with healthcare providers and quality of services) in the L2 services as negative, and as a result, they tend to be reluctant to access L2 healthcare services, compared with individuals with a lower level of health communication anxiety.

Effects of predictive uncertainty and predicted quality of service encounter in mental health context. The third hypothesis concerns whether, in the mental health context, there would be an indirect effect of L2-*specific* health communication anxiety on willingness to use L2 healthcare, through the overall predictive uncertainty (PredUnc) and predicted quality (PredQual) of service

encounter (as measured by the 6-item *PredUnc* and *PredQual* scales across all items). For this purpose, Hayes' (2013) bootstrapping analysis of multiple serial mediation model (i.e., PROCESS Model 6) was used to examine the effects of overall predictive uncertainty and the overall predicted quality of service in explaining the indirect effects of L2-*specific* mental health communication anxiety on willingness to use L2 mental health services. 5000 bootstrapping samples were used in this analysis. In this model, L2-*specific* mental health communication anxiety was entered as the independent variable (i.e., X), and willingness to use L2 mental health services as the dependent variable (i.e., Y). The overall predictive uncertainty was entered as the first factor (i.e., M1) and predicted quality of service encounter was entered second (i.e., M2). Statistical controlling variables were entered as covariates and these included L2 speaking proficiency, L2 understanding proficiency, L1 and L2 general communication anxiety, health anxiety, willingness to use L1 services, L1 predictive uncertainty, and L1 predicted quality of service encounter.

The results showed a significant total effect of L2-*specific* health communication anxiety on willingness to use L2 health services (unstandardized coefficient = -0.64, $p<.001$, *95%CI* [-0.92, -0.35]). The results failed to demonstrate a significant indirect effect of L2-*specific* mental health communication anxiety on willingness to use L2 mental health services (unstandardized coefficient = -0.04, *95%CI* [-0.17, 0.04]), through the multiple series variables of overall predictive uncertainty and predicted quality of service encounter in the mental health context. The direct effect of L2-*specific* mental health communication anxiety on willingness to use L2 mental health services was significant (unstandardized coefficient = -0.51, $p<.01$, *95%CI* [-0.82, -0.20]). Although both direct and indirect effects are of interest in the analysis, the most central is the indirect effect of L2-*specific* health communication anxiety on willingness to use

L2 mental health services (Hayes & Preacher, 2014). This indirect effect is interpreted as the amount by which two cases that differ by one unit on L2-*specific* mental health communication anxiety (i.e., X) are estimated to differ on willingness to use L2 mental health services (i.e., Y) as a result of the effect of L2-*specific* mental health communication anxiety (i.e., X) on the overall predictive mental health uncertainty (i.e., M1) and the overall predicted quality of mental health service encounter (i.e., M2), which in turn affect willingness to use L2 mental health services (i.e., Y). The direct effect quantifies how much two cases who differ by one unit on L2-*specific* mental health communication anxiety (i.e., X) but who are equal on predictive uncertainty (i.e., M1) and predicted quality of service encounter (i.e., M2) are estimated to differ on willingness to use L2 mental health services (i.e., Y).

When looking into individual effects in this model, it revealed that L2-*specific* mental health communication anxiety had a significant effect on predictive uncertainty (unstandardized coefficient = -0.42, $p<.001$, *95%CI* [-0.63, -0.21]), which in turn significantly affected predicted quality of service encounter (unstandardized coefficient = 0.51, $p<.001$, *95%CI* [0.40, 0.62]). The effect of the overall predicted quality of service encounter on willingness to use mental health services was not significant (See Figure 2).

The results suggest that individuals, with a high level of L2 health communication anxiety taking about mental health, tend to be uncertain predicting medical services provided, tend to predict the actual outcomes of their medical encounters as negative, as well they tend to be reluctant to access to L2 mental health services. However, their uncertainties about predicting overall L2 mental health services and their negative beliefs of the overall quality of mental health encounter did not explain why they would have a high level of L2 mental health anxiety and their reluctance to use L2 mental health services.

Effects of clinical rapport uncertainty and predicted quality of clinical rapport in mental health context. The fourth important research question concerns whether uncertainty about clinical rapport and predicted quality of rapport provide the explanation for the indirect effect of L2 health communication anxiety on healthcare use in the mental context. Given the special importance of clinical rapport in the mental health service (Horvath & Bedi, 2002; Horvath & Symonds, 1991; Martin, Garske, & Davis, 2000), clinical rapport uncertainty and predicted quality of clinical rapport were examined in the analysis, instead of the overall predictive uncertainty and overall predicted quality of clinical rapport. For this purpose, Hayes and Preacher's (2014) bootstrapping analysis of multiple serial mediation model (i.e., PROCESS Model 6) was also used to examine indirect effects of L2-*specific* mental health communication anxiety on willingness to use mental health services, through clinical rapport uncertainty and predicted quality of clinical rapport. Again, 5000 bootstrapping samples were used in this analysis. In this model, L2-*specific* mental health communication anxiety was entered as the independent variable (i.e., X) and willingness to use mental health services as the dependent variable (i.e., Y). Statistical controlling variables, entered as covariates, included L2 speaking proficiency, L2 understanding proficiency, L1 and L2 general communication anxiety, health anxiety, willingness to use L1 services, L1 predictive clinical rapport uncertainty, and L1 predicted quality of clinical rapport encounter. Instead of using the 6-item predictive uncertainty and predicted quality of service encounter scales, single-item measures of predictive clinical rapport uncertainty and predicted quality of clinical rapport encounter were entered into this model. Clinical rapport uncertainty was entered first (i.e., M1) and predicted quality of clinical rapport second (i.e., M2). Control variables included L2 speaking proficiency, L2 understanding

