The Gender Gap in Foreign Language Study:

What Deters Men from Voluntary Enrolment?

by

Kathryn Everhart Chaffee

A thesis submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Psychology

University of Alberta

Abstract

Currently, men are under-represented in many careers and fields of study, including foreign-language study. In seven studies, I examined social psychological correlates and causes of the gender gap in enrolment and interest in language-related fields. After reviewing research on gender similarities and differences in language education in Chapter 1, Chapter 2 reports a correlational study revealing that men in foreign language classes differed from men not in such classes in both motivational factors and their beliefs about gender. Enrolment was associated with both expectancies for success at language learning and valuing of learning, with masculine role beliefs influencing enrolment through values. To further examine how men's expectancies of success in foreign language might be influenced by gender stereotypes, in Chapter 3 I describe four experiments (total $N=542$) uncovering little evidence for stereotype threat effects on men in language tasks. In Chapter 4 I show that men's disinterest in foreign languages may be caused by a combination of traditional beliefs about masculinity and masculinity threat. Men reported less interest in foreign language study and less positive attitudes towards foreign language learning following a masculinity threat compared to men whose masculinity was affirmed or who did not hold traditional masculinity beliefs. In terms of expectancy-value theory, men's underrepresentation in foreign language appears more a function of values than of expectancies. Threats to men's competence in language did not affect their expectancies, but traditional masculine gender roles pushed men to avoid "feminine"-typed domains such as foreign language learning. These results suggest that concern about affirming a masculine identity may limit men's educational choices.

Preface

This thesis is an original work by Kathryn Everhart Chaffee. The research projects of which this thesis is a part received research ethics approval from the University of Alberta Research Ethics Board, Project Name "Gender differences in motivation for second language learning", No. 00051664, December 15, 2014, and Project Name "Stereotype Threat and Language Learning", No. 00048268, September 08, 2014.

Acknowledgments

I would like to thank my supervisor, Dr. Kimberly Noels for her support and feedback throughout all stages of this project and her openness to my ideas. Her feedback, support, and perspective allowed me to develop and pursue my research interests.

I would also like to offer special thanks to my labmate, collaborator, and friend Nigel Mantou Lou for many hours discussing research ideas, designs, measures, and statistics. These studies might never have happened without his input and motivating force.

I am also grateful to my supervisory committee members, Drs. Takahiko Masuda and Elena Nicoladis, for their helpful feedback and suggestions through this process. I would also like to thank examiners Drs. Bill Dunn and Joe Vandello for their helpful questions, comments, and suggestions, and Dr. Wendy Hoglund for chairing my exam.

Special thanks to the Intercultural Communication Lab and the undergraduate lab members who have been involved in these projects, particularly Josh Katz, Sharon Tahir, and Rashmani Chakrabarty. Thanks also to my floormates and friends throughout the department and university for various moments advice and laughter, and to the front office and tech shop staff who keep everything running and make it all happen.

I would also like to thank my parents for teaching me the value of learning and knowledge, and my dog Blaze for being a good listener and snuggle buddy.

Lastly, I would like to thank my husband Chris for his support and patience, and for always believing I could do this.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

The Gender Gap in Foreign Language Study: What Deters Men from Voluntary Enrolment?

Chapter 1: Introduction

Although gender gaps in most male-dominated fields of study and many male-dominated career fields have narrowed dramatically over the last few decades, men's representation in female-dominated fields has remained largely unchanged. Decades of research into women's underrepresentation in STEM (Science, Technology, Engineering, and Mathematics) disciplines has shown changes in gender ratios from fewer than 20% of degrees conferred on women in 1970 to over 40% in 2010, but today the proportion of men in university foreign language majors is smaller than the proportion of women in the physical sciences, math, or biology (e.g. National Center for Education Statistics [NCES], 2014). The only male-dominated disciplines that still show large gender imbalances at the undergraduate level are computer sciences and engineering. Most subjects with large gender imbalances are now female-dominated subjects like nursing, psychology, and foreign languages (Canadian Council on Learning, 2009; NCES, 2014; Statistics Canada, 2014).

The ability to speak a foreign language is an important skill that has potential economic, social, and cognitive benefits. Multilingualism facilitates intercultural communication, making it an asset in an era of increasing immigration and globalization. Men who choose not to learn foreign languages may also miss opportunities to engage with other cultures and people. Some researchers also argue that becoming bilingual may afford cognitive benefits such as increased ability to control attention, larger working memory capacity, and delayed onset of Alzheimer's disease (Adesope, Lavin, Thompson, & Ungerleider, 2010; Craik, Bialystok, & Freedman, 2010). If men do not study foreign languages, they may miss out on cognitive benefits and also be left lacking a set of skills that are of vital importance in modern job markets.

In this dissertation, I will begin by discussing why it is important to study men and how research into men's educational choices and achievement might be informed by previous work related to women in STEM fields. I will then provide an overview of gender differences in language-related ability and achievement as well as gender differences in language attitudes and motivation before considering what social psychological explanations might underlie these differences. I focus on the possible role of stereotypes in explaining these differences. In particular I focus on stereotypes related to gender and ability, as well as stereotypical beliefs about the appropriate behaviors and pursuits of men. In Chapter 2, I will report the results of a study examining how expectancies and values, as well as beliefs about gender, differentiate men who have chosen to study a foreign language from men not studying foreign language. I will then report a series of studies of stereotype threats on men in language in Chapter 3, followed by a study of how threats to masculinity may lead certain men to disavow interest in foreign languages. I will close with a discussion of the implications of my research findings.

Why Study Men?

Given men's privileged position in society and the persistence of pay gaps and other discrimination favoring men (especially white men), readers may ask why we should care about men's underrepresentation in female-dominated fields. I argue that it is important to study how gender stereotypes and biases affect both men and women because these may affect the opportunities and well-being of both men and women. For example, stereotypes that men are ambitious and driven but women are nurturing may limit women's opportunities in fields where ambition and drive are seen as important, but they may also deter men from entering more "nurturing" professions such as nursing. Stereotypes that men are good at math and women are

good at languages affect girls' math self-concepts, but they also affect boys' language self-concepts (Good, Rattan, & Dweck, 2012; Retelsdorf, Schwartz, & Asbrock, 2014).

Fostering male interest in language learning may also eventually have larger societal implications. For instance, sociologists Levanon, England, and Allison (2009) found that between 1950 and 2000 in the United States, a profession's median wages were negatively correlated with the number of women entering the profession. This study provided evidence that work becomes more devalued as it becomes more female-dominated, rather than the alternative hypothesis that men eschew female-dominated professions because they are low paying. Thus, if more men can be convinced to enter female-dominated professions related to language and communication, it is possible that this influx of men might reverse this effect and increase the prestige and pay of these traditionally female-dominated professions. Over time, more equal gender distributions in these professions may influence the expectancies and task values future generations of men associate with language learning. Given that culture and psyche are mutually constituted (Schweder, 1990), we can hope that interventions to increase male participation in language learning and language fields may influence the cultural milieu over time and reduce the strength and prevalence of gendered stereotypes about what subjects, majors, and careers are appropriate for both men and women.

Possible Parallels to Women in STEM

I begin with the assumption that many of the same issues and stereotypes that deter women from entering STEM disciplines may, in a complementary fashion, be limiting the occupational interests and opportunities of men. System justification theorists have suggested that gender stereotypes (and many other types of stereotypes) are complementary, such that each gender is seen to have both strengths and weaknesses that create balance in society (Jost & Kay,

2005). I suggest that "math is for boys (and not girls), but language is for girls (and not boys)" is one such complementary stereotype. Because of the parallel nature of these stereotypes, the causes of gender disparities in language and STEM might also parallel each other. To examine how this may be the case, I will review gender differences in language ability and motivation as well as some possible factors that underlie these differences, such as stereotypes and sense of belonging to language domains. Beyond simply replicating existing findings with women in STEM and applying them to a new domain, I will also examine some features which might be unique to males and female-dominated fields, such as views of masculinity. I will then propose a line of research to begin filling these gaps.

        In this dissertation, I investigate how men's beliefs about gender and language might affect their interest in languages and ultimately their voluntary enrolment and participation in language classes in three empirical chapters. I will first conduct an exploratory questionnaire comparing male language learners to non-learners in order to identify what factors might be important. I next draw from the literature on women in STEM to examine whether stereotypes might threaten men's competence in language domains in the same way that gender stereotypes hold back women in math. Moving beyond the premise that men in foreign language experience parallel problems to those experienced by women in STEM, I then examine a way in which masculinity itself may deter men from foreign language study.

Overview of Gender Differences in Language

        According to the American Psychological Association (APA, 2010), "sex" refers to the biological categorization of a person or other organism as male or female, while "gender" is used to refer to men and women as social categories. More specifically, the APA recommends that the term "sex" be used when referring to biological differences, while "gender" should be used for

discussion of social, cultural, and psychological characteristics or experiences. Sex and gender

often overlap, but some people may identify with a gender that does not match their biological

sex or with a gender other than "man" or "woman." For my dissertation research, I will be

adopting a social psychological perspective, and as such I will focus on psychological gender

differences rather than biological or sex differences in foreign language.

Language ability.

One important area where gender differences have been observed and male students

appear to lag behind their female counterparts is in language ability. Although a 1988 meta-

analysis by Janet Shibley Hyde indicated that gender differences in language ability were too

small to be meaningful and were shrinking over time, recent studies have shown that girls

consistently outperform boys in reading and writing in most countries where this issue has been

studied. This discrepancy applies to cases where "ability" refers to performance on standardized

tests, laboratory tasks, and/or school achievement. A meta-analysis by Voyer and Voyer (2014)

showed that girls outperform boys in their school achievement (grades), with the largest

difference being in language arts and foreign languages. In the US, Canada, and at least 72 out of

75 OECD nations, girls significantly outperform boys on various standardized measures of

reading and writing proficiency (CCL, 2009; National Center for Education Statistics, 2011;

Stoet & Geary, 2013). On average, this disparity is three times larger than differences in math

and science ability (CCL, 2009; Stoet & Geary, 2013). Unlike the math and science gaps, this

gap appears to grow larger as children age, and according to at least one study, the gap has also

widened since 2000 (Lynn & Mikk, 2009; Stoet & Geary, 2013). A longitudinal study of Belgian

7th through 12th graders revealed that girls' language abilities improve continuously over time,

while boys' abilities actually decline in 7th grade before later improving again (Van de Gear,

Pustjens, Van Damme, & Munter, 2009). Paralleling this pattern in objective assessments, boys report less confidence than girls in their language arts and writing abilities (Meece, Glienke, & Burg, 2006). Therefore, boys may have low expectations of success in language domains.

These studies focused primarily on native language ability, but the results might be relevant to foreign language ability as well. Some researchers have argued that native language (L1) and foreign language (L2) ability are determined by the same underlying aptitude (Cummins, 1980), where language aptitude refers to an underlying ability or capacity to learn language. Though research in this area is still ongoing, proficiency in first and second languages have been linked empirically (Bernhardt & Kamil, 1995), meaning that differences in native language ability may be relevant to foreign language contexts. Some studies of foreign language contexts specifically have found that women and girls outperform men and boys in foreign language learning, just as in native language reading and writing (e.g. Glowka, 2014; Oxford, Park-Oh, Ito, & Sumrall, 1993). For example, British girls outperform boys in French, German, and Spanish at the secondary level (GSCE, 1999).

Even if native language and foreign language aptitudes are distinct, as suggested by some researchers (e.g. Dale, Harlaar, & Plomin, 2012), if cultural beliefs suggest that L1 and L2 proficiencies are related, these beliefs might have a similar effect on interest in both reading and writing the native language and foreign language study. In other words, if students believe that native and foreign language ability are linked, they are likely to believe that female advantages in language ability will extend to foreign languages. Such a belief could become a self-fulfilling prophecy for male learners. In sum, gender differences in language ability and gender disparities in language-related study are likely to be psychologically related, whether they reflect objectively related capacities or not. Actual or perceived differences in males' and females'

language ability are likely to influence male students' beliefs about their own abilities, which in turn will influence their motivation and performance via language self-concepts and affective memories.

Interest, attitudes, and motivation.

Given these differences in ability, it is perhaps unsurprising that male students seem to have less positive attitudes about language than female students. Among a large sample of young Hungarian teens, girls reported consistently more positive foreign language attitudes than boys (Csizér & Dörnyei, 2005). In Japan, high school boys had less positive attitudes towards both knowing English and studying it in school, as well as less interest in culture and communication compared to girls (Kobayashi, 2002). Among university and secondary school students in China, female students reported more positive attitudes towards learning additional languages and greater interest in travel and culture than male students (You & Dörnyei, 2014). Flemish high school boys had less positive attitudes towards French, but not English, compared to female peers (Dewaele, 2005). Boys also appear to be less impressed by multilingualism than girls; in one study, only about a third of Australian boys agreed that multilingual people are "very intelligent," compared with over half of girls (Bernat & Lloyd, 2007). These gender differences may be moderated by experience with language learning; Canadian boys not in French immersion had less positive attitudes towards French compared to girls generally and to boys in French immersion programs (Baker & MacIntyre, 2000).

Studies focusing on students' tendencies to envision themselves in an ideal future as competent L2 or L3 users (Ideal L2/L3 self) have revealed similar results. You & Dornyei (2014) found that female students intended to put greater effort into their English studies compared to male students, and that they also endorsed stronger ideal-L2 selves and ought-L2 selves. This

finding is consistent with numerous other studies finding gender differences in ideal-L2 or ideal-L3 self favoring women and girls (Henry, 2009; Henry & Cliffordson, 2013; Kim, 2009; Kim & Kim, 2011).

Many studies suggest that boys and men tend to have poorer motivation than girls and women both in school generally and in language domains especially (e.g. see Meece, Glienke, & Burg, 2006 for a review of gender and motivation). Male students' demotivation is important because motivation is an important predictor of effort and later performance (Deci & Ryan, 2000a; Masgoret & Gardner, 2003). Gender differences in foreign language motivation are seen in terms of multiple ways of conceptualizing "motivation," including the intensity of effort put towards language learning and reasons for foreign language learning (using frameworks including Gardner's instrumental and integrative orientations and self-determination theory's intrinsic and extrinsic motivation; Coleman, Galaczi, & Astruc, 2007; Kissau, 2006; Kissau et al., 2010; Sung & Padilla, 1998). Studies conducted in numerous different countries have found that male students are less motivated than female students to learn and use foreign languages as a means to approach a target culture, or for personally important or intrinsic reasons (Abu-rabia, 1997; Bacon & Finnemann, 1992; Oxford, Park-Oh, It, & Sumrall, 1993; Yashima et al., 2009; Yashima, Nishida, & Mizumoto, 2016). Among a large sample of foreign language learners from around the world, female students reported greater interest and enjoyment in their FL classes compared to male students (Dewaele, MacIntyre, Boudreau, & Dewaele, 2016).

Some studies have found no gender differences in foreign language motivation. Among students who are already taking language classes at the university level, some studies have found no differences in intrinsic or self-determined motivation (e.g. Chaffee, Noels, & McEown, 2014), although these samples do to tend to be predominantly female, which is consistent with the fact

that men are underrepresented in foreign language study, but also limits statistical power to detect gender differences. This pattern was found in university foreign language classes in Canada, where students in most faculties are not required to study a foreign language, and even students who are subject to a foreign language requirement are free to choose which language to study. Hence these students are not forced to take a particular language. Baker and MacIntyre (2000) found gender differences in motivational orientation only among Canadian students not in French immersion programs, but not among French immersion students. Though the motivation of university students who choose to study languages may not always differ by gender, women and girls have been consistently shown to use adaptive language learning strategies more than men and boys, and to use a greater variety of these strategies (e.g. Oxford et al., 1993; Ansarin & Zeynali, 2012).

Possible Social Psychological Explanations

Little research has directly addressed the reasons that might underlie male students' disinterest in language, especially foreign language. Although some research has focused on why women are attracted to language study, these studies have had little obvious relevance to the question of why men are not. For example, Piller and Takahashi (2006) discussed Japanese women's attraction to Western men and fantasies about life abroad as major reasons for their English study, but the authors did not mention whether or how such motives might apply to men, or what different motives men might have for pursuing or avoiding English conversation classes. Other researchers have suggested that gender differences in motivation might stem from more interdependent self-construals among women (Henry & Cliffordson, 2013), or from the tendency of female students to use more visual imagery (You, Dörnyei, & Csizér, 2016). In this dissertation, I suggest some compelling possible avenues for research into men's apparent

disinterest in foreign language study. I will primarily focus on examining intersections between gender stereotypes and beliefs about foreign languages.

Gender Stereotypes and Language

Stereotypes are cultural beliefs that associate membership in certain groups with certain traits or qualities. Stereotypes can be considered cultural for several reasons. Like other forms of cultural knowledge, stereotypes are collectively held and widely known by group members (Devine, 1989). According to Devine's (1989) model of stereotyping and prejudice, regardless of a person's personal level of belief in stereotypes (or explicit stereotype), most members of a culture tend to be aware of stereotypes about different groups because these stereotypes come from common socialization experiences. Research has shown that stereotypes are embedded in and transmitted through cultural products such as mass media (e.g. Stice, Schupak-Neuberg, Shaw, & Stein, 1994), as well as through interpersonal contact, such as with teachers (e.g. Retelsdorf, Schwartz, & Asbrock, 2015). Stereotypes can also be embedded in and transmitted through organizational cultures, constraining the behavior of members within the organization (Aaltio-Marjosola, 1994). Stereotypical associations tend to be well-learned and easily activated, again regardless of whether the individual person believes the stereotype to be true or not (Devine, 1989). Below I outline several ways in which stereotypes about gender and about foreign language learning might influence men. In particular, I argue that research should investigate stereotype threat, stereotypes about the congruence of one's gender with foreign language study, antifemininity, and masculinity threat.

Internalized gender stereotypes.

Both children and adults tend to favor occupations stereotypically associated with their own gender (Weisgram, Bigler, & Liben, 2010), suggesting that individuals internalize

occupational gender stereotypes and act on them throughout life. This tendency means that stereotypes may affect men's feelings about language not just immediately via stereotype threat, but also over time in more subtle ways as the stereotypes become internalised. The stereotypes held by both teachers and students may arise partially as a function of descriptive norms that self-reinforce over time—boys do not see men going into language study or language-related careers, so they also avoid these careers, and future generations of boys continue to observe the same gender disparities in occupations. When it comes time to choose classes or university majors, "female"-typed subjects may not even be seriously considered by most male students (Eccles, 1994). Men may also avoid language domains if they feel that these are inconsistent with their gender role (Eccles et al., 1993). Correspondingly, if women internalise the same stereotype that language is feminine, they may be disproportionately attracted to foreign language study in much the same way that men are deterred (Schmenk, 2004).

Researchers studying issues related to women in STEM across 66 countries have found a negative correlation between a nation's explicit stereotypes about gender and science and the number of women enrolled in science majors and employed in science-related careers there (Miller, Eagly, & Linn, 2015). The same study revealed that greater numbers of female science majors, but not female scientists in the workforce, was associated with weaker implicit stereotypes (Miller et al., 2015). Though not providing evidence of causality, these results hint that if we can increase the number of men studying languages, this increase may reduce the stereotype that languages are for women only.

Stereotype threat.

Many studies of women in STEM have examined stereotype threat as an important mechanism through which gender stereotypes influence students' behavior. Stereotype threat

occurs when a negative stereotype about a student's group is made salient. Activating a

stereotype suggesting that the student is not expected to do well on a certain task because of their

group membership causes the student who is the target of the stereotype to feel extra pressure to

perform well on stereotype-relevant tasks. This pressure increases the student's cognitive load

and anxiety and thereby ironically undermines performance on the task, causing the student to

perform poorly (Aronson, Lustina, Good, Keough, Steele, & Brown, 1999; Steele & Aronson,

1995). In this way stereotype threat can lead to the original stereotype being confirmed. The

effect of stereotype threat has been demonstrated among women on math tests in many studies;

women tend to perform more poorly on a math test after a reminder of the "women are bad at

math" stereotype compared to both men and women not reminded of the stereotype (O'Brien &

Crandall, 2003; Spencer, Steele, & Quinn, 1999). It has been established that men can experience

stereotype threat in domains traditionally considered feminine (such as social sensitivity, Koenig

& Eagly, 2005; and relationship maintenance McGlone & Pfeister, 2014). If this is the case for

men in foreign language domains as well, stereotype threat over time might lead men to

disidentify with foreign language learning, leading to a lower sense of belonging in language and

a weaker language self-concept (Aronson et al., 1999).