proficiency, L1 and L2 general communication anxiety, health anxiety, L1 clinical rapport uncertainty, and L1 predicted quality of clinical rapport. The results showed a significant total effect of L2-*specific* mental health communication anxiety on willingness to use L2 mental health services (unstandardized coefficient = -.64, $p < .001$, (*95%CI* [-.93, -.35]). The indirect effect of L2-*specific* health communication anxiety on willingness to use L2 health services was significant (unstandardized coefficient = -.05, (*95%CI* [-.16, -.01]), through the multiple series variables of clinical rapport uncertainty and predicted quality of clinical rapport in L2. The direct effect of L2-specific health communication anxiety on willingness to use L2 mental health services was also significant (unstandardized coefficient = -.53, $p < .001$, (*95%CI* [-.83, -.22]). Although both direct and indirect effects of *L2-specific* health communication anxiety are of interest in the analysis, the most central is the indirect effect of *L2-specific* health communication anxiety (Hayes & Preacher, 2014). The indirect effect is interpreted as the amount by which two cases that differ by one unit on *L2-specific* health communication anxiety (i.e., X) are estimated to differ on willingness to use L2 mental health services (i.e., Y) as a result of the effect of *L2-specific* health communication anxiety (i.e., X) on predictive clinical rapport uncertainty (i.e., M1) and predicted quality of clinical rapport (i.e., M2) which in turn affect willingness to use L2 mental health services (i.e., Y). The direct effect quantifies how much two cases who differ by one unit on L2-specific health communication anxiety (i.e., X) but who are equal on predictive clinical rapport uncertainty (i.e., M1) and predicted quality of rapport (i.e., M2) are estimated to differ on willingness to use L2 mental health services (i.e., Y) (Hayes & Preacher, 2014).

When looking into individual effects in this model, the analyses revealed that L2-*specific* mental health communication anxiety had a significant effect on clinical rapport uncertainty (unstandardized coefficient = -.52, $p < .001$, (*95%CI* [-.80, -.24]), which in turn significantly

affected predicted quality of clinical rapport (unstandardized coefficient = .37, $p < .001$, (*95%CI* [.25, .50]). There was no significant effect of predicted quality of clinical rapport on willingness to use health services. (See Figure 3).

The indirect pathway results suggest that individuals with a higher level of anxiety communicating about mental health issues in a linguistic discordant situation, tend to be more uncertain about clinical rapport with healthcare providers, are more likely to anticipate the clinical rapport as poor, and as a result, they tend to be more reluctant to use L2 mental healthcare services, compared with individuals with a lower level of L2 health communication anxiety.

Discussion

Language barriers in healthcare services can result in a variety of health issues among linguistic minorities, such as low levels of quality of service, medical adherence, and healthcare utilization. Yet little research has examined the specific nature of healthcare communication that impacts on healthcare outcomes. This study aimed to investigate L2 health communication anxiety as a barrier to healthcare access and the factors underlying this anxiety. L2 health communication anxiety is a multifaceted concept, which involves the apprehension that is specially associated with patients communicating about health issues in a second language with healthcare providers. To date, few studies have examined the role of L2 health communication anxiety affecting healthcare access with appropriate controls. In addition, it is not clear why and how L2 health communication anxiety affects healthcare access among linguistic minorities.

In order to better understand L2 health communication anxiety as a barrier to healthcare access, the current study aimed to examine the effects of communication anxiety, predictive uncertainty, and predicted quality of service encounter on willingness to use healthcare services

based on patients' perceptions. First, this study aimed to examine the extent to which the relation between L2 health communication anxiety and willingness to use L2 healthcare services is specific to the discordant language situations. Secondly, it aimed to investigate the indirect effects of predictive uncertainty and predicted quality of services encounter as factors underlying this L2-specific health communication anxiety.

The study identified L2-specific health communication anxiety in both physical and mental health contexts, which goes beyond and above L2 language proficiency, communication anxiety about health in L1, and communication anxiety in general social situations. Moreover, this L2-specific health communication anxiety predicted reluctance to use L2 health services in both physical and mental health settings. This form of health communication anxiety specific to language discordant situations has now been consistently demonstrated across all of our four studies, including the current one (this dissertation, Studies 1-3). These findings suggest that individuals who have a higher level of L2 health communication anxiety are less willing and more reluctant to use L2 physical and/or mental health services, compared to individuals with a lower level of L2 health communication anxiety. In addition, this L2-specific health communication anxiety cannot be fully explained by one's L2 ability, communication anxiety about health issues in one's L1, and one's general social anxiety.

The most important research question of this study concerns the indirect effects of L2 predictive uncertainty and predicted quality of medical encounters underlying the link between L2-*specific* health communication anxiety and willingness to use health services in both physical and mental health contexts. In the physical context, correlational analyses revealed significant correlations between L2-*specific* health communication anxiety, predictive uncertainty, and predicted quality of medical encounter. The analysis identified significant effects of predictive

uncertainty and predicted quality of medical encounter underlying the L2-specific health communication anxiety in predicting willingness to use L2 health services. That is, the association between L2-specific health communication anxiety and willingness to use L2 health services is explained by the effects that L2-specific health communication anxiety influenced medical uncertainty, which in turn had a negative impact on predicted quality of medical encounter in L2, in the case of physical health contexts. However, predicted quality of medical encounter per se did not directly influence willingness to use L2 health services whereas the indirect pathway involving both these variables does. The overall findings suggest that people who are anxious talking about physical health in L2 are less willing to use L2 physical health services. Their reluctance to use L2 health services is a result of their uncertainty about being able to predict what will happen when they receive medical services in their L2, leading them to believe their medical experience of using the L2 health services is likely to be negative.

In the mental health context, the multiple series mediation model analysis identified significant indirect effects of clinical rapport uncertainty and predicted quality of clinical rapport underlying the L2-*specific* health communication anxiety in predicting willingness to use mental health services in L2. That is, the association between L2-*specific* mental health communication anxiety and willingness to use L2 health services is explained by the effects that L2-*specific* mental health communication anxiety influenced clinical rapport uncertainty, which in turn had a negative impact on predicted quality of clinical rapport in language discordant settings. However, predicted quality of clinical rapport per se did not directly influence willingness to use L2 health services. The overall results suggest that people who are anxious talking about mental health in L2 are less willing to use L2 mental health services. Their reluctance to use L2 mental health services results from not being sure about the clinical rapport they would be able to build

with the mental health professional, in terms of feeling understood, valued and supported, and this leads them to perceive the quality of such a rapport likely to be poor in the L2 mental health services.

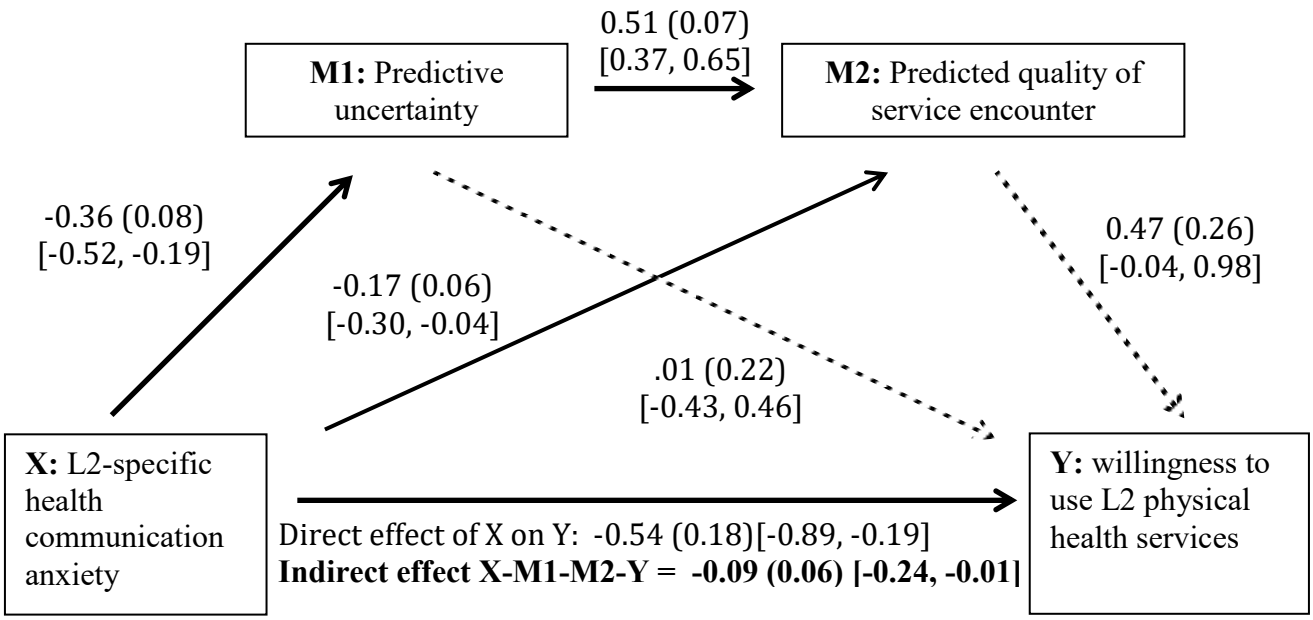
The results of this study indicate that uncertainty and predicted quality of encounters are the key components in language-discordant communication anxiety in healthcare environments. When anxiety was high, participants became less sure about L2 medical services, held negative beliefs about their experiences in L2 healthcare services, and were reluctant to use L2 health services. These findings support the AUM theory that high levels of anxiety and uncertainty lead to decreased quality of intercultural encounter based on the communicator's perception. Although previous literature has reported the roles of anxiety and uncertainty in intercultural communication, the current study is distinctive in that it identified L2-specific health communication anxiety as a barrier in an interlinguistic healthcare environment, with appropriate controls. In addition, it identified uncertainty and predicted quality of encounter as factors underlying this L2-specific health communication anxiety. The findings also suggest that although uncertainty and predicted quality of encounter are both involved in indirect effects underlying the L2-specific health communication anxiety, anxiety and uncertainty may be more influential in predicting reluctant to use L2 health services because predicted quality of encounter in itself did not significantly affect reluctant to use L2 health services. In addition, whereas the overall predictive uncertainty and overall predicted quality of medical encounter play significant roles in explaining this anxiety, the particular aspects of clinical rapport uncertainty and predicted quality of clinical rapport are of primary concern in explaining the L2 communication anxiety in the mental health context. It highlighted the importance of clinical rapport in the mental health interlinguistic environment.