The Antifemininity Mandate and Precarious Manhood

Beyond the possibility that men internalize cultural stereotypes that men either do not or

can not do language, there are factors distinct to men's experience of gender that could further

influence men's foreign language enrolment. The anti-femininity mandate represents another

way in which stereotypes might affect men and boys' language learning motivation. Bosson and

Michniewicz (2013) described the anti-femininity mandate as the most central feature of the

male gender role. The anti-femininity mandate is a prescriptive norm stating that it is important

for boys and men not to appear feminine. This norm means that if language is for girls, boys and

men might avoid it not just because of feeling that they do not belong, but in order to avoid

appearing feminine (Bosson & Michniewicz, 2013). The researchers found that men tend to rate

stereotypically feminine traits as not applying to men to a much greater extent than women do

the reverse. In other words, men believe that men are unfeminine, but women do not necessarily

view womanhood as incompatible with masculine traits.

　　　　We can see the operation of this norm in treatment of gender-nonconforming behavior.

Parents tend to encourage boys' gender-typical behaviors more than those of girls (Lytton &

Romney, 1991). Although women also tend to be sanctioned for counter-stereotypical behavior,

masculine women have still been evaluated more positively than feminine men (Levy, Taylor, &

Gelman, 1995). In various domains, including occupational preferences, women tend to express

both masculine and feminine interests, whereas men avoid endorsing feminine interests

(Weisgram, Bigler, & Liben, 2010). In the last decade, researchers have tied this tendency to

cultural concepts of "precarious manhood," or the idea that manliness (but not womanliness) is

something one can lose through unmanly behavior, such that when the tenuousness of manhood

is made salient, men more strongly reject feminine traits as incompatible with a masculine

identity (Bosson & Michniewicz, 2013; Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008).

　　　　It has been found that a combination of fear of failure (which may result partially from

stereotypes about girls being better students at the primary and secondary levels than boys) and

fear of appearing feminine leads some boys to reject academic work in general, since working

hard in school is seen as feminine, and boys are afraid of being bullied if they appear feminine

(Jackson, 2003). Boys who are concerned about appearing feminine may refuse to put effort into

schoolwork, or at least use deceptive strategies to make it appear to their peers as though they are

not working hard in school (Jackson, 2003). This phenomenon is especially evident in secondary schools, but it also occurs at universities (Jackson & Dempster, 2009). In other words, boys and young men see working hard in school as something girls do, so if these boys also feel the need to distance themselves from femininity, they will want to project the image that they do not work hard in school, either by not studying or by lying about not studying. These efforts may be especially important to male students when it comes to a domain like language learning that is stereotyped as feminine.

Consistent with the idea that male students avoid "the feminine" in terms of language study, differences in attitudes and motivation towards foreign language appear to vary according to the perceived masculinity or femininity of the language in question. British boys in grades 7-9 were more motivated to learn German than French because they saw French as being too feminine (Williams, Burden, & Lanvers, 2002). Similar results were found among Irish students, who associated German with masculine pastimes like war and soccer (Glowka, 2014). Data from the U.S. appears consistent with this possibility; German is one of the few foreign language majors that is not heavily female dominated (NCES, 2014). If foreign languages overall are perceived as feminine, then, boys and men may avoid them in much the same way that they avoid appearing to work hard in school.

Masculinity Threat

Social identity threats to men's masculinity have been shown to lead men to protect their (precarious) manhood through hyper-masculine behavior (e.g. Cohn, Seibert, & Zeichner, 2009; Maass, Cadinu, Guarnieri, & Grasselli, 2003). Masculinity threat experiments have typically used false feedback to call participants' masculinity into question by informing men that they have scored in the feminine range on tests of personality or strength. These masculinity threats

made men more likely to aggress (Cohn et al., 2009), sexually harass a female experimenter (Maas et al., 2003), and express negative attitudes towards effeminate gay men (Glick, Gangl, Gibb, Klumpner, & Weinburg, 2007). At least in cultures where antifemininity is part of the male gender role, masculinity threat also leads men to engage in actions intended to distance themselves from femininity; men whose masculinity is threatened also express decreased preferences for feminine products and decreased liking for other men who express stereotypically feminine preferences (Cheryan, Cameron, Katagiri, & Monin, 2015; Schmitt & Branscome, 2001). When threats to precarious masculinity combine with the antifemininity mandate, this complex may lead male students to avoid language learning due to its feminine image. The anti-femininity mandate may mean that language learning represents a threat to male students' masculinity.

Male students across the world are academically disadvantaged by lower reading and writing skills and lower language-related motivation than girls (e.g. Dewaele et al., 2016; Meece et al., 2006; Stoet & Geary, 2013; Voyer & Voyer, 2014). They are also not entering language-related major fields such as literature, English, or foreign language to the same extent as female students. These differences may be largely attributable to some of the same factors that affect women in STEM, such as stereotype threat and stereotype internalization, with some of the same gender biases and stereotypes that affect women also affecting men. Unique factors like antifemininity and masculinity threat may also affect male students' interest in language. Research is needed to examine how issues like stereotype threat, sense of belonging, and the anti-femininity mandate affect male language learners.

The Research Thus Far

     Prior correlational study.

A necessary step in this research is to identify what aspects of gender ideology and what aspects of language learning are correlated, and which of these differentiate learners from non-learners, especially among men. A study comparing male and female language learners to non-language learners revealed some interactions between language learner status and gender (Noels, Chaffee & Elcheson, 2018). Compared to men not studying foreign languages, men in language classes rated themselves as having less masculine personality traits, and also reported lower levels of hostile, benevolent, and ambivalent sexism, less traditional views about the role of women in society, and less endorsement of the idea that men should strive for high status and avoid feminine pursuits. On the other hand, there were few gender differences in beliefs about the nature of verbal intelligence. Though motivational orientations and the ideal self were only measured among language learners, very few gender differences emerged along these dimensions. Furthermore, greater sexism and endorsement of traditional gender roles were related to a more fixed mindset about language learning and greater amotivation. Taken together, these results suggest that men's internalization of cultural beliefs about gender may play a central role in whether they choose to study languages, but these findings should be replicated and extended to inform future avenues of exploration.

Present Studies

Exploratory questionnaire study.

The purpose of this study is to replicate and extend the findings from the original questionnaire study by Noels et al. (in preparation) by including additional measures of gender ideology, a language aptitude measure, and measuring motivational factors among all participants. This study aims to determine how specific language learning and gender variables are interrelated and how these differ between male students who choose to study foreign

languages and those who do not. This study will also explore how expectancies of success in language learning and task values for language learning relate to men's enrolment, as well as how gender beliefs might relate to expectancies and values.

Stereotype threat studies.

In my first set of experimental studies, I will examine a factor that might influence men's expectancies of success in FL. A clear starting point for experimental research into men and language learning is apparent in the phenomenon of stereotype threat, which has been well studied among women in STEM and among racial minority groups, but which is less well-established among majority-group men. To this end, I first seek to explore whether men are subject to stereotype threat on tasks related to language, especially foreign language learning. If we manipulate some aspect of students' gendered beliefs, can we change their attitudes towards language learning or their language performance? I hypothesize that there is a causal link such that gender stereotypes and gender beliefs cause changes in language learning interest and performance. One way in which this process seems likely to occur is via stereotype threat. If this is in fact the case, these studies will help to explain how gendered stereotypes influence men's language achievement and expectancies of success.

Masculinity threat study.

My final study will examine a way in which gender stereotypes might cause men to devalue language learning. Under stereotype threat, men may worry about confirming a negative stereotype, and this anxiety may undermine their performance and sense of belonging. However, because of the antifemininity mandate, men might also worry about appearing feminine if they show interest in a feminine domain such as foreign language. These two types of threat should operate independently to affect language learning. In the final study of my dissertation, I

hypothesize that men whose masculinity is threatened will disavow interest in language learning. Masculinity threat may or may not also lead men to perform worse on language aptitude tasks in order to further distance themselves from feminine abilities.

Chapter 2: Exploratory Correlational Study

Programs in the humanities, including foreign languages (FLs), are being down-sized or cut at many universities (e.g. Flaherty 2018a), but the soft skills acquired through education in the humanities are actually highly valued by employers, including STEM-sector companies such as Google (Strauss, 2017). Foreign languages in particular have increasingly been made optional in university degree programs, and have seen declines in enrolment (Flaherty, 2018b) despite the many benefits of language skills and worldwide opportunities for employment as language teachers (Swanson & Mason, 2018). Men may be particularly disadvantaged by this disconnect between the utility of foreign language learning on the job market and its lack of emphasis in university study. Across the Anglosphere, boys disproportionately discontinue foreign language learning once FL study becomes optional (Jo Carr & Pauwels, 2006). This tendency leaves advanced foreign-language study and foreign-language university majors female dominated. The reasons why men are disproportionately affected by an institutional de-emphasis on FL study, however, are poorly understood.

The few studies to date that have focused on men or boys and language education have not focused on enrolment in formal FL study. Instead, studies have focused on scholastic achievement rather than course enrolment, and these usually address either achievement in the native language (e.g. Ehrtmann & Wolter, 2018; Stoet & Geary, 2013), or achievement in FL and native language classes collapsed together (Voyer & Voyer, 2014a); only a few have focused on FL achievement specifically (Glowka, 2014; Oxford et al., 1993). A few studies have documented male students' comparatively poor motivation in native language (Meece et al., 2006) and FL domains (Kissau et al., 2010; Kobayashi, 2002), although some studies have shown no motivational differences between male and female FL learners at the university level (Chaffee, Noels, & McEown, 2014). In these studies, "motivation" has been framed both in

terms of the types of reasons students have for learning, as well as in terms of the strength of students' desire for learning. To the best of my knowledge, however, no studies have focused on predicting men's enrolment in FL courses.

To fill this gap, I propose that Expectancy-Value Theory (EVT) provides a useful framework to begin thinking about how men choose their elective courses, university majors, and careers (Eccles, 1994, 2011). This theory has been applied extensively to questions of gender and educational and occupational outcomes in past research of women in STEM (e.g. Guo, Marsh, Parker, Morin, & Dicke, 2017; Watt et al., 2012). According to this model, people's choices are influenced most directly by the individual's expectancies for the task, that is, their expectations of being able to do a task well or successfully, and the individual's personal assessment of the task's worth to him/herself (i.e., the subjective value of the task). Expectancy-value theorists argue that expectancies are very closely related to self-perceived ability or self-efficacy (Wigfield & Eccles, 2002).

Task values include perceptions of intrinsic value in the task, perceptions of the usefulness of the task, and the importance of what will be attained from the task, as well as the costs associated with pursuing the task (Wigfield & Eccles, 2002). In terms of language learning, this definition means that task values might include intrinsic interest in foreign languages and the target language specifically, beliefs about the importance of bilingualism, as well as perceptions of the value of FL to one's personal future plans. This formulation (without the aspect of costs) is similar to constructs central to some other motivational theories, most notably self-determination theory's (SDT) notion of intrinsic interest and identified regulation. Wigfield and Eccles (2002) point out that although EVT and SDT come from different philosophical roots and represent distinct theoretical traditions, there is substantial conceptual overlap between task value and

subtypes of intrinsic and extrinsic motivation as described by Deci and Ryan (e.g. Deci & Ryan, 2000; Ryan & Deci, 2017). Similar to SDT, EVT's values and expectancies are predicted by goals, self-concepts, affective factors, aptitudes, cultural factors, the opinions of parents and teachers, relevant experiences, etc. Understanding similarities between these two theoretical models is helpful because SDT has been used extensively in foreign language learning research, but it does not itself address questions of how educational decisions are made, as EVT does. Thus the EVT model can help us to shape exploratory research into men's relative absence from humanities subjects such as FL.

According to EVT, expectancies based on self-efficacy and competence beliefs should be the best predictor of achievement outcomes, while task value should best predict outcomes like enrollment (Plante, De la Sablonnière, Aronson, & Théorêt, 2013). Though gender gaps in both language achievement and enrolment have been observed (Carr & Pauwels, 2006; Stoet & Geary, 2013; Voyer & Voyer, 2014), in the present research, I focus on the latter set of outcomes. Enrolment (rather than achievement) should be a first and important line of investigation because men cannot be expected to achieve high levels of foreign language proficiency or good grades in foreign language classes without first enrolling in those classes. As such, men's task values for language learning are expected to be important for predicting which students are in language classes and which are not. The degree to which men value language for internalised, self-determined reasons as opposed to external, pressured ones is thus expected to be a strong proximal, or direct and immediate, predictor of FL class enrolment.

The Relation between Language Stereotypes and Language Study

EVT specifies that cultural gender stereotypes are one factor that can guide individuals' educational and career choices, often by shaping how much they value achievement in a target

domain as well as how likely they think they are to be able to succeed in that domain. This shaping may happen in several different ways. For instance, past research has tied gender beliefs and gendered stereotypes that boys are not as good at language as girls to language self-concept (Retelsdorf et al., 2015), and beliefs about the masculinity or femininity of certain FLs to interest in those FLs (Glowka, 2014). Plante and colleagues (2013) used a path model based on EVT and found that boys' beliefs about their competence in language arts, their task values for language arts study, and their school performance were all predicted by their gendered stereotypes about math and language ability, and boys' intentions to work in language-related fields were indirectly predicted by gender stereotypes—boys' gender stereotypes predicted their valuing of language arts as useful, and valuing language arts predicted intention to work in language-related fields.

There are several additional gender-related constructs and beliefs that might be relevant beyond stereotypes about men's and boys' abilities or about the gendered qualities of languages themselves. The first of these is gender identification, which describes the degree to which an individual considers their gender a central part of their identity. Glick, Wilkerson, and Cuffe (2015) found that men's gender identification was related to positive attitudes towards people fulfilling traditional gender roles, but it was unrelated to negative attitudes towards non-traditional gender roles like "stay-at-home dad." Noels, Chaffee, and Elcheson (in preparation) found that gender identification was not related to FL enrolment. If we consider "FL learner" a non-traditional role for men (as suggested by findings presented later; Chapter 3; Chaffee, Lou, & Noels, 2018), the Noels et al. finding is consistent with the findings of Glick and colleagues. Hence, gender identification would not seem to be a consistent predictor of attitudes and enrolment in (foreign) language study.

Gender ideologies and sexist beliefs, which have more to do with beliefs about the content of masculinity and femininity and the roles of men and women in society, rather than relating to the importance of one's personal gender identity or stereotypes about characteristics of men and women, should also be considered in research about men in FL. Gender ideologies are prescriptive beliefs about what men's and women's social roles should entail—how a proper man or a proper woman ought to behave. These types of gender beliefs have been linked to students' educational and occupational choices such that individuals with more traditional gender ideologies tend to choose or express interest in traditionally gender-typed educational subjects and vocations (Sinclair & Carlsson, 2013; Tokar & Jome, 1998; van der Vleuten, Jaspers, Maas, & van der Lippe, 2016). Sexist beliefs are closely associated with traditional gender ideologies (Glick et al., 2015), and consist of stereotypical views of women that may include hostile attitudes, superficially positive paternalistic attitudes, and denials of women's continued disadvantage in society, all of which serve to perpetuate a status quo where women are disadvantaged (Glick & Fiske, 1996; Swim, Aikin, Hall, & Hunter, 1995). These types of beliefs may also be relevant to the issue of men in language study; for instance, Ehrtmann and Wolter (2018) found that boys who agreed with gender egalitarian, anti-sexist statements (e.g. "Girls should be able to learn the same professions as boys") experienced more growth in L1 reading competence across fifth through seventh grades than boys with less egalitarian gender role beliefs.

A study comparing male and female language learners to non-language learners revealed some interactions of language learner status and gender (Noels, Chaffee & Elcheson, in preparation). Few gender differences emerged between male and female FL learners or between female learners and non-learners, but compared to men enrolled in FL courses and women, men

not studying a FL rated themselves as having more masculine personality traits, and also

reported higher levels of hostile, benevolent, and ambivalent sexism, more traditional views

about the role of women in society, and more strongly endorsed the idea that men should strive

for high status and avoid feminine pursuits. In other words, men who were not enrolled in a

language course tended to be less progressive in their gender beliefs. On the other hand, that

study revealed no gender differences in beliefs about the nature of verbal intelligence. Because it

measured the strength of the ideal L2 self and reasons for language learning, or task values, only

among students who were learning a language, this study could not address how motivational

factors relate to gender beliefs across all students, or whether gender beliefs might influence

enrolment decisions through motivational factors. Taken together, these results suggested that

men's internalization of cultural beliefs about gender may play a central role in whether they

choose to study languages.

In terms of expectancy-value theory, research should explore whether these gender

beliefs influence men's foreign language enrolment decisions through expectancies, values, or

both. Gendered stereotypes that men lack competence in language domains could hurt men's

expectancies of success in those domains, thereby leading them not to enroll. On the other hand,

values are expected to be the stronger predictor of such decisions (Eccles, 2005), and stereotypes

that FL is not masculine, or not something men should pursue, could influence FL task values. It

is possible that the value men place on FL, but not men's expectancies of FL success, are the

important factor predicting their disengagement. Another possibility is that since expectancies

are expected to be the strongest predictor of achievement outcomes, it could be that competence

stereotypes hurt men's performance, while gender role norms hurt their likelihood to enrol.

Objectives of the Present Study

The purpose of this study is, first, to replicate and extend the findings from Noels et al.'s (2018) survey, which indicated that men who were enrolled in language courses differed from men who were not across several gender- and language-related variables. More specifically, this study examines how specific language learning and gender variables differ between male university students who choose to study languages and those who do not, and how these factors interrelate. This study extends the prior study by adding measures of expected ability to succeed in foreign language courses, and language aptitude tests as a more objective measure of this ability. These measures enable us to investigate whether men who choose not to study FLs might be deterred by low aptitude in that domain.

The present study also extends Noels et al. (in preparation) by measuring reasons for language learning (self-determined and controlled motivation) not only among language learners, but also among non-learners. If we consider FL class enrolment as chosen, it may seem obvious that men not studying FL must be less motivated to study FL (by which I mean that they should see few worthwhile reasons for FL learning and value FL learning less) than men who have chosen to take FL classes. However, by measuring reasons for language learning among both learners and non-learners, I can examine how men's task values for FL are associated with other variables such as gender beliefs.

Finally, I also seek to extend our understanding of men's participation or non-participation in FL learning by applying an EVT-based model to explore how expectancies, task values, and gender beliefs might predict FL enrolment, and how aptitude and gender beliefs might predict expectancies and values. I plan to conceptually replicate the findings of Plante et al. (2013) regarding boys and L1 study, and extend them to men's participation in FL study.

Research Question 1: How do men enrolled in FL study differ from men not enrolled in FL study in their language-related beliefs and language aptitude? How do they differ in the endorsement of gender beliefs?

Research Question 2: How do gender and language variables interrelate?

Research Question 3: Do gender and language variables together predict men's language class enrolment in accordance with the predictions of EVT?

The model. In addition to examining bivariate correlations among gender and language variables and course enrollment (RQ2), I will test a path model in order to simultaneously account for multiple predictors. Figure 1 is adapted from the model tested by Plante et al. (2013). The full EVT model specifies many complex interrelations among constructs including interrelations between expectancies and values in addition to paths from expectancies and values to enrolment and from cultural stereotypes and aptitudes to expectancies and values (Eccles, 2011). Following Plante et al.'s (2013) model, gender beliefs are expected to influence expectancies and values, with a significant indirect effect from gender beliefs to FL enrolment via task values, and expectancies and values should be positively correlated. My model differs from Plante's model in that I have no measure of language achievement. Instead, I consider language aptitude as a predictor for expectancies and values, paralleling gender beliefs but with an indirect effect via expectancies.
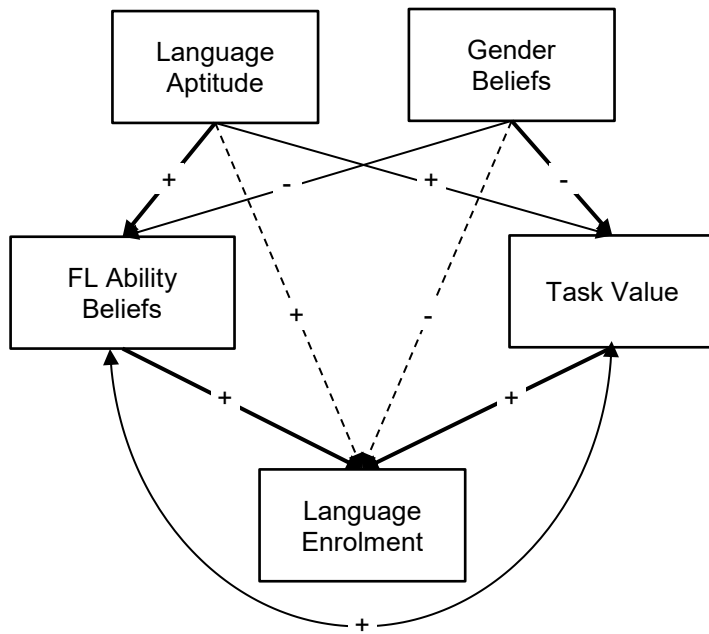
Figure 1. Hypothesized Model. Hypothesized statistically significant paths are represented by solid lines; paths expected to be nonsignificant paths are represented by dotted lines. Expected indirect effects are represented by bolded lines.