Table 7. Zero-order Spearman inter-correlations for the main variables analyzed in Study 4. *N=117.*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1HCA1p	—	-.10	.39***	-.10	.25**	-.06	-.03	-.61***	.12	-.26**	.16	-.38***	-.35***	.22*	.08
2HCA2p		—	-.08	.86***	.07	.78***	-.65***	.12	-.65***	.10	-.54***	.35***	.21*	-.53***	-.19*
3HCA1m			—	-.05	.26**	.04	-.12	-.38***	-.02	-.40***	-.05	-.15	-.27**	-.01	-.06
4HCA2m				—	.04	.75***	-.61***	.16	-.50***	.21*	-.61***	.27**	.15	-.42***	-.20*
5GCA1					—	.16	-.12	-.40***	-.07	-.15	.03	-.21*	-.20*	-.12	-.18
6GCA2						—	-.71***	.04	-.53***	.06	-.54***	.22*	.13	-.45***	-.17
7SpkL2							—	.04	.52***	-.00	.53***	-.21*	-.01	.59***	.27**
8Will1p								—	-.06	.33***	-.13	.34***	.29**	-.09	-.13
9Will2p									—	-.08	.46***	-.30***	-.17	.52***	.06
10Will1m										—	-.22*	.06	-.01	-.05	-.16
11Will2m											—	-.20*	-.09	.30**	.21*
12UseFreq1p												—	.42***	-.13	.13
13UseFreq1m													—	-.10	.28**
14UseFreq2p														—	.29**
15UseFreq2m															—

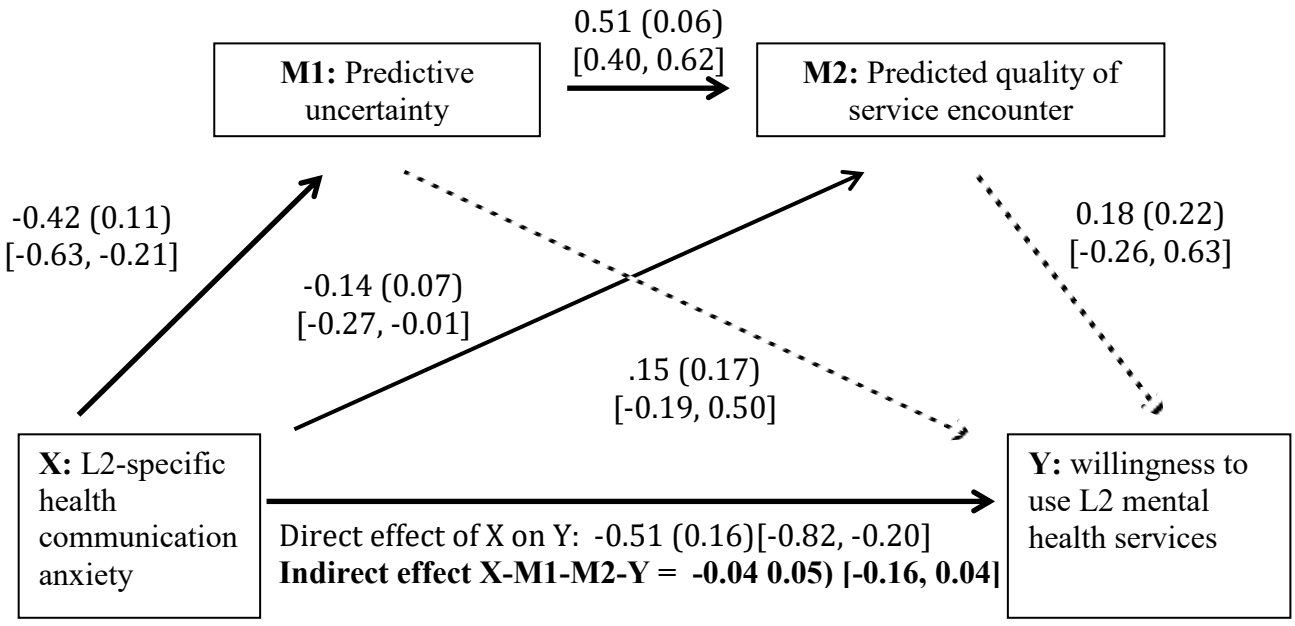
Note: The variables listed are: HCA1p, HCA2p = L1 and L2 health communication anxiety for physical health, respectively; HCA1m, HCA2m = L1 and L2 health communication anxiety for mental health, respectively; GCA1, GCA2 = L1 and L2 general communication anxiety, respectively; SpkL2 = L2 speaking ability; Will1p, Will2p = L1 and L2 willingness to use physical health services, respectively; Will1m, Will2m = L1 and L2 willingness to use mental health services, respectively; UseFreq1p, UseFreq2p = L1 and L2 frequency of using physical health services, respectively; UseFreq1m, UseFreq2m = L1 and L2 frequency of using mental health services, respectively.
* p < .05, ** p < .01, *** p < .001

Figure 1. Direct and indirect effects of L2-specific health communication anxiety (X) on willingness to use L2 healthcare services (Y) through the mediating variables of predictive uncertainty (M1) and predicted quality of service (M2), in physical health contexts.



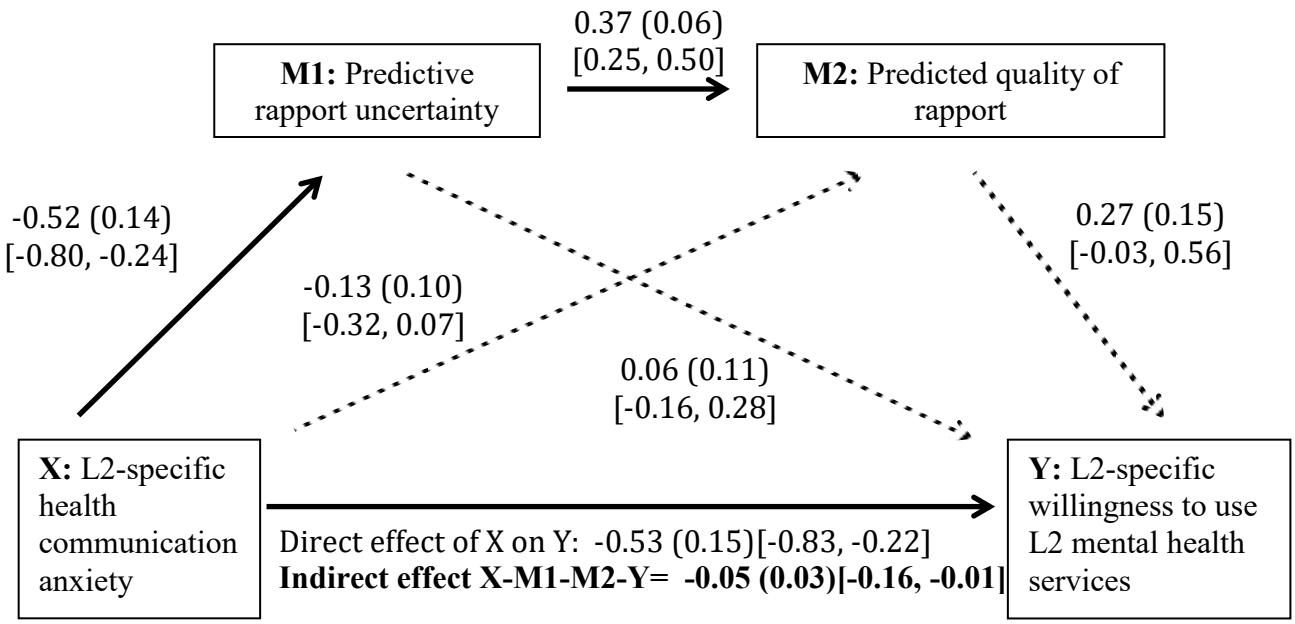
Note: For the predictive uncertainty scale, low scores indicated uncertainty and high scores indicated certainty. Data shown are unstandardized coefficients with standard errors in parentheses and 95% confidence intervals in square brackets. The indirect effect X-M1-Y = -0.004 (0.10) [-0.18, 0.21]; the indirect effect X-M2-Y = -0.08 (0.05) [-0.24, -0.01]; and the indirect effect X-M1-M2-Y = -0.09 (0.06) [-0.24, -0.01]. Solid arrows indicate statistically significant paths and dotted lines nonsignificant paths.

Figure 2. Direct and indirect effects of L2-specific health communication anxiety (X) on willingness to use L2 healthcare services (Y) through the mediating variables of predictive uncertainty (M1) and predicted quality of service (M2), in mental health contexts.



Note: For the predictive uncertainty scale, low scores indicated uncertainty and high scores indicated certainty. Data shown are unstandardized coefficients with standard errors in parentheses and 95% confidence intervals in square brackets. The indirect effect X-M1-Y = -0.06 (0.09)[-0.26, 0.09]; the indirect effect X-M2-Y = -0.03 (0.03) [-0.14, 0.01]; and the indirect effect X-M1-M2-Y = -0.04 0.05) [-0.16, 0.04]. Solid arrows indicate statistically significant paths and dotted lines nonsignificant paths.

Figure 3. Direct and indirect effects of L2-specific health communication anxiety (X) on willingness to use L2 healthcare services (Y) through the mediating variables of predictive uncertainty of rapport (M1) and predicted quality of rapport (M2), in mental health contexts.



Note: For the predictive uncertainty scale, low scores indicated uncertainty and high scores indicated certainty. Data shown are unstandardized coefficients with standard errors in parentheses and 95% confidence intervals in square brackets. The indirect effect X-M1-Y = -0.03 (0.07)[-0.19, 0.09]; the indirect effect X-M2-Y = -0.03 (0.04)[-0.15, 0.01]; and the indirect effect X-M1-M2-Y = -0.05 (0.03) [-0.16, -0.01]. Solid arrows indicate statistically significant paths and dotted lines nonsignificant paths.