Measurement strategy. Following Plante et al. (2013), expectancies of success in language learning will be measured in terms of participants' beliefs that they have the ability to succeed at FL learning. Participants' task values will be operationalized in terms of the extent to which they have personally meaningful and important reasons to value language learning. We know from self-determination theory that not all reasons for valuing a task are equally motivating; reasons for language learning that are perceived as external pressures rather than as internalized and personally important may actually undermine motivation. For this reason, I will be using SDT's relative autonomy index (RAI) as a measure of task value in order to capture intrinsic interest, personally important utility values, and reasons that may undermine personal valuing of FL in a single index. These expectancies and values will in turn be predicted by participants' gender beliefs and language aptitude. It is expected that aptitude will most strongly predict expectancy and gender beliefs will be more predictive of task value.

In assessing autonomous motivation for FL learning, one important constraint is in the circumstances of FL learning—specifically, whether FL courses are voluntarily chosen or required by the program or the school. At the time of data collection, some faculties at the university where this study was conducted had degree requirements making FL study mandatory. Most faculties, however, did not have such requirements. I expect that students with a strong desire to avoid FL study would not enrol in faculties with FL requirements. On the other hand, students who prioritize FL learning can be expected to find a way to study FL regardless of faculty affiliation, meaning that despite the existence of these requirements, I expect that FL class enrolment in a given semester is largely based on personal choice. The possibility that some students might be studying FL because of a program requirement highlights another advantage to using the RAI as a measure of task value rather than using only self-determined motivational regulations; because the RAI accounts for the motivations stemming from feelings of external control that may be engendered by FL requirements, it accounts for one major way in which students may be influenced by faculty FL requirements.

Method

Participants and Procedure

Men enrolled at a western Canadian university, including 95 men enrolled in foreign or second language classes and 257 men not engaged in language study (total $N= 352$), completed a computerized self-report questionnaire and language aptitude tests. Most participants were recruited through introductory psychology classes in exchange for partial course credit, but 23 men were recruited through advertising in foreign language classrooms. These participants were offered a $5 Starbucks gift card if they participated in the language aptitude tasks. Participants ranged in age from 17 years to 59 years old, with a mean age of 19.74 ($SD = 3.19$).

Of those who answered a question about ethnicity (45 participants provided no information), 39.41% reported European ethnicity, 28.99% East Asian, 14.33% South Asian, and the rest reported other ethnicities. A majority (*n*=202) reported that English was their only native language, 37 reported being raised bilingual in English and another language, and 86 reported native languages other than English. Chi-squared analyses showed that FL learners and non-learners did not differ significantly in their distribution of native language or ethnicity.

Most participants were enrolled in either the Faculty of Arts (*n*=123), which had a FL requirement, or the Faculty of Science (*n*=137), which does not require FL. The proportions of students in each faculty differed across groups, with a larger percentage of FL learners enrolled in the Faculty of Arts (63.22% of learners vs. 28.10% of non-learners) and a higher proportion of non-learners in the Faculty of Science (49.59% non-learners vs. 19.54% learners). This finding is unsurprising given that FL is considered an arts subject.

Materials

The order of the language aptitude tasks and questionnaire was counterbalanced, and the order of scales within the questionnaire were randomized.

Language measures.

Language aptitude tasks. The language aptitude test consisted of four different subtests created by Meara (2005). The tests required participants to learn a novel language that is native-language-neutral. The first subtest measures the ability to learn novel grammar (LLAMA B), the second measures grammatical reasoning (LLAMA F), the third involves sound-symbol correspondence (LLAMA E), and the fourth measures auditory word recognition (LLAMA D).

Language Learning Orientations Scale. Participants rated reasons for learning a foreign language on a 7-point rating scale (1 = does not correspond; 7 = corresponds exactly) using the

language learning orientations scale (LLOS), adapted from Noels, Pelletier, Clement, and

Vallerand (2000). Participants enrolled in language classes were asked to rate how well each

reason corresponded to their own reasons for being in a language class, while those not in

language classes were asked to rate reasons why they would consider learning a language.

External regulation was measured using two items (e.g. "in order to have a better salary later

on"), introjected using three (e.g., "because I have the impression that it is expected of me.",

identified using four (e.g., "because I think it is good for my personal development."), and

intrinsic using five items (e.g., "for the pleasure I (would) experience as I get to know another

language better."). Cronbach alpha indices for the subscales ranged from α= .78 to α= .93. The

Relative Autonomy Index (RAI) was calculated by adding the weighted means of each

orientation (intrinsic*2 + identified*1 + introjected*-1 + external*-2; Grolnick & Ryan, 1987).

Language Mindsets Inventory (LMI). Participants completed the LMI, developed by Lou

and Noels (2016), as a measure of their beliefs about the nature of language intelligence. The

scale includes subscales for an incremental mindset of language intelligence (9 items; e.g.

"People can always substantially change their language intelligence;" α= .91) and a subscale for

a fixed mindset (9 items; "To be honest, people can't really change their language intelligence;"

α= .82). The overall scale combines the fixed subscale with the reverse-scored incremental

mindset into a single index (α=.91).

Can-do list. Participants rated their self-perceived competence in a previously/currently

studied FL on 26 items from Clark's (1981) can-do list (e.g. "count to 10," "understand movies

without subtitles;" α=.98). Each item was measured using a 4-point scale ranging from 1

(always) to 4 (rarely or never).

   Ideal L2 Self. Participants responded to 10 items measuring their Ideal L2 Self (Dörnyei, 2010; e.g. "I can imagine myself speaking another language as if I was a native speaker"; α=.95). Participants responded along a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

   Willingness to communicate. Willingness to communicate consisted of 20 items (including 8 unanalyzed filler items) from McCroskey (1992). Participants were asked to indicate the percentage of the time they would be willing to communicate in a foreign or second language. Examples of the items include "Talk with a physician" and "talk with a stranger while standing in line." Cronbach's alphas ranged from .84 with friends to .96 with acquaintances, with an overall reliability of .95.

   Integrative orientation. The integrative orientation was assessed using 4 items from the Attitude Motivation Test Battery (AMTB; Gardner, 2010; α= .94; "Studying [language] will be important for me because it will allow me to meet and converse with more and varied people"). The items were measured using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree).

   Language use anxiety. Anxiety in using another language was measured using 26 items adapted from Gardner's (2010) AMTB. Participants rated statements about their comfort speaking either the language they were currently studying, or the language they had studied longest, on a scale from 1 (strongly disagree) to 5 (strongly agree; α= .92; e.g. "I feel uneasy whenever I speak [the target language]").

   Language and gender identification. The importance of language learning to participants' sense of identity was measured using 4 items adapted from Luhtanen and Crocker's identity subscale (1992; e. g. "Learning [language] is an important reflection of who I am;"

α=.89). The items were rated on a scale from 1 (strongly disagree) to 7 (strongly agree). The

same items also measured participants' identification with their gender ("Being a man/woman is

an important reflection of who I am;" α=.69).

Gender measures.

Male Role Norms Scale. Thompson and Pleck's (1986; MRNS) scale was used to

measure participants' masculinity ideology. The scale included three subscales: Eleven items

measured status norms (α= .85; "Success in his work has to be man's central goal in this life"),

eight measured toughness norms (α= .77; "A man should never back down in the face of

trouble"), and seven items measured anti-femininity norms (α= .83; "It is a bit embarrassing for a

man to have a job that is usually filled by a woman"). The overall Cronbach's alpha across all

items was .91. Participants rated the 26 items using a 7-point scale ranging from 1 (strongly

disagree) to 7 (strongly agree).

Femininity Ideology. The femininity ideology scale consisted of 45 items developed by

Levant, Richmond, Cook, House, and Aupont (2007). Participants rated how much they agreed

or disagreed with the statement on traditional female roles in society. The items were measured

using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Eleven

items measured stereotypic image and activities (α=.86; "It is more appropriate for a female to be

a teacher than a principal"), ten measured dependence/deference α= .87; "Women should have

men make decisions for them"), nine measured purity (α= .76; an example is "A woman should

not swear"), seven measured caretaking (α= .86; "A woman's natural role should be the

caregiver of the family"), and eight measured emotionality (α= .84; "It is expected that a woman

will be viewed as overly emotional"; overall α=.95 for all items).

Old Fashioned Sexism and Modern Sexism. Old fashioned sexism and modern sexism

consisted of 13 items that are based on Swim, Aikin, Hall, and Hunter's (1995) study.

Participants rated how much they agreed or disagreed with the statements on sexist attitudes. The

items were measured using a 7-point Likert scale ranging from 1 (strongly disagree) to 7

(strongly agree). Old fashioned sexism and modern sexism are made up of two subscales

including five old fashioned sexism ("Women generally are not as smart as men;" α=.77) and

eight modern sexism ("It is easy to understand the anger of women's groups;" α=.83) items.

Ambivalent Sexism Inventory. Ambivalent sexism inventory consisted of 22 items from

Glick and Fiske (1996). Participants rated how much they agreed or disagreed with statements on

men and women's attitudes in different scenarios. The items were measured using a 6-point scale

ranging from 1 (disagree strongly) to 6 (agree strongly). The ambivalent sexism inventory is

made up eleven hostile sexism items (α=.88; "Women seek to gain power by getting control over

men") and eleven benevolent sexism items (α=.85; "Women should be cherished and protected

by men"). Overall α= .89.

Precarious Masculinity. Precarious masculinity beliefs were measured using 13 items

adapted from Vandello and colleagues (J. A. Vandello, Bosson, Cohen, Burnaford, & Weaver,

2008). Examples include, "It is a rocky road from boy to man" and "A man must continually

prove his honor." Participants rated their agreements to the statements using a 7-point Likert

scale ranging from 1 (not at all true) to 7 (very true). The Cronbach's alpha across all the items

was .92.

Gender essentialism. Coleman and Hong's (2008) gender lay theories scale was used to

measure beliefs that gender is fixed, essential, and biological (e. g. "When men and women

differ in some way, it is likely that the difference is due to biological factors," 5 items; α=.75) or

socially constructed (e. g. "If social situations change, the characteristics we attribute to gender categories will change as well," 5 items; α=.74; overall α=..81). These items were rated on a 6-point scale from strongly disagree (1) to strongly agree (6).

Results

Analysis Plan

I will begin with exploratory analyses to replicate Noels at al.'s (in preparation) findings regarding how male FL learners and non-FL learners differ from one another (RQ1) and how students' beliefs about gender and beliefs about language interrelate (RQ2). First, one-way analysis of variance will be used to assess mean differences between FL learners and non-learners on language-related variables and gender-related variables in order to RQ1. Bivariate correlations between the other language variables and gender variable will be computed to answer RQ2. These correlations will also be used to indicate what aspect of gender beliefs should be incorporated into the hypothesized EVT model. To examine how the gender variables and language and motivational variables relate to one another, correlations among the gender variables and among the language variables will also be computed.

I then will examine how gender beliefs and language aptitude predict expectancies and values for FL, and how expectancies and values in turn predict FL enrolment to answer RQ3. In this analysis, the hypothesized path model will be tested using MPlus Version 8 (Muthen & Muthen, 2017; see Figure 1). Nonsignificant paths will be trimmed to create a more parsimonious final model.

Because of the complexity of the initial model relative to the sample size, the model for RQ3 will be tested using path analysis of observed variables instead of a structural equation model estimating latent variables and error variances. Kline (2011) recommends a sample size of at least 10 times the number of parameters being estimated in the model, and the initial SEM

model would violate this recommendation for our sample. Hence, path modeling is the more

appropriate analytic strategy.

Research Question 1: Differences between FL learners and non-learners

Table 1. Results of one-way analyses of variance comparing men enrolled in foreign language classes to men not enrolled in foreign language study on language-related variables.

	Learner		Non-Learner					
	Mean	SD	Mean	SD	F	df	p	η^2
FL Career Interest	2.30	1.11	1.54	0.75	44.58	(1, 297)	.000	0.13
FL Class Interest	1.92	1.16	1.54	0.76	10.70	(1, 298)	.001	0.04
Perceived FL Ability	2.92	1.42	2.01	1.19	29.14	(1, 297)	.000	0.09
FL Identification	3.79	0.95	3.11	0.07	20.85	(1, 284)	.000	0.07
STEM Career Interest	1.68	0.77	2.30	0.90	28.18	(1, 297)	.000	0.09
STEM Class Interest	1.79	0.91	2.68	1.06	41.38	(1, 302)	.000	0.12
Perceived STEM Ability	2.92	1.60	3.93	1.77	18.67	(1, 296)	.000	0.06
Willingness to Communicate	30.60	29.02	21.90	29.32	4.78	(1, 294)	.030	0.02
RAI	4.93	5.37	1.81	5.39	18.59	(1, 299)	.000	0.06
Ideal Self	5.31	1.30	3.98	1.70	38.97	(1, 301)	.000	0.12
Integrative Orientation	5.27	1.41	4.28	1.96	16.31	(1, 301)	.000	0.05
Language Mindset	2.59	0.84	2.81	0.71	6.16	(1, 340)	.014	0.02
Fixed Mindset	2.87	0.83	3.01	0.76	2.39	(1, 339)	.123	0.01
Growth Mindset	4.69	0.98	4.39	0.83	8.11	(1, 340)	.005	0.02
Can-Do	2.12	0.69	2.17	0.91	0.19	(1, 341)	.664	0.00
Language Aptitude	54.63	14.70	52.79	17.24	0.58	(1, 279)	.448	0.00
Language Use Anxiety	3.00	0.59	3.18	0.88	2.72	(1, 304)	.100	0.01

The results of one-way analyses of variance revealed significant differences between

language learners and non-learners on many motivational and gender-related variables (see Table

1). Men in language courses reported more self-determined motivation towards language

learning, a stronger ideal L2 self, a stronger integrative orientation, greater willingness to

communicate in another language, and a more incremental language mindset than men not in FL

courses. Though both groups rated themselves below the midpoint on interest in both language

and STEM-related majors and jobs, men not in language classes were less interested in writing

and in English and foreign language related majors and careers but more interested in STEM

majors and STEM-related jobs compared to men enrolled in language courses. Non-FL-learners

also thought they had less ability to succeed in foreign language learning, but greater ability to

succeed in STEM subjects compared to FL learners. The two groups did not differ on language

aptitude, self-perceived competence on the can-do list, language use anxiety, nor their

endorsement of a fixed mindset.[1] Most of the significant effects were medium to large in effect

size.

Table 2. Results of one-way analysis of variance comparing men enrolled in foreign language
classes to men not enrolled in foreign language study on gender-related variables.

	Learner		Non-Learner					
	Mean	SD	Mean	SD	F	df	p	η^2
Gender Identification	5.27	1.90	5.51	1.80	1.06	(1, 325)	.305	0.00
Femininity Ideology	2.02	0.59	2.14	0.54	2.84	(1, 330)	.093	0.01
Masculinity Ideology	3.35	1.02	3.64	0.94	6.22	(1, 336)	.013	0.02
Gender Essentialism	3.41	0.96	3.55	0.84	1.81	(1, 339)	.180	0.01
Precarious Masculinity Beliefs	3.92	1.43	4.19	1.30	2.56	(1, 321)	.110	0.01
Hostile Sexism	2.25	0.94	2.52	0.85	5.96	(1, 304)	.015	0.02
Benevolent Sexism	2.23	0.93	2.46	0.86	4.26	(1, 321)	.040	0.01
Modern Sexism	3.25	1.17	3.57	1.01	5.85	(1, 323)	.016	0.02
Old-Fashioned Sexism	2.28	1.17	2.20	0.95	0.33	(1, 323)	.564	0.00

The results of comparisons across groups also showed that, although neither group agreed

strongly with traditional ideologies or sexist statements (i.e., the means for both groups were

---

[1] Controlling for whether the student is enrolled in a faculty with a FL requirement does not meaningfully change
the significance level of any of these differences

below the midpoint of the scale), men enrolled in FL courses expressed significantly less

benevolent, hostile, and modern sexism than non-learners, as well as more traditional

masculinity ideologies (Table 2).[2] Beliefs in precarious masculinity, gender essentialism,

centrality of gender to identity, femininity ideology, and old-fashioned sexism did not differ

across the two groups of men.

Research Question 2: Are Motivational Differences Related to Gender Beliefs?

Correlations among language and motivational variables. I examined the interrelations

among the conceptually related sets of variables (See Table 4 for intercorrelations among the

language variables and the STEM variables, and Table 5 for intercorrelations among the gender

related variables). The language variables tended to intercorrelate in the expected directions. In

general, interest in STEM subjects and careers related negatively to the RAI, suggesting that

students more interested in STEM also tend not to personally value FL learning.

The interrelations among the gender variables also tended to be significant in the expected

directions (Table 5). However, language aptitude was unrelated to either of the subjective

measures of language ability—the can-do list, measuring students' self-perceived acquired

proficiency in a FL, or self-rated ability to learn FLs in the future. Instead, its only significant

relation was a positive correlation with the RAI.

Correlations among gender variables. Intercorrelations among the gender variables

tended to be moderately strong and positive. The exception to this trend was gender

identification, which was positively correlated with most other gender variables, but its

correlations were substantially weaker than the intercorrelations among ideology, essentialism,

---

[2] No.changes in statistical significance result when controlling for whether the student is required to take FL for their degree.

and sexism. These relatively weak relations suggest that the strength and centrality of men's

gender identity is not necessarily closely related to the content of that identity in terms of

prescriptive beliefs about gender roles or sexist beliefs.

Correlations between language and gender variables. To evaluate the links between the

studied variables, I examined correlations between gender beliefs and language variables.

Willingness to communicate, ideal L2 self, and the integrative orientation were unrelated to the

gender variables. The RAI was negatively correlated with all but gender essentialism (see Table

3), with the strongest relation being with masculinity ideology. Masculinity ideology also

correlated positively with interest in STEM careers and majors and self-perceived STEM ability,

and negatively with FL ability and career interest, but not interest in FL majors. Hostile and

benevolent sexism showed the same pattern, as did modern sexism with the further addition of a

negative correlation with interest in FL majors.

Gender essentialism was not strongly related to language mindset: having a fixed language

mindset was related to greater gender essentialism, but the association was small. An incremental

language mindset was unrelated to beliefs about gender differences as biological or socially

constructed (Table 3).[3]

Table 3. Correlations between gender-related and language-related variables.

	Gender Ident.	FIS	MRNS	Gender Ess.	Precar. Masc.	Hostile Sexism	Benev. Sexism	Modern Sexism	Old-Fash. Sexism
FL Career Interest	.00	-.12*	-.15*	-.17**	-.03	-.12*	-.14*	-.16**	.00
FL Class Interest	.09	.03	.00	-.11	.07	-.03	.04	-.12*	.03
FL Identification	-.01	.01	-.03	-.09	.07	.03	-.02	-.08	.05

[3] A few relationships flip statistical significance when controlling for enrolment in a faculty that requires FL. The magnitude of these changes is small and the overall pattern of results remains the same. These partial correlations are reported in Appendix A.