General Discussion

This research project investigated how anxieties associated with health communication in language discordant settings have an impact on willingness to use healthcare services in a second language, in both physical and mental health contexts. Previous research on language communication barriers has largely focused on language proficiency as a predictor of access to care and utilization of services in North American countries (Shin & Bruno, 2003). This dissertation project contributes to the body of research by examining effects of second language health communication anxiety on access to healthcare among linguistic minorities. Four empirical studies were conducted to examine various aspects of this barrier of L2 health communication anxiety to healthcare utilization. The first study developed a valid and reliable measurement tool assessing L2 health communication anxiety, controlling for L1 health communication anxiety. Results from the other three studies consistently demonstrated that, in both physical and mental health settings, there is an anxiety specifically related to L2 health communication, which goes above and beyond the L2 proficiency, general social communication anxiety, and general health communication anxiety. This L2-*specific* health communication anxiety has a negative impact on individuals' willingness to seek L2 health services. In addition, two studies examined the factors underlying this L2-*specific* health communication anxiety. Results from Study 4 revealed that predictive uncertainty and predicted quality of services encounter are involved in indirect effects in the association between L2 health communication anxiety and reluctance of using L2 health services. The following sections discuss the implications of the study findings, as well as future research directions.

These findings have important implications for language-discordant health communication research in that they provide empirical support for extending previous research findings by bringing in intercultural relation theories to study linguistic barriers in the healthcare environment. Linguistic barrier is one of the great issues in healthcare services, because ineffective communication can be implicated in aspects of negative healthcare outcomes for linguistic minorities. While linguistic minority patients need to have good language ability to communicate successfully about medical information with the healthcare providers, anxieties may nevertheless arise speaking in a second language with healthcare providers. These are important to take into account when considering the likelihood of patient satisfaction and access to healthcare. Perceived predictability about the medical situation and predicted quality of the medical encounter in L2 health services appear to be key to understanding this barrier of L2 health communication anxiety. The results suggest that patients might be reluctant to use L2 services if they are anxious due to perceiving that they have little control over the situation and anticipate that their experiences are negative, when receiving services in an L2 health setting. It should also be noted that the central element in L2 mental health communication is the clinical rapport between patients and healthcare providers, a therapeutic alliance based on trust and co-operation and established through understanding and empathy of the patient's perspective (Leach, 2005). The results also demonstrated that although predictive uncertainty and quality of medical encounter are important issues in the context of both physical and healthcare services, key facets of uncertainty and quality of encounter may differ between physical and mental health settings.

Limitations. One limitation of the present research is that the studies relied on self-report data (e.g., L2 speaking skill; use of health services) and on participants' abilities to imagine

hypothetical situations. Studies of actual behaviors using health services would be valuable in this context. A second limitation is that the outcome variable of willingness to use health services was assessed by a single-item measure, which has high face validity. Although it is not clear whether this variable consisted of more than one dimension, it is worth exploring more deeply the nature of this construct itself. Third, the directionality of the associations between L2 health communication anxiety and use of health services was assumed based on a review of the literature regarding these issues. The cross-sectional nature of the present research precludes inferences about the causal effects among these variables. A longitudinal design can be used in order to examine the directionality of the effects. Fourth, this research primarily focused on English-speaking minorities living in Quebec, where the cultural and linguistic milieus may be different from that for minorities in other societies and possibly even other minorities within the same region of Canada. It is possible that factors underlying this L2-specific health anxiety (e.g., medical uncertainty and anticipated quality of service encounter) may not be as relevant in other cultural and linguistic contexts. Cultural variations on factors affecting L2 health communication and use of health services need to be examined.

Future Directions. The results of this study have generated a number of questions related to interlinguistic communication, intercultural communication, and healthcare. Future research should examine factors that contribute to predictive uncertainty in L2 health communication. While the literature has reported associations between anxiety and uncertainty, little is known about what makes patients perceive the L2 health services as unpredictable. Unfamiliarity about the L2 health services could be a factor related to feelings of uncertainty in a novel situation. Low levels of contact may leave people with limited knowledge of outgroup members' behaviours, attitudes, and values (Stephan, 2014). This lack of understanding and knowledge can

increase uncertainty during intergroup interactions. For example, many studies have shown that the low levels of social contact with out-group members are associated with high levels of anxiety (Pettigrew & Tropp, 2008). Pettigrew and Tropp (2008) found that across 60 studies including a wide range of populations (ethnicity, nationality, religion, age, immigrants, sexual orientations), the mean correlation between the amount of contact and intergroup anxiety was –0.29. In addition, lack of familiarity often means that patients have few opportunities to acquire skills in interacting with healthcare providers who speak their L2, which can increase patients' perception of a lack of control over situations and unpredictability in those situations. Uncertainty and poor interaction skills could all increase anxiety by fostering patients' perceived sense of lacking control and negative anticipations concerning the outcomes of interaction with healthcare providers with whom they do not share the same first language, especially in light of the power imbalance that often characterizes physician-patient encounters.

It is also possible that the quality of patients' previous contact with the L2 health system has an influence on their perceptions about future events. Negative contact may have even more adverse effects on intergroup anxiety than neutral or positive contact because it generates experience-based expectancies about future interactions with others (Stephan, 2014). Patients who have had negative experience using the L2 health system know that communication with healthcare providers in their L2 can have negative effects and then expect negative outcomes related to L2 health communication in the future. In fact, a number of studies have found that negative contact is positively related with interaction anxiety (Aberson & Gaffney, 2008; Corenblun & Stephan, 2001; Rohmann, Florack, Pinotkowski, 2006).

Cultural variations in illness etiology, diagnosis, and treatment approach may also be important concerns from patients' perspective, which in turn affect their perceived predictability

about the L2 services. Although the health care system is focused on diagnosing, treating, and ideally preventing disease, the clinical encounter has other functions as well, such as the creation of a clinical relationship between patient and clinician. Clinicians are often viewed as an authority figure who bear witness to the suffering and confusion of affliction (Kirmayer, 2011). Patients come to the doctor because of the fundamental needs for making sense of affliction and relieving pain and suffering (Kleinman, 1988; Tauber, 1999). This requires that clinicians go beyond the generic prototypes of diseases and disorders described in medical textbooks to understand the embodied and socially embedded particularity of an individual's suffering in their own cultural contexts (Kleinman, 1988, 1999, 2006). Understanding another person's illness experience requires knowledge of the social and cultural contexts in which their illness unfolds (Kirmayer, 2008). If patients are concerned that whether their illness would be understood in their own terms, they may perceive lessened control over their medical treatment and more negative outcomes of treatment, and become reluctant to seek medical health in the L2 systems.

Research should also investigate the nature of clinical rapport in language-discordant health communication in the mental health context. Clinical rapport in a language-discordant environment can be complex because it involves building a therapeutic relationship between a patient and a healthcare provider who come from different linguistic backgrounds and very often from different cultural backgrounds as well. The variables mentioned above, such as previous contacts with the L2 mental health services, knowledge about the L2 services, lack of interlinguistic communication skills, and cultural variations in illness diagnosis, conceptualization, and treatment may also influence a patient's perception on the clinical rapport and the trust in the healthcare provider. In addition, negative stereotyping may also affect the patient-provider relationship, either when the patient stereotypes the provider or perceives that

the provider would stereotype them in a negative manner.

Finally, the effects of L2 health communication anxiety, predictive uncertainty, and predicted quality of medical encounter on healthcare access should be examined in other linguistic minorities groups, such as French-speaking minorities in other provinces, international students, immigrants, First Nations in Canada. The present research exclusively focused on English-speakers in Quebec – Montreal specifically, where French is the official language. Canada is characterized by English and French bilingualism and multiculturalism policy. Whether the present results would replicate in other linguistic minority populations is unknown. For example, immigrants may have to face to cultural unfamiliarity in addition to linguistic adaptation and L2 health communication anxiety may be manifested in a different way as a barrier to healthcare access among immigrants. First nations in Canada may be affected by historical and sociopolitical factors, which are not experienced by English- or French-European descents in Canada. Therefore, they may have different concerns seeking L2 health services. Given the diversity of ethnic groups in Canada, studies need to examine these issues in other populations in order better understand language barriers to healthcare access among linguistic minorities.

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Appendices

Appendix A — Health Communication Anxiety (HCA) Scales

Items for health communication anxiety regarding physical health

1. If I had to use English (French) to talk to a doctor about a health problem, I would get so nervous speaking I would forget things I know.
2. I would start to panic if I had to use English (French) to speak without preparation about health problems in the doctor's office.
3.* I talk often about health matters using English (French).
4.* I actively seek out information about health questions using English (French).
5.* If I had to use English (French), I would feel confident speaking in the doctor's office.
6. If I had to use English (French), I would feel my heart pounding when talking to a doctor.
7. If I had to use English (French), I would become nervous speaking in the doctor's office.
8. If I had to use English (French), I would fear that the doctors or nurses would laugh at me.
9. If I had to use English (French), I would get nervous if the doctor asked questions that I was unable to prepare for in advance.
10.* If I had to use English (French), I would feel at ease talking about health problems with healthcare providers.

Items for health communication anxiety regarding mental health

1. If I had to use English (French) to talk to a health professional about emotional difficulties, I would get so nervous I would forget things I know.
2. I would start to panic if I had to use English (French) without preparation to talk about emotional difficulties in a healthcare professional's office.

3.* I talk often about emotional difficulties using English (French).

4.* I actively seek out information about emotional difficulties using English (French).

5.* If I had to use English (French), I would feel confident speaking about emotional difficulties in the office of a healthcare professional.

6. If I had to use English (French), I would feel my heart pounding when talking to a healthcare professional about emotional difficulties.

7 If I had to use English (French), I would become nervous speaking in a healthcare professional's office about emotional difficulties.

8. If I had to use English (French) to talk about emotional difficulties, I would fear that the healthcare professionals would laugh at me.

9. If I had to use English (French), I would get nervous if the doctor asked questions about emotional difficulties that I was unable to prepare for in advance.

10.* If I had to use English (French), I would feel at ease talking about my emotional difficulties with healthcare professionals.

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* Reverse-scored items.