FL Ability	-.04	-.09	-.13*	-.15**	-.06	-.13*	-.11	-.21**	-.04
Can-Do	-.17**	.02	-.04	.00	.01	.03	-.01	.06	.00
STEM Career Interest	-.04	.20**	.26**	.12*	.11	.18**	.17**	.25**	.18**
STEM Class Interest	-.04	.19**	.25**	.19**	.15**	.21**	.23**	.23**	.17**
STEM Ability	.00	.22**	.25**	.22**	.11	.19**	.17**	.25**	.15**
Language Aptitude	.08	-.01	-.14*	.08	.00	-.13*	-.11	-.02	-.14*
Language Use Anxiety	.15*	-.09	-.01	-.03	-.02	-.02	-.06	-.08	-.05
Willingness to Communicate	-.15*	.04	-.02	.01	.07	.05	.08	.09	.11
RAI	-.13*	-.15**	-.28**	-.08	-.13*	-.26**	-.16**	-.14*	-.20**
Ideal Self	-.03	.01	-.05	-.01	.02	-.01	.00	-.09	.06
Integrative Orientation	-.08	-.05	-.06	-.08	.05	-.05	.00	-.06	-.04
Fixed Mindset	.02	.23**	.22**	.14**	.16**	.24**	.21**	.15**	.27**
Growth Mindset	-.01	-.14*	-.04	.00	.01	-.10	-.02	-.06	-.22**

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Correlations among language-related and motivational variables.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. FL Career Interest	.54**	.39**	-.02	-.12*	-.19**	.19**	.06	-.19**	.23**	.20**	.39**	.37**	.04	.13*
2. FL Class Interest	--	.45**	.04	.06	-.06	.22**	.08	-.25**	.22**	.19**	.35**	.34**	.02	.06
3. FL Ability		--	-.03	-.05	.04	.34**	.11	-.36**	.23**	.22**	.50**	.40**	-.20**	.18**
4. STEM Career Interest			--	.69**	.60**	.14*	.01	-.03	.05	-.18**	-.04	.03	.11	.01
5. STEM Class Interest				--	.70**	.11	.07	.01	.03	-.15*	-.05	.00	.10	.01
6. STEM Ability					--	.12*	.08	-.09	.02	-.10	.02	.02	.03	.03
7. Can-Do						--	.01	-.78**	.55**	.04	.44**	.44**	-.10	.09
8. Language Aptitude							--	-.04	-.02	.30**	.11	.12	.03	-.10
9. Language Use Anxiety								--	-.59**	-.13*	-.53**	-.48**	.12*	-.11
10. Willingness to Communicate									--	.16*	.45**	.38**	-.02	.13
11. RAI										--	.33**	.30**	-.18**	.16**
12. Ideal Self											--	.70**	-.16*	.24**
13. Integrative Orientation												--	-.07	.16**
14. Fixed Mindset													--	-.64**

15. Growth
Mindset   --

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5. Correlations among gender variables.

	2	3	4	5	6	7	8	9
Gender Identification	.24**	.24**	.18**	.14*	.18**	.18**	.07	.14*
Femininity Ideology	--	.64**	.35**	.33**	.55**	.49**	.41**	.59**
Masculinity Ideology		--	.41**	.51**	.60*	.54**	.41**	.50**
Gender Essentialism			--	.27**	.46**	.36**	.46**	.26**
Precarious Masculinity Beliefs				--	.47**	.43**	.18**	.16**
Hostile Sexism					--	.46**	.53**	.42**
Benevolent Sexism						--	.26**	.24**
Modern Sexism							--	.39**
Old-Fashioned Sexism								--

Language aptitude was negatively related to both masculinity ideology and the more

antagonistic forms of sexism (hostile and old-fashioned). Self-perceived foreign language ability

showed a similar pattern, with an additional negative correlation with gender essentialism. On

the other hand, proficiency in a previously studied language, as measured by the can-do list, was

unrelated to gender beliefs except for gender identification.

Research Question 4: Testing Expectancy-Value Theory

Path Modeling. The hypothesized path model (Figure 1) was tested using MPlus version

8, with 5,000 bootstraps specified for testing the indirect effects. Because language class

enrolment is a dichotomous variable, the model was computed using probit regression with

weighted least squares mean and variance adjusted (WLSMV) estimator. Probit and logistic

regression methods are commonly used to test models in which one dichotomous outcome is

more common than the other (e.g. Boyraz, Horne, Owens, & Armstrong, 2013; Hammen, Hazel,

Brennan, & Najman, 2012). The RAI was used to represent task values, and masculinity

ideology (as measured by the MRNS) was used to represent gender beliefs, both because of

theoretical links between gender ideology and educational choice (Tokar & Jome, 1998; van der

Vleuten et al., 2016), and because of the association between masculinity ideology and

autonomous motivation demonstrated in the correlational analyses. As previously discussed, self-

perceived ability to succeed in FL study was used to represent expectancies. The initial model fit

well (see Table 6). Nonsignificant paths were trimmed, resulting in a final model which also

demonstrated good fit, which was retained.

Bootstrapping revealed a significant indirect effect from MRNS to language class

enrolment via the RAI (5000 bootstraps; β=-0.07, p=.017, 95% CI [-.13, -.03]), but no significant

indirect effect via perceived ability. Consistent with the correlational analyses, language aptitude

predicted task values but not self-perceived ability.

Table 6. Model fit indices for the initial and final path models.

	χ^2	df	p	RMSEA	CFI	R^2 Enrol.
Initial Model	0.70	2	.70	.00	1.00	0.20
Final Model	4.93	4	.29	.03	.99	0.20
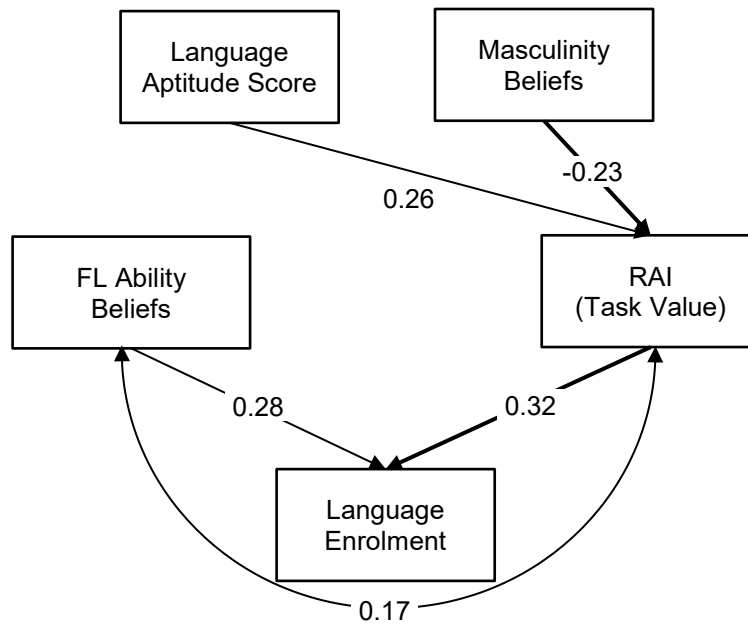
Figure 2. Final Model with Standardized Path Coefficients

Discussion

The present study confirms that men studying FL differ from men not studying FL in several important ways. It is perhaps unsurprising that people studying FLs are more interested in foreign-language related majors and careers, feel more confident in their present and future FL-learning ability, are more willing to speak a FL with others, have a stronger ideal L2 self, and have more culture-related interest and self-determined motivation towards FL compared to people not studying languages. Somewhat less intuitive is the finding that FL-learners do not differ from non-learners in the belief that language intelligence is a fixed entity, although FL learners were more likely to believe that hard work can improve language intelligence. This study also replicates a single prior study (Noels et al., 2018) showing that male FL-learners and non-learners differ significantly their beliefs and attitudes about the social roles and attributes of men. Though male university students tended to have progressive gender beliefs overall (i.e. low sexism and only moderately traditional gender ideologies), this trend was more pronounced

among male FL learners than male non-learners. These differences in men's gender beliefs may be important for explaining why rates of FL study differ between men and women.

The decision to enroll in a foreign language course does appear, consistent with EVT, to be most proximally associated with value for foreign language learning and the expectancy of being able to succeed at FL learning. The fact that men's enrolment in a FL course was predicted by both expectancies and values supports the central thesis of EVT. However, contrary to the prediction that values should be a stronger predictor of enrolment decisions than expectancies, both expectancies and values predicted enrolment with approximately equal strength in the path model. It is difficult to interpret why these paths were similar in my sample given that researchers often measure future intentions (Plante et al. 2013), but in the present study the primary criterion variable was an enrolment decision that had already been made. It may be that taking an FL course also boosts students' expectancies of success in other similar courses, or that more immediate decisions are more strongly influenced by expectancies, or that university students are particularly motivated by expected grades when it comes to FL study. Though values did not have a much stronger relation with FL enrolment than did expectancies, only values showed direct relations with masculinity norms and language aptitude. I note particularly that gender beliefs predicted enrolment only through values and not influence expectancies.

Values and decisions to learn a foreign language also appear to be shaped by men's beliefs about gender. In other words, men's decision to take a language (or, more commonly, not to take one) may stem partly from men's beliefs about the roles of men and women in society (sexism), as well as their prescriptive beliefs about what men ought to be like (masculinity ideology). These factors may be shaping men's decision-making directly, and also indirectly by influencing

the value they place in FL learning. The path model results suggest that masculinity ideology

may be indirectly influencing enrolment decisions through value for FL.

This study provides some preliminary evidence that competence-related stereotypes may

not be the most important predictor of men's FL enrolment. Though men's beliefs about their

own competence to learn FL were associated with FL class enrolment, neither essentialist beliefs

about the nature of gender differences, essentialist beliefs about the nature of language

intelligence (fixed language mindsets) nor language aptitude differed between language learners

and non-learners. Furthermore, language aptitude was unrelated to self-perceptions of ability

either in a previously learned FL or in a hypothetical future FL. Instead, language learners and

non-learners differed in their beliefs about men's social roles and their beliefs about the roles and

relations of men and women in society.

Though prescriptive gender beliefs may shape men's language enrolment choices, it

appears that other aspects of their beliefs about gender may be less important. It seems that

decisions to learn foreign languages are not, or are less, shaped by what men believe women

should be like, by how much they believe that masculinity is a precarious or fragile status, or by

how important masculinity is to their sense of identity.

Limitations

Though gender beliefs should theoretically predict FL enrollment (based on EVT), and

were treated as a predictor in the path model, the cross-sectional design of this present study does

not allow us to draw causal conclusions from these results. Though the directions of paths in our

model are theoretically based, since our data were collected at a single timepoint without random

assignment or experimental manipulation of any variables, we cannot rule out the possibility that

studying a foreign language makes men more progressive in their gender beliefs. This shift could

happen through high levels of interaction with women in a female-dominated classroom setting, through demonstrating proficiency in a stereotypically feminine class, or through some other social or psychological mechanism. Thus it is necessary to follow up with further investigation, and expand the methods to include longitudinal and experimental studies.

Conclusion

The present study provided further evidence that stereotypical beliefs about gender roles may be an important factor in men's relative absence from foreign language learning. Gender beliefs differentiated men in language classes from men not studying language, whereas language aptitude did not. In other words, men who choose not to study foreign languages do not appear to have less ability to succeed in language study, but they do have less progressive attitudes about the proper roles and behavior of men in society. Consistent with the expectancy-value model (Eccles, 1994), task values explain how gender beliefs affect men's FL enrollment. Men's beliefs in their own ability to succeed in foreign language study are influenced not by their actual aptitude, but by their beliefs about masculinity. These beliefs also link with how valuable men believe learning a foreign language will be for them, and these expectancies and values relate to whether men enroll in language study or not. Expectancies were not related to gender beliefs in the model but were related to FL enrolment. Thus, it is men's beliefs about both the competence of their gender and particularly about the appropriate roles of their gender require further investigation.

Chapter 3: Stereotype Threat

Previous research has established that men and boys differ from women and girls in their language motivation, participation, and test scores. This finding potentially parallels some of the issues related to women's under-participation and underperformance in STEM (science, technology, engineering, and mathematics) disciplines compared to men. Many studies have pointed to the role of gender stereotypes of ability and of images of scientists in STEM-related gender gaps (e.g. Cejka & Eagly, 1994; Cheryan, Ziegler, Montoya, & Jiang, 2017; Clark, Fuesting, & Diekman, 2016). I propose that these same stereotypes are double-sided: according to stereotypes, math and science are for boys, but on the other side of the same coin, verbal skills and foreign languages are for girls. There is evidence to support the existence of the male side of this stereotype already: both elementary school students and their teachers believe that girls are better at language in general than boys, and boys internalize these stereotypes throughout their school years (Hartley & Sutton, 2013; Retelsdorf et al., 2015). Similarly, Steffens and Jelenec (2011) found that both male and female students held explicit gendered stereotypes for both math (male) and language (female).

If men are subject to the same gendered stereotypes about their aptitude and appropriate areas of study as women, I further propose that many of the same issues and stereotypes that deter women from entering STEM disciplines may also limit the occupational interests and opportunities of men and boys by deterring them from enrolling and engaging in language classes. Stereotypes about language ability and languages as a female domain are likely to affect students in a number of ways. One of the most well-studied mechanisms for the influence of stereotypes on women in STEM, and therefore a sensible starting point for investigation of the impact of stereotypes on men in language, is stereotype threat.

Stereotype threat refers to the phenomenon that individuals who are the target of a negative stereotype feel pressured not to confirm that stereotype, and this pressure leads to poor performance by distracting from the task (Aronson, Lustina, Good, Keough, Steele, & Brown, 1999; Steele & Aronson, 1995). Because stereotype threat increases the cognitive load of a task by forcing the person to attend to both the task and the pressure of the stereotype, stereotype threat affects performance only on very difficult tasks and tests (Nguyen & Ryan, 2008). In a classic example of stereotype threat, female university students performed more poorly on a challenging math test when reminded of the stereotype that males are better than females at math compared to when the stereotype was not salient (Spencer et al., 1999). Further studies have suggested that the effects of stereotype threat can extend beyond test performance; stereotype threat can also affect students' sense of belonging to the stereotyped domain, making them feel out of place in certain classes or majors (e.g. Good, Rattan, & Dweck, 2012).

Stereotype threat theory specifies that negative stereotypes are only threatening to individuals with high domain-identification—in other words, only individuals who care about the threatened domain should experience stereotype threat (Steele et al., 2002). If succeeding in language classes is not relevant to a man's identity, he should not be susceptible to a stereotype threat. One meta-analysis suggested that stereotype threat effect sizes were much larger among individuals who identified strongly with the threatened domain (d=.68 vs d=.29; Walton & Cohen, 2003). Another meta-analysis did not find a difference between moderate domain identification and high domain identification (Nguyen & Ryan, 2008), but that analysis did not include studies of individuals with low domain-identification. Overall, it seems that at least moderate identification with the threatened domain is necessary for stereotype threat effects to emerge.

There has also been debate and conflicting meta-analytic results regarding the benefits of subtle versus explicit stereotype threat messages. Some researchers have argued that more explicit threats, where the expectation of a group-based performance difference is stated (in contrast to subtle threats describing the test as diagnostic of intelligence or involving priming of the stigmatized identity) might trigger stereotype reactance, and improved performance rather than performance decrements (Kray, Thompson, & Galinsky, 2001), but no meta-analyses have found evidence of such an effect. Nguyen and Ryan (2008) found that subtle stereotype threats yielded the largest effect sizes among women, but explicit threats had a greater effect on racial minority individuals. This finding again conflicts with Walton and Cohen's (2003) earlier meta-analysis, which found that explicit threats produced greater effect sizes than subtle ones. Flore and Wicherts's (2015) relatively small meta-analysis of math/science stereotype threat on schoolgirls yielded yet another pattern: the authors found no moderation by type of threat.

Men have been shown to experience stereotype threat in domains that are traditionally considered feminine (such as social sensitivity, Koenig & Eagly, 2005, and relationship maintenance, McGlone & Pfiester, 2015). There is also evidence suggesting that men may experience stereotype threat in language domains in much the same way that women experience it in math domains. Keller (2007) found that stereotype threatened men performed poorly on verbal tasks under conditions of combined stereotype threat and prevention focus, but not when unthreatened or manipulated to have a promotion focus. An experiment by Pansu, Régner, Max, Colé, Nezlek, and Huguet (2016) showed that boys who identified strongly with reading performed more poorly at a reading task after stereotype threat when controlling for reading ability. Van Loo, Boucher, Rydell, and Rydell (2013) found that men who were primed with competition performed more poorly on a verbal test than unprimed men, while women were

unaffected, suggesting a stereotype threat effect for men on the verbal task. Similarly, Hirnstein, Andrews, and Hausmann, (2014) found that stereotype threat instructions decreased men's performance on a verbal fluency task.

A few studies have found opposite effects, however: Hirnstein, Freund, and Hausmann (2012) found that men's performance on the same verbal fluency task as Hirnstein et al. (2014) was improved under a stereotype threat manipulation compared to a control condition. Hausmann (2014) also found that men performed better on a verbal task when gender stereotypes about such tasks were activated than when they were not. Results of how stereotypes affect men's performance on language-related tasks, then, have not been consistent, with some evidence pointing to stereotype threat and other evidence showing stereotype reactance. Furthermore, some results supporting a stereotype threat effect have been found only under specific conditions, and all have used L1 tasks such as sentence construction, reading, or GRE-verbal type tests.

Also missing is an examination of potential social-psychological effects of stereotype threat for men in language domains, such as decreased sense of belonging. If stereotype threat does indeed affect men in language, it may lead individuals to disidentify with the threatened domain in the long-term—in this case, it could lead male students to have a lower language self-concept (Aronson et al., 1999). It might also lead men to devalue the threatened domain, adopting a more negative attitude about the value of language learning. This possibility has many potential implications for men's educational choices, which partially determine men's career opportunities in communicative fields. These stereotypes may also have implications for male immigrants' intercultural contact in terms of factors such as their feelings of language anxiety and confidence, or their worry about facing rejection as a result of their language skills.

If men experience stereotype threat in language and foreign-language-related domains, interventions to wipe out this effect have been identified with women in STEM; similar interventions may be applicable for eliminating stereotype threat effects in men. One factor that has been effective in eliminating stereotype threat is mindset, or the individual's beliefs about the nature of intelligence in the threatened domain. In other words, individuals with a fixed mindset, meaning that they believe each person has a certain capacity for learning something and that this capacity cannot be altered or improved, but instead is genetically determined, experience stereotype threat. On the other hand, individuals who believe that hard work and effort can allow one to improve one's intelligence and capacities—individuals with a growth mindset—are not susceptible to stereotype threat (Aronson, Fried, & Good, 2002; Good, Aronson, & Inzlicht, 2003). Interventions to promote this type of mindset have been effective in eliminating stereotype threat effects (Aronson et al., 2002; Good et al., 2003), which suggests that if men experience stereotype threat on verbal or foreign language tasks, these effects are reversible.

Preliminary Study: Existence of "Language-is-feminine" Stereotypes

To determine whether stereotypes that language learning is feminine and that women have stronger verbal abilities than men exist among Canadian university students, I surveyed introductory psychology students.

Participants and Procedure

As part of a large pre-testing (mass testing) survey of introductory psychology students, 1673 participants answered questions about their perceptions of the genderedness of various major subjects and ability domains. These measures were included in a large computerized survey offered to all students in introductory-level psychology courses in exchange for course credit. Of these participants, 557 self-identified as male, 1055 identified as female, and 61 did not specify. Participants ranged in age from 17 years old to 40 years old (M=19.35 years, SD =

2.20). Only 57 of the 538 males and 149 of the 1027 females who responded to both questions

reported being enrolled in language study at the time of testing, but 142 (of 539) males and 372

(of 1017) females reported that they intended to study a language other than English in a future

semester. The sample included 310 students who were born outside Canada and who did not

have English as a native language, 51 Canadian-born students who did not have English as a

native language, 1068 Canadian-born native English speakers, and 202 native English speakers

born outside Canada.

Materials

Gender stereotypes. Participants were asked to answer the question "What do you think

is most U of A students' impression of the following majors in terms of how masculine or

feminine they seem?" by rating five language-related majors (East Asian Studies, English,

German, Spanish, and French), two STEM majors (engineering and math) and psychology on a

5-point scale from 1 ("more for males") to 5 ("more for females") with 3 as a neutral midpoint.

Participants were also asked to rate which sex was better in verbal, mathematical, and foreign

language ability on a 5-point scale where 1 was "males are much better," 3 was "males and

females are equally good," and 5 was "females are much better."

<div align="center">

Results

</div>

One-sample t-tests were computed on the eight subject stereotype and three ability

stereotype variables. All ability domains and subjects except German differed significantly from

the scale midpoint in the expected directions (see figure 3, table 7). Results confirmed that

Canadian university students stereotype mathematical domains as masculine and languages as

feminine. These results were consistent across various sub-samples: both male and female

participants, and both Anglo-Canadian students and students who were non-native English

speakers born outside Canada (i.e. migrant students) had significantly gendered stereotypes, and

these stereotypes were in the same direction as those of the overall sample. The only exception to

the pattern was that migrant students considered German to be a feminine major, while Anglo-

Canadians rated it as gender-neutral.

These results confirm that Canadian university students hold gendered stereotypes about

the masculinity or femininity of academic subjects. They also believe that men have greater math

ability than women, while women have stronger verbal skills and greater ability to learn foreign

languages than men. These beliefs appear to be widespread and consistent across male and

female students, as well as among immigrant and international students. Though the effect sizes

for the genderedness of engineering and math are larger than the those for the female-dominated

subjects, the effect sizes even for these subjects tend to be very large.

The size of these effects was also fairly consistent with the gender gaps in these majors

according to data from the United States, Canada's closest neighbor (NCES, 2013). The gender

stereotype of engineering had the largest effect size (Table 7), and this lines up with the fact that

it is the major with the second largest gender disparity in the U.S. after health professions. The

gender gaps in foreign language study (24.07% male for French, 25.26% for Spanish), East

Asian Studies (which often includes Japanese and Chinese language concentrations; 42.06%) and

English (31.37% male) are much smaller than the gap in Engineering, and for these majors I

found that there is a stereotype that they are feminine, but the difference from the midpoint was

smaller than for Engineering. German, for which there was no overall gendered stereotype, is

fairly gender-equal in terms of the number of German majors (46.47% male; NCES, 2015).
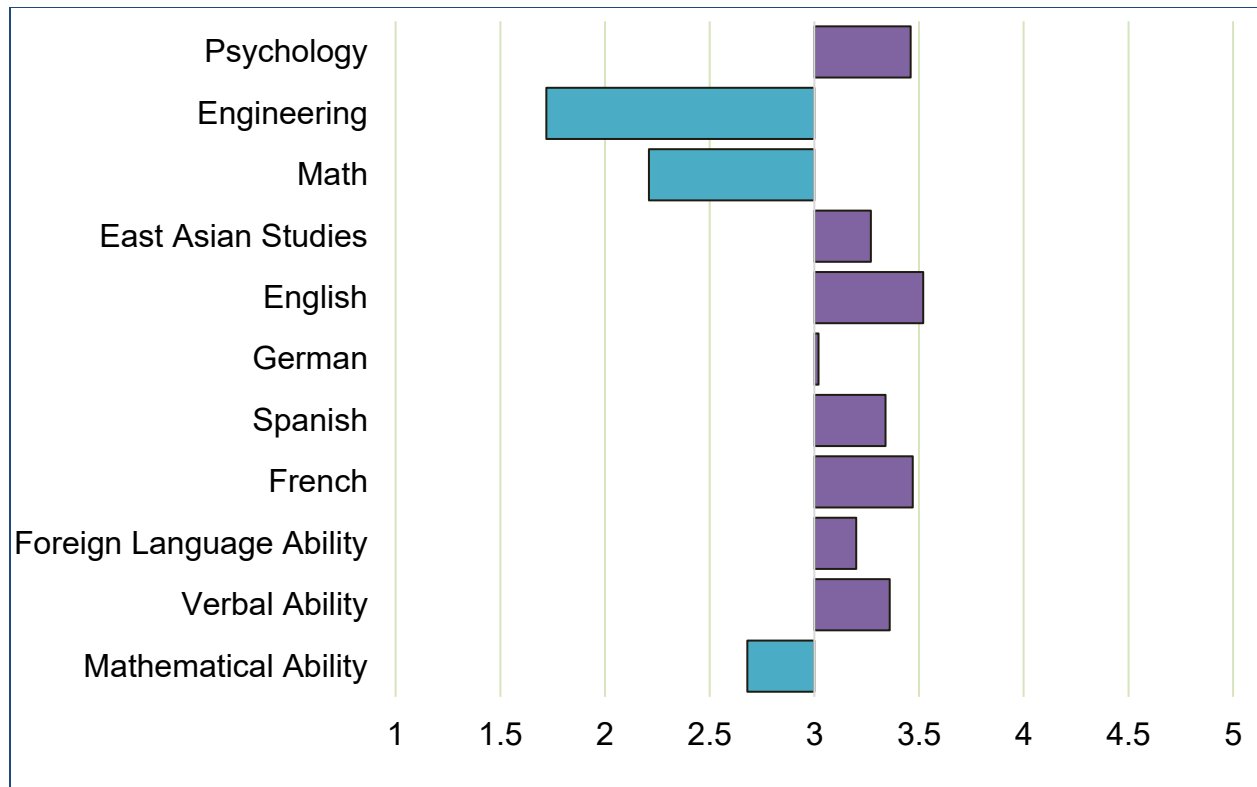
Figure 3. Stereotypes of the Genderedness of Subjects and Abilities. Values above 3 are stereotyped as feminine, and values below 3 are stereotyped as masculine.

Table 7. One-sample t-test testing the difference from the neutral midpoint of stereotypes of the genderedness of subjects and abilities.

	t	Sig. (2-tailed)	Mean Difference	Cohen's d
Math	-38.139	.000	-.789	-1.89
French	26.606	.000	.474	1.32
Engineering	-63.414	.000	-1.283	-3.14
Spanish	20.372	.000	.341	1.01
German	1.386	.166	.023	0.07
English	27.634	.000	.516	1.37
East Asian Studies	16.256	.000	.267	0.81
Psychology	24.407	.000	.462	1.21
Mathematical Ability	-18.417	.000	-.320	-0.91
Verbal Ability	20.615	.000	.357	1.02
Foreign Language Ability	13.611	.000	.199	0.68

Study 1: Stereotype Threat and Language

The first study aimed to examine whether stereotype threat influences men's performance on language tests and social psychological outcomes related to language learning both compared to women and compared to men in a threat negated condition. For this first study, I chose to use both explicit stereotype threats and explicit stereotype threat negation conditions.

I chose to use explicit threat and explicit threat negation rather than a control condition in this first study because testing this stereotype is relatively new and using these types of manipulations accounts for the possibility that this stereotype might be either chronically salient, or less salient than other stereotypes that could be activated by a subtle manipulation. Stereotype nullification rather than control conditions have been used to account for the possibility that individuals might be under a chronic stereotype threat—in other words, if stereotype threat is the default experience of men taking language tests, it might still operate in a control condition, making its effect undetectable when comparing threat and control conditions. Using explicit manipulations in both conditions was also intended to ensure that stereotypes other than the stereotype of interest would not become salient. In this study, I am interested in stereotypes about men and language, but I want to ensure that the testing situation does not activate alternate stereotypes, such as stereotypes of general intelligence that might favor men. Though the stereotypes associating languages with women were large in effect size in my preliminary study, because this stereotype is less often discussed than issues related to women in STEM, stereotypes about men and language may be less culturally salient than stereotypes about general intelligence or women and math.

Method

Participants

A total of 209 university students recruited from a pool of students in introductory psychology courses completed the study. Only participants who indicated in a pre-testing questionnaire and who indicated moderate to strong identification (above the scale midpoint) with both their gender and with language learning were eligible to participate (because meta-analyses indicate that stereotype threat effect sizes are larger among students with moderate or high domain identification, Walton & Cohen, 2003). Fourteen participants who answered an attention check question incorrectly were excluded from analyses (one man and six women in the threat condition and five men and two women in negated threat condition). Two female and three male participants in the threat condition were also excluded because they correctly guessed the study hypothesis on the suspicion check. The final sample of 189 university students (95 female and 94 male) ranged from 17 to 37 years old ($M = 19.34$, $SD = 2.85$). All participants were native speakers of English, with 38 participants (13 women and 8 men in the threat condition and 10 women and 7 men in the non-threat condition) reporting that they were bilingual in English and another language. Canadian citizens comprised 94% of the sample. Most participants (58.4%) were in their first year of university, with the rest of the sample in their second year (23.2%), third year (9.7%), fourth year (6.5%) and fifth year (2.2%). Participants were randomly assigned to either a stereotype threatened (47 women and 45 men) or threat negated (48 women and 49 men) condition.

Procedure

Participants were tested in sessions of up to 12 participants. Each session was conducted by a female experimenter in a computer laboratory.

Participants were randomly assigned to threat and threat-negated conditions and given a different set of study instructions depending on the experimental condition. Participants who

were in the threat condition were told that gender differences in language aptitude exist and were

relevant to the tests they would be taking, and participants in the threat-negated condition were

told gender differences in language ability did not exist for the tests they would complete. This

manipulation was delivered both verbally by the experimenter and in writing on the

questionnaire. Participants in the threat condition were asked to indicate their gender at the

beginning of the questionnaire, while those in the threat negated condition were asked at the end.

Following the manipulation, participants completed two language tests and a

questionnaire. The order of questionnaire scales and items was randomized in the online

questionnaire. Participants were fully debriefed at the end of the session.

Materials

Stereotype threat manipulation. The threat and threat-negated scripts were adapted

from Aronson et al. (1999) and re-worded to refer to men and language, as well as to suit the

Canadian context. One sentence was added to the end of each script specifying either that gender

differences were expected (threat condition) or not expected (threat-negated condition) on the

experimental tasks.

Threat script.

> As you probably know, language skills are crucial to performance in many
>
> important subjects in university. Yet surprisingly little is known about the mental
>
> processes underlying language aptitude. This research is aimed at better
>
> understanding what makes some people better at languages than others.
>
> As you also may know, at some top schools, female students outnumber the male
>
> students in language majors and majors with language as a prerequisite, and there
>
> seems to be a growing gap in academic performance between these groups. A

good deal of research indicates that females consistently score higher than males on standardized tests of language ability. But thus far, there is not a good explanation for this. The research you are participating in is aimed at better understanding these differences. Your performance on the exam will be compared to other students from across Canada. One specific question is whether females are superior at all aspects of language aptitude or only certain types.

This test measures your language aptitude, or how well you are able to learn languages. The test you are about to take is one that has shown gender differences in the past.

Threat-negated script.

As you probably know, language skills are crucial to performance in many important subjects in university. Yet surprisingly little is known about the mental processes underlying language aptitude. This research is aimed at better understanding what makes some people better at learning languages than others. Your performance on the exam will be compared to other students from across Canada.

This test measures your language aptitude, or how well you are able to learn languages. The test you are about to take is one that has not shown any gender differences in the past.

Language tests. Participants answered 11 multiple-choice questions from a practice SAT test provided by The College Board (2014). Questions were chosen based on difficulty level (3, 4 or 5, with higher values denoting higher difficulty) assigned by The College Board and pilot

tested by the authors. Questions included in the present study were correctly answered by 52% or fewer of the pilot testers. Students were given 10 minutes to complete the questions.

Participants also completed a computerized language aptitude test involving learning novel vocabulary (LLAMA B; Meara 2004). Participants were given 90 seconds to learn nouns in a made-up language, then tested on their ability to recall the words. Scores on this task reflect a percentage score from 0 to 100%.

Manipulation check. After the language tasks, participants were asked whether, according to the study description, the language tasks they completed tend to show gender differences favoring females, gender differences favoring males, or no gender differences. Participants who did not answer the manipulation check correctly were omitted from the analyses.

Task motivation and effort. The Intrinsic Motivation Inventory (IMI) from Ryan (1982) was used to assess participants' motivation towards the two language measures. The inventory consisted of 23 questions rated on a 7-point Likert scale that ranged from (1) "not at all true" to (7) "very true." 7 items were used to assess intrinsic motivation (α = .89; "I enjoyed doing the language aptitude tasks very much"), 6 to assess competence (α = .89; "I think I am pretty good at these language aptitude tasks"), 5 to assess effort (α = .85; "I put a lot of effort into this"), and 5 to assess feelings of pressure during the task (α =.88; "I felt very tense while doing the language aptitude tasks").

Sense of belonging. The sense of belonging scale consisted of 4 questions adapted from Good, Rattan and Dweck (2012). Each question was assessed using an 8-point Likert scale of strongly disagree (1) to strongly agree (8; "I feel that I belong to the language community." α = .93).

Language learning attitudes. The language learning attitude scale consisted of 10 questions adapted from Gardner, Tremblay, and Masgoret (1997). Each question was assessed using a 7-point Likert scale of strongly disagree (1) to strongly agree (7; "I would really like to learn many foreign languages;" α =.75).

Belief in gender differences. Participants rated 11 questions on a 7-point scale ranging from "males are much better" (1) to "females are much better" (7). Participants rated language learning ability in a native language (5 questions, α = .71) and in foreign languages (5 questions, α = .73) in terms of the four basic skills (reading, writing, speaking, and listing comprehension) as well as in general. Participants also rated math ability on the same scale.

Language Mindsets Inventory (LMI). This scale from Lou and Noels (2017) was used to assess incremental and entity mindsets of language learning. Each item was assessed using a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). Entity beliefs (9 items; "People have a certain amount of language intelligence, and people can't really do much to change it;" α = .84) and incremental beliefs (9 items; "No matter who the person is, people can significantly change their intelligence level;" α = .90) were collapsed into a single index for which a high score indicated a strongly fixed mindset and a weak growth mindset, while a low score reflected a strong growth mindset and weak entity beliefs (overall α = .92).

Suspicion check. Participants were asked to report what factors they felt influenced their performance on the language aptitude tasks and to guess the study hypothesis using two open-ended questions. Participants also answered a multiple choice question to select at what point in the study they thought that their hypothesis was likely. Participants who correctly guessed the hypothesis or reported suspicion about the experimental manipulation were excluded from

analysis if they also reported that they had these thoughts before or during the language aptitude tasks.

Results: Study 1

Sensitivity analysis computed in G*Power 3.0.10 revealed that the study had 80% power to detect an effect size of f=0.24. The sample for this study included only students who identified moderately to highly with language learning, and my power analysis indicates that the present study had ample power to detect the effect size reported in Walton and Cohen's (2003) meta-analysis (f=0.34) for students who identified with the stereotype-threatened domain, as well as sufficient power to detect the effect sizes reported by Nguyen and Ryan (2008) for moderately identified (f=0.26 ;but not highly identified, f=0.14) women in math. My study also used tests which were chosen and pilot tested for difficulty, which should yield larger effect sizes than other types of tasks.

Results of 2x2 (gender x condition) analysis of variance revealed significant main effects of stereotype threat on belief in gender differences in both foreign language ($F(1, 180)$=35.17, p<.001) and native language ($F(1, 180)$=21.72, p<.001) skills such that participants in the threat condition believed in a stronger female advantage in both skills. Main effects of gender and gender by condition interactions were nonsignificant in both cases. There were no significant main effects of gender (language aptitude: $F(1, 183)$=0.18, p=.672, η_p^2<0.01; SAT verbal $F(1, 183)$=3.20, p=.075, η_p^2<0.01) or condition differences (language aptitude: $F(1, 183)$=0.02, p=.879, η_p^2<0.01; SAT verbal $F(1, 183)$=0.27, p=.603, η_p^2<0.01) on language aptitude (Figure 4) or SAT verbal score (Figure 5) and no gender by condition interactions (language aptitude: $F(1, 183)$=1.20, p=.275, η_p^2<0.01; SAT verbal $F(1, 183)$=0.14, p=.705, η_p^2<0.01). There were no main

effects of experimental condition or gender by condition interactions for belongingness, language

attitudes, or any IMI dimension (see Table 8).
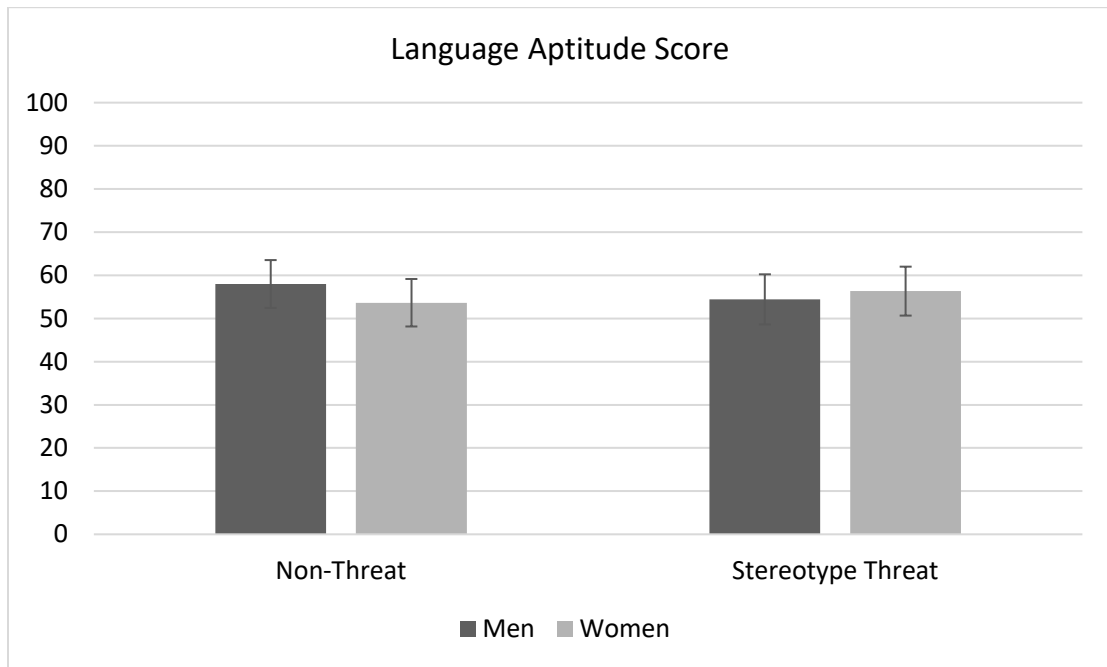
Figure 4. 2x2 ANOVA results for Language Aptitude by Gender and Condition with 95% Confidence Interval bars
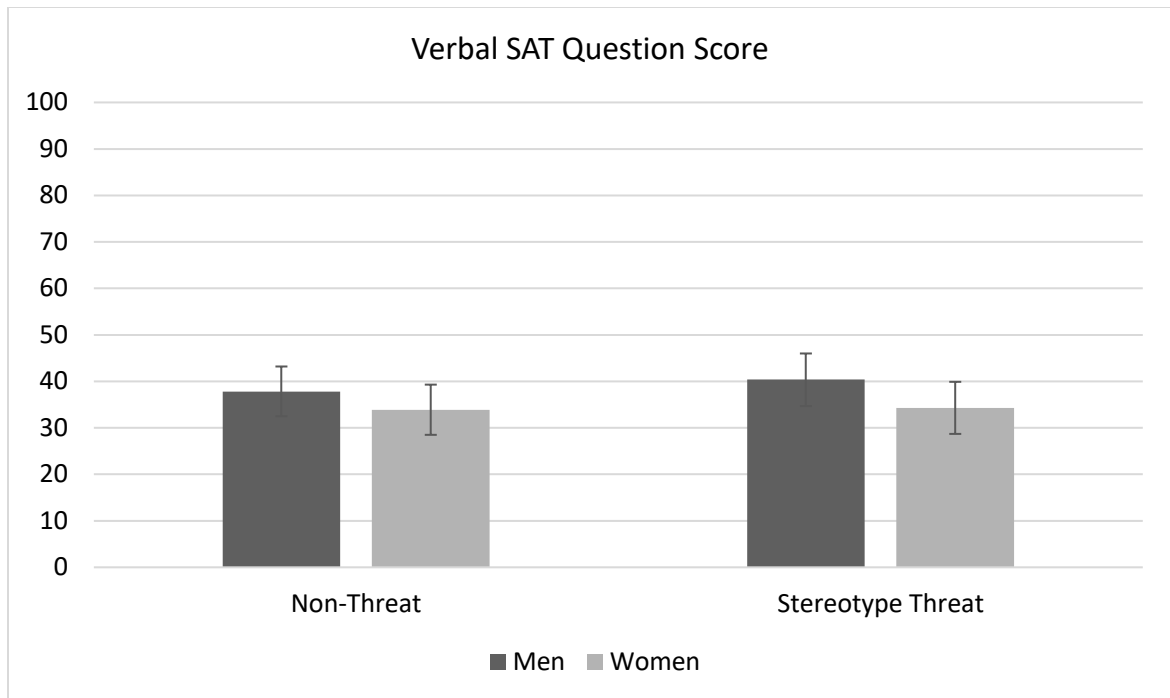
Figure 5. 2x2 ANOVA results for Verbal Test by Gender and Condition with 95% Confidence
Interval bars

Table 8. Results of 2x2 analyses of variance comparing by gender and experimental condition.

| | | Means (SD) Threat | | Means (SD) Negated Threat | | | | | |
		Men	Women	Men	Women	F	df	p	η^2
Belonging		4.40(1.80)	4.88(1.56)	4.95(1.59)	5.27(1.75)				
	Gender					2.56	(1, 183)	.112	0.01
	Condition					3.53	(1, 183)	.062	0.02
	G x C					0.30	(1, 183)	.747	<0.01
Language Attitudes		5.48(.82)	5.61(.87)	5.68(.76)	5.81(.72)				
	Gender					1.29	(1, 184)	.258	0.01
	Condition					2.91	(1, 184)	.090	0.02
	G x C					0.00	(1, 184)	.984	<0.01
Intrinsic Motivation		4.04(1.18)	3.97(1.03)	4.11(1.17)	3.96(1.13)				
	Gender					0.45	(1, 184)	.501	<0.01
	Condition					0.05	(1, 184)	.847	<0.01
	G x C					0.07	(1, 184)	.814	<0.01
Competence		3.59(1.13)	3.20(1.20)	3.76(1.22)	3.31(1.06)				

Gender					6.05	(1, 184)	.015	0.03
Condition					0.63	(1, 184)	.428	<0.01
G x C					0.04	(1, 184)	.837	<0.01
Effort	4.34(1.27)	4.35(1.25)	4.23(1.35)	4.27(1.04)			
Gender					0.02	(1, 184)	.887	<0.01
Condition					0.25	(1, 184)	.618	<0.01
G x C					0.01	(1, 184)	.913	<0.01
Pressure	3.47(1.49)	3.59(1.48)	3.17(1.57)	3.38(1.50)			
Gender					2.32	(1, 184)	.130	0.01
Condition					0.83	(1, 184)	.365	<0.01
G x C					0.19	(1, 184)	.661	<0.01

After the hypothesized differences were not found, exploratory analyses were performed to look for indirect effects of stereotype threat. Moderated mediation analyses were conducted to determine whether the extent to which participants had internalized a belief in the gender-language stereotype, rather than the threat itself, might drive differences in aptitude and attitudes. These analyses were computed using the PROCESS macro for SPSS (Hayes, 2013), and 5,000 bias-corrected bootstrapped resamples were used. Stereotype threat predicted belief in gender differences in foreign language ability (B=.22, p<.001), and belief in gender differences predicted vocabulary task score (B=9.82, p<.001). However, the association between belief in gender differences and language aptitude was moderated by gender such that the indirect effect of stereotype threat on vocabulary (LLAMA B) score was only significant among women (conditional indirect effect for women: B= 2.36, CI [1.10, 3.90]). Thus, women in the threat condition experienced an indirect stereotype lift on the vocabulary learning task (to the extent that they believed the manipulation), but stereotype threat did not affect men's performance.