Note: Response set: 7-point scale, 1 = strongly disagree, 7 = strongly agree

Appendix B — General Communication Anxiety (GCA) Scales

1. I feel tense when I have to speak English (French).
2. I am socially somewhat awkward when I have to speak English (French).
3.* I am comfortable asking other people for information using English (French).
4.* I am generally comfortable at parties and other social functions when I am using English (French).
5. When in a group of people, I have trouble thinking of the right things to say when I am using English (French).
6.* I quickly overcome my shyness in new situations when speaking in English (French).
7.* It is easy for me to act natural when I am using English (French).
8. I feel nervous when speaking in English (French) to someone in authority.
9. I have doubts about my social competence when I use English (French).
10. I feel inhibited using English (French).
11.* I find it easy to talk to strangers using English (French).
12. I am more shy with members of the opposite sex when speaking in English (French).

* Reverse-scored items.

Note: Response set: 7-point scale, 1 = strongly disagree, 7 = strongly agree

Appendix C — Single Item Scales

Willingness to use health services

Physical health: "If I had to obtain health services to deal with a health problem, I would be willing to do this in English (French)."

Mental health: "If I had to obtain health services to deal with an emotional difficulty, I would be willing to do this in English (French)."

Response set: 7-point scale, 1 = strongly disagree, 7 = strongly agree

Frequency of using health services

Physical health: "In the past 6 months, how many times have you used English (French) to obtain health services or to consult with healthcare providers about your physical health? Think about all providers of physical health, including doctors, nurses, pharmacists, dentists, optometrists, etc."

Mental health: "In the past 12 months, how many times have you used English (French) to obtain health services or to consult with healthcare providers about emotional difficulties? Think about all providers of emotional health, including social workers, counselors, therapists, psychologists, psychiatrists, etc."

Response set*: 8-point scale, 1 = never, 2 = 1-3 times, 3 = 4-6 times, 4 = 7-9 times, 5 = 10-12 times, 6 = 13-15 times, 7 = 16 or more times, 8** = I prefer not to answer

* Interpreted as ordinal scale

** Treated as missing data

Preference for using health services

Physical health: "If you had to consult a health professional about your physical health, which language would you prefer to do this in?"

Mental health: "If you had to consult a health professional about an emotional difficulty, which language would you prefer to do this in?"

Response set: 7-point scale, 1 = strongly prefer French, 7 = strongly prefer English

Appendix D: Predictive Uncertainty Scales; Predicted Quality of Service Encounter Scales

Predictive Uncertainty (PredUnc) scale items for communication about physical (p) mental health (m) in L1 (English) and L2 (French) settings and the corresponding items for the Predicted Quality of Service Encounter (PredQual) scale.

	PredUnc-p	**PredUnc-m**	**PredQual**
Instruc-tions	*Imagine you need to talk about your physical health in English (French) in a healthcare institution. This might be, for example, with a doctor, nurse, pharmacist, dentist, optometrist, etc. Choose the appropriate number on the scale below to indicate how strongly you agree with the statement about this situation.*	*Imagine you need to talk about emotional difficulties in English (French) in a healthcare institution. This might be, for example, with social workers, counselors, therapists, psychologists, psychiatrists, etc. Choose the appropriate number on the scale below to indicate how strongly you agree with the statement about this situation.*	(Note: Each *PredUnc* was accompanied by the corresponding *PredQual* item.)
1	In this situation, I am certain that I would be able to predict the quality of rapport I would have with an English (French)-speaking health professional, in terms of feeling understood, valued and supported.	In this situation, I am certain that I would be able to predict the quality of rapport I would have with an English (French)-speaking health professional, in terms of feeling understood, valued and supported.	The quality of this rapport would actually be good in this situation.
2	In this situation, I am certain that I would be able to predict how easy it would be to establish good rapport with an English (French)-speaking health professional, in terms of feeling understood, valued and supported.	In this situation, I am certain that I would be able to predict how easy it would be to establish good rapport with an English (French)-speaking health professional, in terms of feeling understood, valued and supported.	It would actually be easy to establish good rapport in this situation.
3	In an English (French)-speaking institution, I am certain about my ability to predict being able to find out information, complete the necessary paperwork, and communicate with non-medical personnel (e.g., hospital administrators, office secretaries, clerks, assistants).	In an English (French)-speaking institution, I am certain about my ability to predict being able to find out information, complete the necessary paperwork, and communicate with non-medical personnel (e.g., hospital administrators, office secretaries, clerks, assistants).	It would actually be easy for me to do this in this situation.
4	In this situation, I am certain that I would be able to predict the quality of services available in English (French) for treating or handling physical health difficulties.	In this situation, I am certain that I would be able to predict the quality of services available in English (French) for treating or handling emotional difficulties.	The quality of services would actually be good in this situation.
5	In this situation, I am certain that I would be able to predict the general impression an English (French)-speaking health professional would have of me.	In this situation, I am certain that I would be able to predict the general impression an English (French)-speaking health professional would have of me.	The health professional would actually have a positive general impression of me in this situation.
6	In this situation, I am certain that I would be able to predict the quality of treatment I am likely to receive from English (French)-speaking health professionals.	In this situation, I am certain that I would be able to predict the quality of treatment I am likely to receive from English (French)-speaking health professionals for emotional difficulties.	The quality of this treatment would actually be good in this situation.