On the SAT verbal questions, stereotype threat predicted a stronger belief in gender differences in foreign language ability compared to the threat negated condition (B=.22, p<.001), and a stronger belief in gender differences predicted the percentage of SAT practice questions answered correctly (B=2.18, p=.031). The association between beliefs in gender differences and the English task score was moderated by gender such that the indirect effect of stereotype threat on vocabulary score was only significant among men (conditional indirect effect for men: 0.02, CI [.01, .05]). Unexpectedly, this meant that stereotype threat indirectly improved men's scores on the SAT practice questions.

Counter to the stereotype, there were no differences in language aptitude between men and women. Also counter to expectations, stereotype threat did not negatively affect men's performance on either test of language competence. Exploratory analyses revealed that in one case (language aptitude as measured by LLAMA B), men were unaffected while women experienced stereotype lift and performed better after a reminder of the positive stereotype about their group. In the other case, with the test using SAT practice questions, men showed stereotype reactance: instead of doing poorly after stereotype threat, threatened men performed better than men for whom the threat was negated to the extent that they believed in the stereotype following the manipulation. These exploratory results are consistent with the findings of Hirnstein et al. (2012) and Hausmann (2014), but inconsistent with stereotype threat theory and many other stereotype threat studies.

Studies 2-3. In the next two studies, I sought to improve the success of my manipulation by making several changes to the procedure. Primarily, in Study 2 I examined stereotype threat in a specific target language (English among ESL-speaking students) rather than in language

more generally. In Study 3 I added a manipulation of mindsets, a known moderator of stereotype

threat effects.

Study 2: Migrant Students' Stereotype Threat on English

Stereotype threat on men's language ability may have significant implications for the

acculturation of male international students and immigrants. For immigrants to Canada whose

native language is not English or French, language is an important cultural tool and a

foundational skill to daily life and functioning in Canadian society. Rather than simply

influencing sense of belonging to language classes, stereotype threatened men might see their

sense of belonging to the whole host culture negatively affected by stereotypes about men's

language ability.

Not only are international students pursuing degrees in a foreign language an important

population of interest for stereotype threat research, but studying these students also provides the

opportunity to examine stereotype threat on language learning among a group of men who a) are

all using the same target language of English and b) should identify strongly with the domain of

using English because of its central importance in their daily lives.

Participants

Male students in introductory psychology classes who were born outside Canada and did

not have English as a native language participated in the study. Nine students in the stereotype

activated condition and 13 students in the non-threat (control) condition that were excluded

because they answered the attention check question incorrectly. Seven students, all in the

stereotype activated condition, were excluded because they correctly identified the hypothesis of

the study on the suspicion check questions. The final sample consisted of 105 male international

and immigrant students, 42 of whom reported being international students, 22 who were

permanent residents of Canada, 18 who reported having Canadian citizenship, and 23 who did

not report their status. Native languages reported by participants included Chinese languages (*n*=45), south Asian languages (*n*=14), European languages (*n*=8), and several other languages represented by fewer than 5 speakers. Participants were randomly assigned to either threat (*n*=53) or non-threat (*n*=52) conditions. Participants' ages ranged from 17 to 63 years (*M* = 21.21, *SD* = 5.04).

Materials

Language tests. The same language tests as in Study 1 were used, with the LLAMA B language aptitude task learning time reduced to 60 seconds.

English anxiety and confidence. These scales were adapted from Gardner's (2010) AMTB. (anxiety α = .89, "I never feel quite sure of myself when I am speaking in English;" confidence α = .94, "I feel confident when I speak in English").

Cross-cultural adjustment. Feelings of adjustment to Canada in various domains were measured using a scale adapted from Black and Stephens (1989). On a scale from 1 (not at all adjusted) to 7 (very well adjusted), participants rated how well they felt they had acculturated to 14 aspects of life in Canada such as "the academic requirements," "interpersonal relationships," and "customs and practices" (α = .93).

Sense of belonging. See study 1 (α = .88).

Intrinsic Motivation. As in study 1, effort (α = .82), competence (α = .81), interest (α = .89), and pressure (α = .82) in the language aptitude tasks were measured using the intrinsic motivation inventory.

Rejection sensitivity. Participants' expectations of being rejected because of their status as non-native English speakers (e.g. "I would expect that the receptionist might talk to me impatiently because I am not a native English speaker;" α = .86), and their feelings of anxiety

about this possibility (e.g. "How concerned/anxious would you be that the receptionist might talk to you impatiently because you are not a native English speaker;" α = .93) were measured using a scale from Chao, Takeuchi, and Farh (2016). Participants rated each item along a 6-point scale where 1 was labeled as "very unlikely/very unconcerned" and 6 as "very likely/very concerned." For each item, expectation and anxiety scales were multiplied before the mean score was computed. The overall scale reliability was α = .86.

Self-esteem. Self-esteem was measured using the short version (10 items; "On the whole, I am satisfied with myself") of Rosenberg self-esteem scale. The scale reliability was α = .88.

Intergroup contact measures. A scale adapted from Plant and Devine (2003) was used to measure intergroup anxiety (I would feel uncomfortable when interacting with an English-speaking White Canadian;" α = .88), intergroup avoidance ("If I had a choice, I would rather not interact with an English-speaking White Canadian;" α = .86), and intergroup hostility ("I would find interacting with an English-speaking White Canadian annoying"; α = .94).

Results Stereotype Threat 2

Sensitivity analysis computed in G*Power 3.0.10 revealed that the study had 80% power to detect an effect size of at least f=.28.

There were no significant effects of stereotype threat. Threat did not affect performance on the language aptitude tasks or English questions, sense of belonging in language, rejection sensitivity, feelings of adjustment, English anxiety, or intergroup contact emotions or intentions (Table 9).

Table 9. Results of one-way analyses of variance by condition.

| | Threat | | Non-Threat | | | | | |
	Mean	SD	Mean	SD	F	df	p	η^2
Language Aptitude	36.33	18.67	38.73	15.93	0.48	(1, 99)	.491	0.01
Verbal Test Questions	29.42	15.24	28.15	17.64	0.15	(1, 102)	.697	<0.01
Belonging	5.08	1.55	4.97	1.54	0.02	(1, 105)	.730	<0.01
Rejection Sensitivity	8.12	5.45	8.36	5.32	0.05	(1, 102)	.819	<0.01
Adjustment	5.21	1.02	5.30	1.06	0.19	(1, 89)	.662	<0.01
English Anxiety	3.56	0.99	3.43	1.04	0.36	(1, 77)	.550	0.01
Intergroup Anxiety	2.83	1.19	2.59	1.03	0.82	(1, 71)	.368	0.01
Intergroup Avoidance	2.66	1.22	2.47	1.09	0.46	(1, 71)	.500	0.01
Intergroup Hostility	2.23	1.16	2.01	1.07	0.70	(1, 70)	.407	0.01

Study 3: Mindsets and Stereotype Threat

Method

In Study 3, I examined whether a mindsets intervention would interact with stereotype threat on men's language ability. Previous research has shown that mindset can interact with stereotype threat such that stereotype threat is experienced by individuals with fixed mindsets, but not by those with growth mindsets (Good et al., 2003). By manipulating mindset, I expected to find a stereotype threat effect among men primed with a fixed mindset. In other words, I expected that threatened men would perform worse on the language tasks and express less belonging to language domains if they also had a fixed mindset of language intelligence. I expected that men primed with an incremental mindset would be unaffected by stereotype threat, and that these men would perform at least as well as men exposed to fixed mindset but not stereotype threat.

The language competence dependent variables were also modified for Study 3. The LLAMA language aptitude task was made more difficult by reducing the time for the learning

phase, and an anagram-solving task involving 20 challenging anagrams replaced the 11 SAT

questions used in study 1. Because stereotype threat effects are only expected to appear on

difficult tasks, I hoped to find significant stereotype threat effects in this study by increasing the

difficulty of the competence DVs, as well as increasing their subjective difficulty for the

participants by increasing how much time pressure the participants were likely to experience.

Participants

A total of 167 male students in introductory psychology courses at the University of

Alberta participated in the present study in exchange for partial course credit. Only men who

learned English by the age of 3 were eligible to participate. Participants were randomly assigned

to the four experimental conditions. Participants who failed attention checks or reported

suspicion of the study hypotheses were excluded from analysis: 6 men reported suspicions, 19

failed the attention check for the threat manipulation, and 4 participants failed the attention check

for the mindset article. The final sample consisted of 138 male students aged 18 to 30 years ($M =$

19.63, $SD = 1.93$).

Procedure

Procedures for the session and the stereotype threat manipulation were the same as for

Study 1, except that a control condition in which no reference was made to any gender

differences in language learning (similar to Study 1, but with the final sentence omitted) was

used instead of a threat negated condition.

Also added for Study 3 was a second independent variable manipulation. After the study

instructions, participants were told to read an article, ostensibly for a reading comprehension test,

but actually intended to manipulate participants' belief in either an incremental or entity theory

of language intelligence. Participants were randomly assigned to read one of the two possible

articles developed by Lou and Noels (2016). The incremental article stated that language ability

is largely determined by environmental factors and can be improved through effort, while the

entity article stated that language ability is unchangeable and determined by genetics. The threat-

activated group consisted of 60 individuals, 28 in the entity condition and 32 in incremental

condition. The non-threat (control) group consisted of 87 individuals, 45 in the entity condition

and 42 in the incremental condition.

Following the two manipulations, participants completed two language tests (anagrams

and a vocabulary learning activity) and a questionnaire.

Materials

Incremental and entity theory of language intelligence manipulation. Participants

read one of two articles from Lou and Noels (2016) as a mindset manipulation: one article

supported an incremental theory of language intelligence, while the other supported an entity

theory of language intelligence.

Novel vocabulary-learning task. The same LLAMA B Test (Meara, 2014) as study 1

was used, but the time for the learning phase was reduced to 60 seconds to increase the difficulty

of the task.

Anagrams completion task. Participants were told the definition of an anagram and

given 5 minutes to complete as many anagrams as possible from a list of 20.

Task motivation and effort. The Intrinsic Motivation Inventory (IMI) from Ryan (1982)

was again used, and Cronbach alphas ranged from $\alpha = .88$ to $\alpha = .91$.

Foreign languages. Participants were asked to indicate whether they were currently

studying any second or foreign languages, whether they planned on studying any second or

foreign languages in the future, and whether they spoke any other languages in addition to their

native language(s). Participants were also asked to list the foreign language(s) they had studied in the past.

Sense of belonging. The full 30-item sense of belonging scale (adapted from Good, Rattan, and Dweck, 2012) was used to measure participants' feelings in language settings. Participates rated the items on a scale from (1) "strongly disagree" to (8) "strongly agree." The scale included 5 sub-scales: 4 questions were used to assess participants' sense of membership in the language setting, as in Study 1, ("I feel that I belong to the language community." $\alpha = .88$), 10 to assess their sense of acceptance ("I feel like an outsider." $\alpha = .76$), 8 to assess their affect in the language setting ("I feel at ease." $\alpha = .91$), 4 to assess a desire to fade away ("I wish I could fade into the background and not be noticed." $\alpha = .79$) and 4 to assess trust ("I trust the test materials to be unbiased." $\alpha = .67$). Since including the item ("I have trust that I do not have to constantly prove myself") in the trust sub-scale lowered the Cronbach's alpha value to .57, it was excluded from analysis.

Language learning attitudes. See study 1. $\alpha = .85$.

Manipulation, attention, and suspicion checks. The same questions as Study 1 were used to assess participants' attention to the threat manipulation and their suspicion of the study hypotheses. To bolster the cover story about the mindset articles, the attention and comprehension check for this manipulation was embedded in a "reading comprehension and retention task" consisting of 5 filler questions and two attention check questions: "According to the article, what are the roles of genetic and environmental factors in respect to language intelligence?" and "Which results did Knowles find in the study done with twins in terms of their language intelligence?" These two questions were used to determine whether participants read

and understood the article. Participants who chose an answer that did not correspond to the article they were assigned were removed from analyses.

Language mindsets. The Language Mindsets Inventory (LMI) scale, created by Lou and Noels (2017), used in study 1 was used as a check for the lay theory manipulation in Study 3 (entity α = .86; incremental α = .88; overall α = .92).

Results: Study 3

Sensitivity analysis computed in G*Power 3.0.10 revealed that the study had 80% power to detect an effect size of f=.29. There was a main effect of article on mindsets such that participants who read the entity article reported language mindsets that were more fixed and less incremental than participants who read the incremental article ($F(1, 136)=36.14$, $p<.001$).

Results of 2x2 analyses of variance (article by threat condition) revealed no significant main effects of condition or article and no condition by article interactions on any of the dependent variables; stereotype threat, mindset manipulation, and their interaction did not affect language aptitude, anagram solving performance, attitudes towards foreign languages, or any subscale of sense of belonging (Table 10).

Table 10. Results of 2x2 analyses of variance by stereotype threat and mindset conditions for stereotype threat study 3.

	Means (SD) Threat		Means (SD) Non-Threat		F	df	p	η^2
	Growth	Fixed	Growth	Fixed				
Language Aptitude	42.64(15.24)	44.81(14.53)	45.78(19.18)	44.58(15.23)				
Article					0.03	(1, 130)	.866	<0.01
Condition					0.35	(1, 130)	.557	<0.01
A x C					0.26	(1, 130)	.611	<0.01
Anagrams	64.20(22.27)	69.95(21.22)	72.80(22.45)	54.11(23.33)				
Article					0.14	(1, 134)	.709	<0.01
Condition					0.12	(1, 134)	.726	<0.01

					F	df	p	η²
				A x C	3.36	(1, 134)	.069	0.03
Language Attitudes	5.19(1.14)	5.41(0.95)	5.62(0.95)	5.19(0.99)				
	Article				0.33	(1, 138)	.567	<0.01
	Condition				0.35	(1, 138)	.558	<0.01
	A x C				3.44	(1, 138)	.066	0.03
Membership	3.91(1.60)	4.01(1.31)	4.33(1.66)	4.28(1.57)				
	Article				0.01	(1, 138)	.930	<0.01
	Condition				1.66	(1, 138)	.200	0.01
	A x C				0.07	(1, 138)	.798	<0.01
Acceptance	5.04(1.14)	4.80(1.04)	5.14(1.14)	4.99(1.08)				
	Article				1.03	(1, 138)	.312	0.01
	Condition				0.62	(1, 138)	.432	0.01
	A x C				0.06	(1, 138)	.816	<0.01
Affect	4.74(1.27)	4.67(1.81)	4.90(1.37)	4.77(1.28)				
	Article				0.21	(1, 138)	.648	<0.01
	Condition				0.35	(1, 138)	.554	<0.01
	A x C				0.02	(1, 138)	.898	<0.01
Invisibility	3.91(1.60)	3.71(1.16)	3.29(1.41)	3.98(1.59)				
	Article				0.93	(1, 138)	.337	0.01
	Condition				0.45	(1, 138)	.505	<0.01
	A x C				3.11	(1, 138)	.080	0.02
Trust	5.27(1.18)	5.05(1.09)	5.06(1.34)	5.08(1.16)				
	Article				0.21	(1, 138)	.650	<0.01
	Condition				0.19	(1, 138)	.664	<0.01
	A x C				0.34	(1, 138)	.564	<0.01

Stereotype Threat Study 4

In my final study, I measured four different aspects of language aptitude rather than only

the ability to learn vocabulary. I also added a measure of participants' interest in various

language-related and non-language-related major subjects. Since almost all students at Canadian

universities have experience with language learning before university, I also measured participants' willingness to communicate in whichever language they had studied longest in the past.

After the stereotype threat manipulation was shown to be effective in Study 1, the measure of how much participants believed in gender differences in language competence was dropped for studies 3 and 2. However, these studies revealed no direct effects of stereotype threat on test performance or attitudinal or affective measures. Since exploratory analyses of the study 1 data indicated that some effects might occur via students' internalization of or belief in the stereotype introduced by the threat manipulation rather than directly, this measure was re-included in the present study as a potential mediator.

Methods: Study 4

Participants

A sample of 139 male native English speakers enrolled in introductory psychology courses at the University of Alberta participated in the study in exchange for partial course credit. Students who answered the attention check question incorrectly (9 students in the stereotype activated condition and 13 in the control condition) were excluded from analyses. Seven students, all in the stereotype activated condition, were excluded because they correctly identified the hypothesis of the study on the suspicion check questions. As a result, 110 participants remained in the sample, with 53 randomly assigned to the stereotype activated condition and 57 to the non-threat (control) condition. Participant ages ranged from 17 to 37 ($M = 19.16$, $SD = 2.74$), and 16.4% of the participants were studying a second or foreign language at the time of the study. Just over half (51.8%) of participants spoke another language in addition to their native language.

Materials

The same as Study 3, with exceptions as follows:

Language aptitude tasks. Participants completed four language aptitude tasks after the experimental manipulation. LLAMA B (also used in Studies 1-3) assessed ability to learn novel vocabulary, LLAMA F assessed grammatical inferencing, LLAMA E assessed the relationship between sounds and a writing system, and LLAMA D assessed the ability to recognize sound patterns in spoken language.

Willingness to communicate. McCroskey and Richmond's (1985) scale was used to assess participants' willingness to communicate in a language other than English. The scale asks participants to indicate what percentage of the time they would communicate in a foreign or second language in 20 given situations (e.g. "Talk with a friend while standing in line;" α=.97).

Belief in gender differences. The same 11 questions as in study 1 were used to assess participants' beliefs in gender differences in language ability. Participants rated the four language skills and general language ability along a 5-point scale ranging from "males are much better" (1) to "females are much better" (5) in both native and foreign language. In this study, however, native language proficiency showed poor reliability (α=.56) although foreign language skill remained reliable (α=.74). The overall scale was also reliable (α=.73).

Subject and career interest. Participants were asked to indicate how interested they were in studying thirteen different subjects. These included three foreign languages (French, Spanish, and German), three other language related subjects (East Asian Studies, English, and Linguistics), five STEM majors, Nursing, and Psychology. Next, participants were asked how interested they were in sixteen different careers related to either language (e.g. Translation, Airline services) or STEM (e.g. Scientist, Engineer) or known to be highly gendered. All questions were on a 5-point scale ranging from 1 (*not at all interested*) to 5 (*very interested*).

Plans for foreign language study. Participants were asked if they were studying any second or foreign language at the time of the study and also if they had done so in the past. Additionally, participants were asked if they plan to study a second or foreign language in the future.

Results and Discussion: Study 4

Sensitivity analysis computed in G*Power 3.0.10 revealed that this study had 80% power to detect an effect size of $f=.27$.

Results of one-way analysis of variance showed that stereotype threat increased participants' belief in a gender difference favoring women in both foreign language ability ($F(1, 94)=4.81$, $p=.031$, $\eta^2=.05$) and overall language ability in the native language ($F(1, 94)=4.05$, $p=.047$, $\eta^2=.05$). Exposure to stereotype threat also decreased participants' interest in learning Spanish ($F(1, 86)=4.82$, $p=.031$, $\eta^2=.05$), but no other main effects of condition emerged (Table 11).

Table 11. Results of one-way analyses of variance by condition for stereotype threat study 4.

	Threat		Non-Threat					
	Mean	SD	Mean	SD	F	df	p	η^2
Language Aptitude								
LLAMA B	55.29	23.94	50.45	23.32	1.10	(1, 104)	.297	0.01
LLAMA F	54.46	25.49	55.09	26.10	0.02	(1, 107)	.899	<0.01
LLAMA E	73.51	28.15	75.44	26.66	0.13	(1, 107)	.715	<0.01
LLAMA D	30.61	15.95	30.18	14.64	0.02	(1, 107)	.883	<0.01
Belonging	5.18	1.44	4.86	1.62	1.13	(1, 105)	.290	0.01
Language Attitude	5.55	0.70	5.69	0.74	0.99	(1, 106)	.323	0.01
Language Competence	4.33	0.81	4.38	0.92	0.08	(1, 109)	.782	<0.01
Interest in Language Majors								
French	2.97	1.16	3.38	1.21	2.56	(1, 88)	.114	0.03
Spanish	2.87	1.32	3.46	1.20	4.82	(1, 87)	.031	0.05

German	2.84	1.35	3.00	1.31	0.30	(1, 86)	.583	<0.01
English	2.88	1.45	3.06	1.39	0.38	(1, 88)	.540	<0.01
Foreign Language Career Interest	1.56	0.91	1.64	0.99	0.16	(1, 83)	.693	<0.01
Willingness to Communicate in a Foreign Language	31.47	24.58	36.15	24.52	0.94	(1, 102)	.335	0.01

Mediation models with 5,000 bias-corrected bootstrapped samples were tested using

Hayes's (2013) PROCESS macro for SPSS. Stereotype threats indirectly influenced participants'

sense of belonging to language classes (B= -0.24, 95% CI [-.56, -.04]; Figure 6) and feelings of

language competence (B=-0.12, 95% CI [-.30, -.02]; Figure 7) via overall beliefs in a gender
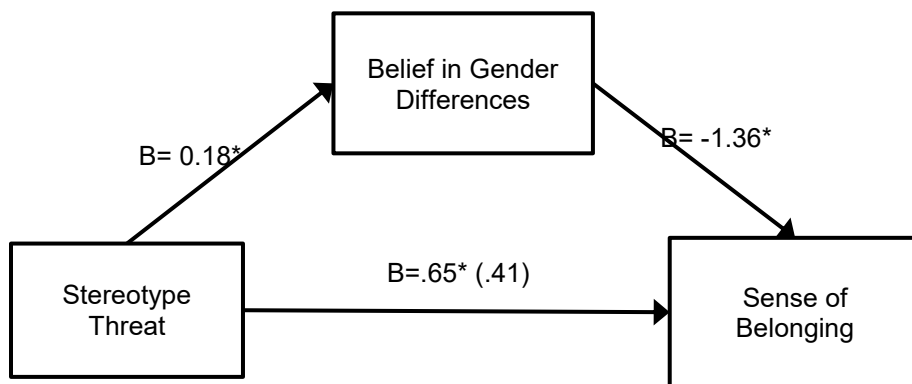
difference in language aptitude.

Figure 6. Indirect effect of Stereotype on Sense of Belonging via Belief in Gender Differences in Language
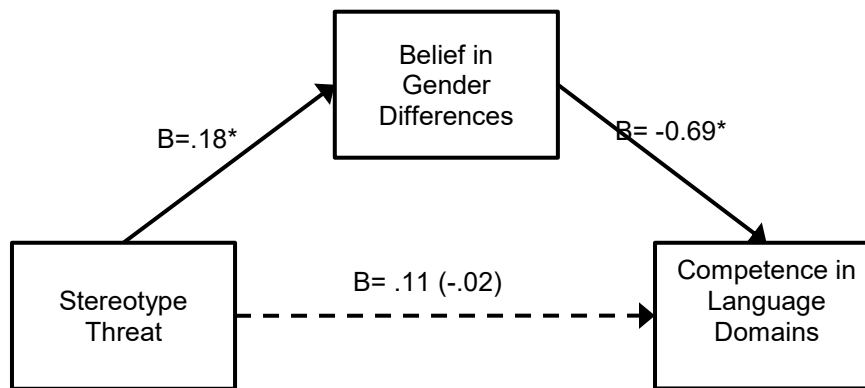
Figure 7. Indirect effect of Stereotype on Sense of Competence via Belief in Gender Differences in Language

I found that stereotype threat may suppress men's interest in Spanish, but not French or German. This is puzzling given that French was more strongly stereotyped as feminine than Spanish in the preliminary study. However, although French is not widely spoken in the region of Canada where the study was conducted, the fact that it is one of Canada's official language might be important. In Canada, even students not interested in language learning or travel might still have practical reasons for wanting to learn French. For example, bilingualism in both of Canada's official languages is a requirement for some government jobs. Results also indicated that stereotype threat might have some indirect effects on social psychological factors like sense of language competence and belongingness to language learning domains to the extent that it leads students to believe gendered stereotypes of language.

General Discussion

Across four studies, I found no evidence that stereotype threat directly harms men's performance on language tests, nor did I find evidence that it suppresses men's belonging in language domains. My preliminary study established that stereotypes of language as feminine exist among Canadian university students and have large effect sizes. I found that students at a

Canadian university believe that language majors are "for girls" and that women and girls have stronger verbal and foreign language ability than men. Despite this, I found little evidence of stereotype threat on male students.

Study 4 revealed some evidence that stereotype threat might suppress men's interest in studying Spanish, but it is unclear why a competence threat would affect interest in one of the three languages included in the study, but not test performance, sense of belonging, or attitudes about language learning. These variables are more typically measured in studies of stereotype threat compared to interests. Given that the measure on which a main effect of stereotype threat was seen was only included in one of the four studies, and that it showed the only significant main effect of stereotype threat across all four studies, this finding needs to be replicated. Future studies should also include a greater number of languages.

Study 4 also indicated that stereotype threat might have some indirect effects on social psychological factors like sense of language competence and belongingness to language learning domains to the extent that it leads students to believe and internalize gendered stereotypes of language. This shows that believing in stereotypes about gender differences in language ability might have some implications for men's expectancies in FL domains. Although stereotype threat in itself seems to have few effects on men in language domains, it seems that the stereotypes themselves may still be important.

Sensitivity analysis showed that all four stereotype threat experiments had sufficient statistical power to detect medium-sized effects. Therefore, if stereotype threat affects men's language performance or feelings about language learning, these effects are likely small to very small in effect size. This evidence casts doubt on whether stereotype threat is a major factor explaining men's underperformance on standardized tests of language, or men's

underrepresentation in elective foreign language classes and majors. Given that stereotypes about men and language are strong and real-life differences in language course enrolment are large, even if a small stereotype threat effect exists, it is not sufficient to account for these differences. It seems likely that other factors may have greater explanatory power.

This program of studies failed to support the hypothesis that stereotype threat causes men's underperformance in language and avoidance of foreign language classes. Further research is needed to probe for other possible explanations of men's underrepresentation in FL study. One possibility is that the value men place on FL, but not men's expectancies of FL success, are the important factor predicting their disengagement. This explanation would be consistent with the expectation of EVT that enrollment decisions and plans should be primarily a function of values (Eccles, 2005). Stereotypes that FL is a feminine domain remain relevant not because reminders of competence stereotypes have any direct effect on men, but because men might devalue FL as a result of believing that feminine pursuits are not appropriate for men. Consistent with the result seen in the correlational study (Chaffee & Noels, 2018; Chapter 2) that gendered beliefs might influence FL enrolment not through expectancies of success but through value for FL, it appears that it is men's beliefs not about the competence of their gender, but about the appropriate roles of their gender, that require further investigation.

Chapter 4: Masculinity Threat

Many researchers, educators, and policymakers are concerned about the low proportion of women in STEM (Science, Technology, Engineering, and Mathematics) disciplines, while the related issue of few men being interested in female-dominated disciplines like nursing, education, and foreign languages has been largely ignored (see Croft, Schmader, & Block, 2015). In the U.S., only 30.60% of foreign language majors are male (National Center for Education Statistics [NCES], 2014). This represents a considerably larger disparity than that found in traditionally male disciplines such as physical science, math and statistics, and biology. Although computer science and engineering remain heavily male-dominated, most other university majors with large gender disparities in the U.S. and Canada are now female-dominated ones like nursing and psychology (Canadian Council on Learning, 2009; NCES, 2014; Statistics Canada, 2014). Though it is true that, historically, almost all academic disciplines have been male-dominated and the opportunities of women are still limited by sexism today, it is important to study how gender stereotypes and biases affect not only women, but also men.

Boys and men appear to be at a disadvantage in second and foreign language learning, and gender stereotypes and ideologies may play a role. Female students tend to be more motivated and have more positive attitudes about foreign language learning than male students (e.g. Kobayashi, 2002; You, Dörnyei & Csizér, 2016), and girls tend to outperform boys in foreign language study (e.g. Glowka, 2014). Women are stereotyped as being both more talkative and as having stronger language skills than men, and gaps in language-related skills and interests are seen in school (Williams, Satterwhite, & Best, 1999; Hartley & Sutton, 2013). Prior research has found that both teachers and students believe that girls are better at language than boys, that teachers pass these stereotypes on to their students, and that boys believe the stereotype more and more with age (Hartley & Sutton, 2013; Retelsdorf, Schwartz, & Asbrock,

2015). Furthermore, how much students internalize these stereotypes predicts how much boys value language arts study, how competent they feel in language arts, and their school performance (Plante, De la Sablonnière, Aronson, & Théorêt, 2013). Elmore and Oyserman's (2012) findings also suggest that the gender-identity congruence of academic success may be important for boys' motivation. Stereotypes that men are good at math and women are good at languages affect girls' math self-concepts, but they also affect boys' language self-concepts (Good, Rattan, & Dweck, 2012; Retelsdorf, Schwartz, & Asbrock, 2015). This may have implications for boys' performance at school, in the job market, and in intercultural interactions. Both children and adults tend to favor occupations stereotypically associated with their own gender (Weisgram, Bigler, & Liben, 2010), suggesting that individuals internalize occupational gender stereotypes and act on them throughout life. When it comes time to choose classes or university majors, "female"-typed subjects may not even be seriously considered by most male students (Eccles, 1994).

One reason gender disparities in female-dominated fields are more intransigent than those in male-dominated fields may have to do with antifemininity, or the idea that the avoidance of the feminine is a central aspect of the male gender role (Bosson & Michniewicz, 2013). Supporting the idea that male students are avoiding the feminine in the domain of language study, differences in attitudes and motivation towards foreign language appear to vary according to the perceived masculinity or femininity of the language in question. British boys in grades 7-9 were more motivated to learn German than French because they saw French as being too feminine (Williams, Burden, & Lanvers, 2002). Similar results were found among Irish students, who associated German with masculine pastimes like war and soccer (Glowka, 2014). Data from the U.S. further corroborates this; German is one of the few foreign language majors that is not

heavily female dominated (NCES, 2014). Studies that assessed how gender ideologies differentiate men who study foreign languages from those who do not showed that men who believe that masculinity involves toughness, striving for high status, and avoidance of the feminine are less likely to be enrolled in language classes than men who do not endorse such ideologies (Chaffee & Noels, in preparation; Chapter 2; Noels, Chaffee, & Elcheson, in preparation).

When threats to masculinity combine with antifemininity and the perception of certain educational domains as feminine, this combination may lead male students to avoid language learning. Gender threat, and masculinity threat in particular, differs importantly from stereotype threat and operates through different psychological mechanisms. Though both threats can be considered related to social identity, they operate in different ways; stereotype threats are threats to the value and competence of a social identity, while masculinity threats threaten the validity of the individual's membership in a social identity. Stereotype threat causes negatively stereotyped individuals to feel pressured to disconfirm negative stereotypes about their group, and this pressure undermines the individual's performance on stereotype-relevant tasks (Steele, Aronson, & Spencer, 2007). In contrast, masculinity threat motivates men to disprove the threat by re-asserting their gender identities through stereotypically masculine behavior. Masculinity-threatened men protect their manhood through hyper-masculine behavior (e.g. Cohn, Seibert, & Zeichner, 2009; Maas, Cadinu, Guarnieri, & Grasselli, 2003), while stereotype-threatened individuals underperform and may dissociate from the threatened identity (e.g. stereotype threatened women may dissociate themselves from femininity; Steele et al., 2007). Previous studies of stereotype threat have provided little evidence that it is a major factor for men's language learning (Noels et al., in preparation; Chapter 3). Consistent with the idea that

masculinity threats may be more important in this domain, one study of adolescents suggested that gender threats, but not competence threats, may increase endorsement of gender-stereotypical occupational interests (Sinclair & Carlsson, 2013).

Masculinity threat experiments have typically used false feedback to call participants' masculinity into question by informing men that they have scored in the feminine range on tests of personality or strength. These masculinity threats made men more likely to aggress (Cohn et al., 2009), sexually harass a female experimenter (Maas et al., 2003), and express negative attitudes towards effeminate gay men (Glick, Gangl, Gibb, Klumpner, & Weinburg, 2007). Masculinity threat also leads men to engage in actions intended to distance themselves from femininity; masculinity-threatened men express decreased preferences for feminine-typed products and decreased liking for other men who express stereotypically feminine preferences (Cheryan, Cameron, Katagiri, & Monin, 2015; Schmitt & Branscombe, 2001).

The Present Studies

The goals of this study is to test whether threats to male university students' masculinity beliefs lead them to disavow interest in language learning, language majors, and language-related careers, and to endorse more negative attitudes towards language learning. The content of participants' beliefs about gender is likely to be important for predicting how masculinity threat will affect men. Prior research has shown that gender ideologies, or beliefs about what a man or a woman should be like, predict gendered educational and vocational interests (e.g. Tokar & Jome, 1998; van der Vleuten, Jaspers, Maas, & van der Lippe, 2016). We therefore believe that masculinity threats will influence language learning interests, intentions, and attitudes only among men who endorse traditional ideas about gender roles.

Primary hypotheses.

Hypothesis 1 (interests and intentions): Masculinity threat will lead men to express less intention to study languages in the future and less interest in language-related subjects and careers, but not STEM-related ones. This pattern will be seen only among men with more traditional beliefs about the male gender role.

Hypothesis 2 (attitudes and belonging): Masculinity threat will lead to negative attitudes towards language learning and less sense of membership in the language community among men who hold traditional gender beliefs.

Exploratory research questions.

In addition to our primary hypotheses, we also investigated two research questions related to whether masculinity threat would influence men's actual or perceived ability to do well at language learning tasks.

Research question 1 (language aptitude): Will masculinity threat have any effect on language aptitude test performance? Threats to masculinity can be considered a threat to identity rather than to competence, so we do not expect to find a difference in men's performance on language aptitude tests by condition.

Research question 2 (confidence in language ability): Will masculinity threat influence men's self-ratings of language ability? While language aptitude is believed to be a stable internal characteristic, self-ratings of ability are subjective self-beliefs that may be more situationally variable. As such, we expect that masculinity-threatened men with traditional masculinity beliefs may downplay their ability in feminine domains by reporting lower feelings of ability to excel in language study.

To examine the effects that these stereotypes of language as a feminine domain might have on men's interests, intentions, attitudes, and sense of belonging towards foreign language

learning (hypotheses 1 & 2), we conducted an experiment using masculinity threat. To investigate our research questions, we also included language aptitude tests and self-ratings of ability.

Method

Participants

Male students from a western Canadian university participated in this study in exchange for partial credit towards their introductory psychology course. Six participants who indicated they did not understand the manipulation materials were excluded from analyses, as well as one for experimenter error and one for disruptive behavior during the research session. The final sample consisted of 182 men ($M = 19.01$, $SD = 2.70$), of whom 50.55% were White, 33.52% were Asian, and the rest reported other ethnicities. All participants were native English speakers (79.12% monolingual and 20.33% bilingual in English and another language). Most participants were in their first (62.64%) or second (22.53%) year of university. Although only 5.49% of participants were enrolled in a language course and only 28.57% were enrolled in faculties with language requirements, the majority (152) reported some prior language learning experience. Eighty-eight participants were randomly assigned to the masculinity threatened condition and 94 to the masculinity affirmed condition. No demographic characteristics (age, ethnicity, bilingualism, faculty language requirement, year of university, or language learning experience) differed by condition. We decided to collect between 80 and 100 participants per group; power analysis showed that this sample size would provide over 90% power to detect the effect sizes found by Cheryan et al. (2015, Study 2) for masculinity threat effects on interest in feminine products.

Procedure

Using procedures adapted from Schmitt and Branscombe (2001), participants were told that they would be completing two separate studies, the first of which was a trial program for providing students with results from the psychology department's beginning-of-semester mass testing questionnaire. All study participants were required to have previously taken part in the mass testing survey administered to students in introductory psychology courses for partial course credit. This pre-testing survey took place at least a week, and up to three months, prior to students' participation in the experiment. Participants were given envelopes including false masculinity feedback, as well as false feedback on the four filler dimensions, and a letter explaining the "trial program" and how their results should be interpreted (see Appendix B).

Once participants had completed the "first study" and viewed the manipulated feedback, they were directed to a second consent form and the experimenter informed participants that they would be completing a second study about interest in foreign languages. After receiving this information, participants began the "second study," which consisted of scales and language aptitude tasks. Finally, in compliance with ethical protocols, participants were fully debriefed and shown that all feedback was fake and not based on their actual scores.

Materials

Pre-testing materials. Participants rated their endorsement of traditional masculine gender roles (three items from different subscales of Thompson & Pleck's [1986] Male Role Norms Scale [MRNS]; e.g. "It is essential for a man to always have the respect and admiration of everyone who knows him;" α = .53[4]) on a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*) in the aforementioned mass testing questionnaire.

---

[4] The full MRNS scale could not be used in pre-testing due to time constraints, limiting reliability due to the small number of items and the nature of the items as tapping different types of traditional masculinity beliefs. Cronbach

Masculinity threat and manipulation. The masculinity threat manipulation was adapted from Schmitt and Branscombe (2001) and Cheryan et al. (2015). Participants in the masculinity threatened condition received a masculinity score that was close to the female average and well below the male average. Participants in the masculinity affirmed condition received a masculinity score that was on the high end of the male average range (Appendix B). Both versions of the false feedback included scores for four filler traits (openness to experience, agreeableness, self-esteem, and cognitive flexibility), and these scores were the same for both experimental conditions.

Participants completed an eight-item feedback scale also adapted from Schmitt and Branscombe (2001) to bolster the cover story (e.g., "I am pleased with my scores from mass testing;" 1 = *strongly disagree*; 7 = *strongly agree*; α = .86). Participants also responded to questions about whether their scores on masculinity and the four filler dimensions were higher, lower, or the same as they expected on a 9-point scale (1 = *much lower than expected*; 5 = *exactly as expected*; 9 = *much higher than expected*).

Plans for language study. Participants rated seven items on a 7-point scale (1 = *definitely will not study*; 7 = *definitely plan to study*) about whether they intended to study six popular foreign languages (French, Spanish, German, Italian, Chinese, and Japanese; α =.71) in the future.

Attitudes towards foreign languages. Participants responded to a ten-item scale adapted from Gardner, Tremblay, and Masgoret (1997; e.g., "I wish I could speak another language

---

Alpha is known to be biased towards providing lower values when the number of items is small, as in this case. Briggs and Cheek (1986) suggest that an inter-item correlation between .2 and .4 suggests optimal internal consistency (see also (Piedmont & Hyland, 1993; Streiner, 2003)). The mean inter-item correlation for our three items was r = .28. Furthermore, the items load onto a single factor in EFA with loadings ranging from .52 - .81.

perfectly") on a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*). A high score reflects a positive attitude towards language learning ($\alpha = .95$).

Sense of membership. Participants responded to four questions on an 8-point scale (1 = *strongly disagree*; 8 = *strongly agree*) adapted from the membership subscale of Good et al.'s (2012) sense of belonging scale (e.g. "I feel that I am a part of the language community;" $\alpha = .95$).

Interest and self-efficacy in majors and careers. Participants reported their interest in 13 majors including three popular foreign language majors (French, Spanish, and German), five STEM majors (e.g. "Chemistry"), and five filler majors (e.g., "Psychology") on a 5-point scale (1 = *not at all interested*; 5 = *very interested*). They also rated their self-perceived level of ability for the same list of majors on a 9-point scale (1 = *very low ability*; 9 = *very high ability*). Participants reported their interest in 16 careers, including five foreign language-related careers (translation or interpreting, airline services, language education, teaching English abroad, tourism) and four STEM-related careers (e.g., "Engineer") on a 5-point scale (1 = *not at all interested*; 5 = *very interested*).

Language aptitude. Participants completed Meara's (2005) four LLAMA tasks as a measure of language aptitude. The tasks measure vocabulary learning (LLAMA B), phonetic memory (LLAMA D), sound-symbol correspondence (LLAMA E), and grammatical inferencing (LLAMA F; $\alpha = .55$[5]).

Results

---

[5] We report results for mean LLAMA score because the results do not differ substantially across the four separate tests; all interaction effects and main effects of masculinity threat on LLAMA subtests are nonsignificant when analyzed separately. As noted later, the main effect of MRNS was only significant for the LLAMA E subtest. The mean inter-item correlation for the four LLAMA tests was $r=.22$.

Manipulation Check and Preliminary Analysis

One-sample t-tests comparing the mean for each condition to the mid-point of the scale were computed to test the effect of the manipulation. Participants in the masculinity threat condition rated their masculinity score (from the false feedback) as lower than they expected (M = 2.86; SD = 1.56, $t(87)$ = −12.83, $p < .001$, CI = [−2.47, −1.81], d = −1.37), while participants in the masculinity affirmed condition reported that their masculinity score was higher than expected (M = 6.06 ; SD = 1.37, $t(93)$ = 7.51, $p < .001$, CI = [0.78, 1.34], d = 0.77). An independent samples t-test confirmed that the conditions differed, $t(180)$ = 14.70, $p < .001$, CI = [2.77, 3.63], d = 2.18. Another independent-samples t-test showed that participants in the threat condition (M = 4.84, SD = .96) reported being less satisfied with their pre-testing feedback than those in the affirmed condition (M = 5.25, SD = .80), $t(180)$ = 3.19, p = .002, CI = [0.16, 0.68], d = 0.47. Independent samples t-test revealed that the moderator, masculinity ideology (MRNS), did not differ between the threat condition (M = 4.00, SD = 1.28) and the affirmed condition (M = 4.07, SD = 1.32), $t(180)$ = 0.34, p = .736, CI = [−0.32, 0.45], d = 0.05. These results indicate that the manipulation was successful and that the moderator did not differ by condition. Means, standard deviations, and variable inter-correlations are presented in Appendix C.

Major Analyses

We ran regression analyses to test the hypotheses and determine whether the effect of masculinity threat on the dependent variables was moderated by endorsement of traditional masculinity ideology (MRNS). Condition (masculinity threatened vs. affirmed), MRNS, and their interaction were regressed on the dependent variables. Results of the regression analyses are presented in Table 12. In cases where the interaction was statistically significant, the simple slopes for high and low levels of the moderator (+1SD and −1SD MRNS) are presented in Table

13. There were significant interaction effects of masculinity threat and male role beliefs on intention to study a foreign language in the future (Figure 4), interest in foreign language majors, and attitudes towards language learning, but not interest in foreign language-related or STEM-related majors or careers (see Table 12). There were main effects of MRNS on interest in STEM-related majors and jobs, with more traditional men having more interest in these disciplines.[6]

Table 12. Linear regression of condition, MRNS, and condition x MRNS on dependent variables.

	R^2	b	SE	t	p	95% CI
Intention to Study FL	.04					
Condition		0.40	0.25	1.59	.110	−0.10, 0.90
MRNS		−0.06	0.06	−0.96	.340	−0.17, 0.06
Condition x MRNS		−0.13	0.06	−2.13	.035	−0.24, −0.01
Interest in FL Majors	.08					
Condition		0.60	0.21	2.91	.004	0.19, 10.00
MRNS		0.01	0.05	0.28	.777	−0.08, 0.11
Condition x MRNS		−0.17	0.05	−3.57	<.001	−0.27, −0.08
Interest in STEM Majors	.04					
Condition		0.18	0.24	0.72	.470	−0.30, 0.65
MRNS		0.12	0.06	2.09	.038	0.01, 0.23
Condition x MRNS		−0.06	0.06	−1.09	.280	−0.17, 0.05
Interest in Language-related Jobs	.01					
Condition		−0.07	0.17	−0.42	.678	−0.43, 0.28
MRNS		−0.04	0.04	−0.98	.328	−0.12, 0.04
Condition x MRNS		−0.01	0.04	−0.22	.824	−0.07, 0.09
Interest in STEM-related Jobs	.07					
Condition		−0.09	0.20	−0.43	.664	−0.49, 0.31
MRNS		0.17	0.05	3.54	<.001	0.08, 0.26
Condition x MRNS		0.02	0.05	0.49	.627	−0.07, 0.12
Attitudes Towards Language Learning	.03					
Condition		0.42	0.22	1.87	.063	−0.02, 0.86
MRNS		−0.02	0.05	−0.33	.739	−0.12, 0.09
Condition x MRNS		−0.11	0.05	−2.17	.031	−0.22, −0.01
Sense of Membership	.02					
Condition		0.11	0.44	0.25	.798	−0.76, 0.99
MRNS		0.08	0.10	0.80	.425	−0.12, 0.29
Condition x MRNS		−0.07	0.10	−0.68	.495	−0.28, 0.14
Self-perceived Foreign Language Ability	.04					
Condition		1.01	0.41	2.46	.015	0.20, 10.84

[6] Bilingual participants were included in all analyses. Excluding bilingual participants did not change the significance level or nature of any interaction effects. Excluding bilingual participants made the main effects of MRNS on STEM interest and STEM ability nonsignificant, but did not change any other effects.

		b	SE	t	p	95% CI
MRNS		0.03	0.10	0.36	.719	−0.16, 0.23
Condition x MRNS		−0.26	0.10	−2.65	.009	−0.45, −0.07
Self-perceived STEM Ability	.03					
Condition		0.08	0.41	0.21	.837	−0.72, 0.89
MRNS		0.21	0.10	2.22	.028	0.02, 0.41
Condition x MRNS		−0.04	0.10	−0.40	.691	−0.23, 0.15
Language Aptitude (LLAMA)	.05					
Condition		−2.72	4.18	−0.65	.515	−10.96, 5.52
MRNS		−3.01	0.98	−3.06	.003	−4.94, −1.07
Condition x MRNS		0.47	0.98	0.47	.636	−1.47, 2.41

Table 13. Simple slopes analyses for effect of experimental condition at ±1SD of the moderator, endorsement of traditional masculine gender roles (MRNS).

	MRNS	b	SE	t	p	95% CI
Intention to Study Foreign Language	+1SD	−0.28	0.11	−2.52	.013	−0.49, −0.06
	−1SD	0.05	0.11	.50	.618	−0.16, 0.27
Interest in Foreign Language Majors	+1SD	−0.33	0.09	−3.66	<.001	−0.50, −0.15
	−1SD	0.12	0.09	1.39	.166	−0.05, 0.30
Attitudes Towards Language Learning	+1SD	−0.19	0.10	−2.00	.047	−0.38, −0.00
	−1SD	0.10	0.10	1.08	.283	−0.09, 0.29
Self-perceived Foreign Language Ability	+1SD	−0.36	0.18	−2.02	.045	−0.72, −0.01
	−1SD	0.31	0.18	1.73	.089	−0.04, 0.66

As expected, threatened men expressed more negative attitudes about language learning than masculinity-affirmed men only if they held traditional masculinity ideologies. As well, there was a significant interaction showing that threatened men high in traditional masculinity ideology were less confident about their ability to excel at foreign language learning than non-threatened men. Beliefs about ability in STEM domains were unaffected by the manipulation, though there was a main effect of MRNS such that higher endorsement of traditional masculine role norms was associated with greater confidence in STEM ability.
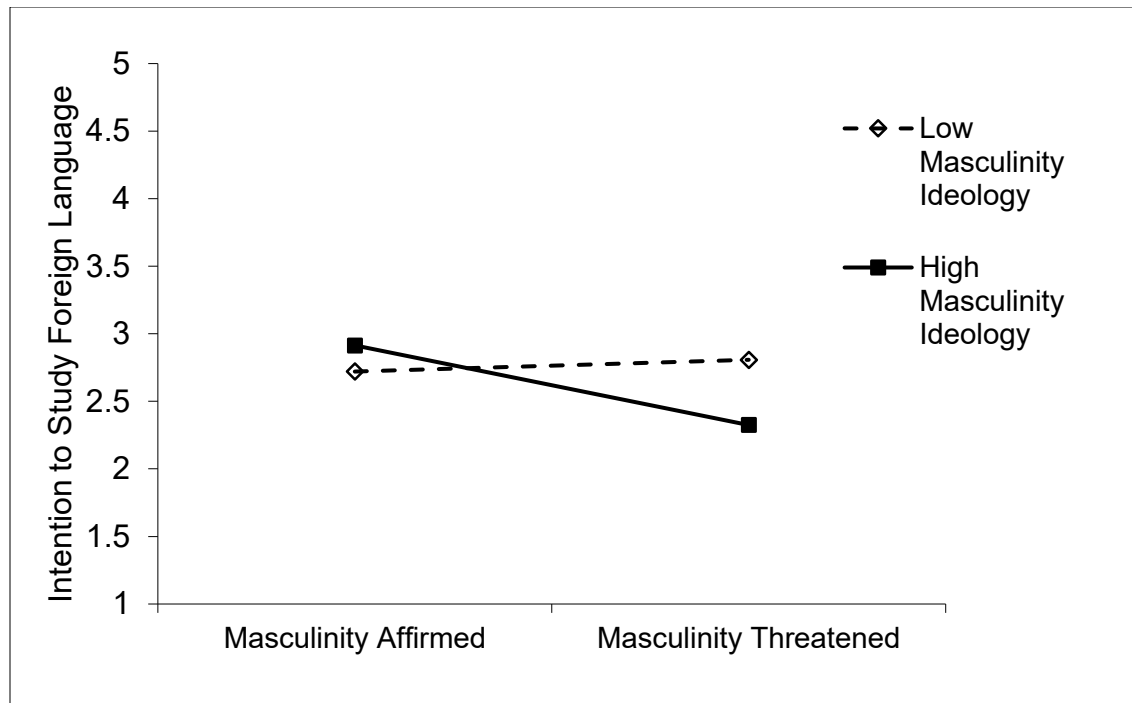
Figure 8. Simple slopes analysis showing the effect of the masculinity threat manipulation on intention to study foreign languages in the future, as moderated by male role norm beliefs (MRNS). "Low masculinity ideology" and "high masculinity ideology" refer to values 1 standard deviation below and above the mean of MRNS.

In terms of participants' language aptitude, as measured by the LLAMA tasks, there were no main effects of condition or interactions. However, there was a main effect of masculinity ideology on LLAMA scores: men with strong male role beliefs had lower language aptitude. When the four aptitude tasks were analyzed separately, there were no main effects for condition or interactions, and main effects of MRNS were observed only on the grammatical inferencing task.

In summary, as shown in Table 12 and Figure 8, among participants who strongly endorsed traditional masculine gender roles (+1 SD MRNS), those in the threat condition reported more negative attitudes towards learning foreign languages and towards foreign language majors, less intention to study foreign languages in the future, and less self-perceived competence at foreign language learning compared to those in the affirmed condition. For

participants who did not endorse traditional masculinity beliefs (–1 SD), there were no significant differences between the threat and affirmed conditions.

Discussion

This study is the first to investigate gender beliefs and gender threats as interactive mechanisms for gender segregation in an educational discipline. Although women have been increasingly entering male-dominated fields for several decades, the same is not true of men and female-dominated fields (Croft et al., 2015). We focused on the under-studied side of this phenomenon: men in female-dominated subject areas like foreign language. Our study also extends prior findings about gender threat and avoidance of the feminine to the domain of education. Extending the gender threat literature to educational interests and intentions is important because educational choices may have impactful long-term consequences; communication skills, including foreign language skills, are generally considered to be feminine "soft skills", but men who lack foreign language skills may be disadvantaged in increasingly globalized job markets. The present study suggests that gender threats and men's masculinity beliefs have important effects on men's educational choices, which may have major downstream implications for men's lives, intercultural opportunities, and occupational options.

In support of our first hypothesis, we found that masculinity threat led men with traditional masculinity ideologies to report less intention to study languages in the future and less interest in language majors. Counter to our hypothesis, this effect was not seen for language-related careers. The lack of effect on career interest may have been due to the fact that for our sample, comprised mainly of first year university students, career choices are still a distal concern compared to the choice of courses and majors. Masculinity-threatened men with traditional ideologies also reported more negative attitudes towards language learning but not less sense of membership, partially supporting hypothesis two.

Threatened men with traditional ideologies also reported less confidence in their ability to excel at foreign language study, consistent with our expectations, but the threat manipulation did not actually undermine language aptitude. These findings highlight that male students' motivational deficits in foreign language study are partially rooted in their socially acquired masculine identities. Since previous studies have shown that male students' underachievement in language classes is probably due to a lack of motivation but not a lack of aptitude (Heyder, Kessels, & Steinmayr, 2017), our results provide additional support for the importance of social psychological mechanisms for men's achievement in this domain.

Although language aptitude was not influenced by masculinity threat, its relation with endorsement of traditional masculinity ideologies, a social psychological construct, was unexpected. Generally, aptitude has been assumed to have an independent effect on language learning (e.g. Gardner, 1985). Even if aptitude is less important than motivation for explaining achievement (Heyder et al., 2017), understanding this link may be important for a deeper understanding of men's educational choices. It may be that men who believe in traditional gender roles are less likely to develop their language aptitude, or that men with poorer language aptitude interpret their lack of aptitude as evidence that gender essentialist views and traditional gender roles are correct. Or, it may simply be that the cause of the link is that less intelligent individuals tend to both rely more on stereotypes and traditional social roles (Kemmelmeier, 2008) and have poorer language aptitude. Issues of gender identity, ideology, and stereotyping are complex, and as such further investigation is needed. Future studies should further investigate potential mechanisms not measured in the present study.

The fact that masculinity threat effects emerge only among men with traditional masculinity beliefs highlights the importance of cultural beliefs about gender roles in educational

decision-making. The content of men's beliefs about appropriate male activities is important

when men express interests and form intentions in gender-typed domains. Although we did not

find an effect on career interest, masculinity beliefs are likely also relevant to occupational

decision-making given that interest predicts career choice over time (e.g. Lauermann, Tsai, &

Eccles, 2017). One potential implication of our study is that in order to encourage more men to

enter female-dominated areas of study, it may be important to challenge stereotypes about these

disciplines.

The present study also differentiates the issue of men's underrepresentation in language

study from that of women in STEM by examining masculinity threat rather than stereotype

threat. Antifemininity is a unique aspect of the male gender role; women have not been found to

feel an analogous anti-masculinity pressure (e.g. Bosson & Michniewicz, 2013). Similarly,

researchers have found that female undergraduates do not feel that womanhood is precarious,

and that only men show a response to gender threats (Vandello, Bosson, Cohen, Burnaford, &

Weaver 2008; for a counter-example with adolescent girls, see Sinclair & Carlsson, 2013). This

study thus highlights an influence on men's educational segregation that is unlikely to affect

women in STEM domains. As well, although our manipulation led men with traditional

ideologies to devalue language learning, it did not threaten their sense of membership to the

language community. Since unstigmatized identities are not susceptible to belongingness threats

(Walton & Cohen, 2007), it may be that men's privileged role in society at large (i.e., their

unstigmatized identity as men) protects men from feeling out of place in language education.

Conclusion

Men and women tend to choose different educational fields and cluster in different

occupations. The male side of this issue is under-studied, but there is growing interest in men's

absence from female-dominated occupations (Croft et al., 2015) as well as in boys'

underperformance both in language learning (Heyder et al., 2017) and school more generally

(e.g. Fortin, Oreopolis, & Phipps, 2015). Outlets like USA Today, The Atlantic, and The

Washington Post have noted that men's reluctance to enter female-dominated fields may hurt

them in an economy where these careers are growing faster than male-dominated ones (Swartz,

2017; Rosin, 2010; Guo, 2014), and psychologists have begun to link the pressure to conform to

traditional masculine norms to various negative consequences for men (Moss-Racusin & Good,

2015). Our results show that men who have traditional beliefs about what it means to be a man

are likely to avoid foreign language study if their status as a "real man" is threatened. Holding

traditional gender role beliefs may cause men to handicap themselves by limiting the scope of

educational choices they consider, suggesting that adopting more flexible societal gender roles

may benefit not only women, but also men.

Chapter 5: General Discussion

Male students across the world show lower reading and writing skills and lower language-related motivation than female students. Men are also not entering language-related major fields, such as literature, English, or foreign language to the same extent as women. In this program of research, I examined two socio-psychological explanations for these differences. This research represents an important step towards understanding the gender gap in language study. By identifying important processes that could deter men from language study, we may eventually be able to apply new or existing interventions to narrow the language gap.

In this research I have sought explanations for why few men study foreign languages beyond the point to which it is mandatory. Based in part on research of women in STEM, I believed that stereotypes would be an important factor in explaining this phenomenon. Across seven studies, I have investigated possible explanations from the perspectives of expectancy-value theory, stereotype threat, and masculine gender role beliefs. Using both cross-sectional and experimental designs I have established correlates and a plausible causal explanation for why fewer men than women choose to study foreign languages.

A correlational study probing differences between language learners and non-learners revealed that these groups of men differed in their motivation towards language learning and their gender beliefs. The two groups of men differed meaningfully in their beliefs about gender, in particular their prescriptive masculinity beliefs and sexist beliefs. They also differed in their self-perceived ability to succeed at foreign language learning, but not in their actual language aptitude. A path model based on expectancy-value theory suggested that beliefs in traditional masculine gender roles might deter men from learning foreign languages by causing men to devalue foreign language study. These findings implied that gender beliefs might play a role in men's educational decisions, in particular by influencing their task values for FL.

In another preliminary study, I confirmed that, consistent with research performed elsewhere, Canadian university students stereotype language learning as feminine and believe that women have an advantage in verbal and foreign language skills compared to men. These beliefs were robust and consistent across male and female students, as well as across both Anglo-Canadian students and students for whom English was not a native language.

In my next set of studies, involving over 500 students, I examined the possibility that gendered stereotypes about language might influence men's performance on language tests, which would be expected to relate to their expectancies of success in language domains. I found little evidence that stereotype threats, which focus on competence, affect men in verbal domains. Across four studies, I repeatedly found that stereotype threat failed to influence men's performance on verbal tests or foreign language aptitude tests, their sense of belonging to language domains, or their language attitudes. Throughout these studies, I found only one main effect of stereotype threat-- on interest in majoring in Spanish. As this single effect was the only significant main effect across four studies and many dependent variables, I consider this finding tentative; without replication, I refrain from concluding that stereotype threat lessens men's interest in Spanish. For stereotype threat to influence interest without influencing performance is inconsistent with stereotype threat theory. If this effect is replicable, it may be due to some mechanism other than stereotype threat itself; perhaps the stereotype threat manipulation activated not only ideas about men's capability, but also stereotypes of the femininity of language learning or ideas about what men should and should not study. Overall, these results suggest that stereotype threat is not a likely explanation for men's underrepresentation in foreign language classes or men's underperformance at language in school and standardized testing.

Finally, to examine how values might be involved in men's interest and enrollment in FL study, I employed a masculinity threat paradigm to probe a causal link between gender beliefs and foreign language interest and intentions. I found that threats to masculinity cause men whose beliefs about masculinity are traditional to devalue and distance themselves from foreign language learning. This finding supports the idea that beliefs about appropriate masculine behavior are one plausible cause underlying the gender gap in foreign language class enrolment. These findings also highlight men's underrepresentation in female-dominated disciplines as attributable to factors distinct from those that affect women in STEM domains, since several studies have shown that adult women are not threatened by feedback suggesting that they are masculine (e.g. Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008; Willer, Rogalin, Conlon, & Wojnowicz, 2013). Instead, threats to competence have been more consistently shown to predict STEM enrolment and performance for women.

Limitations and Future Directions

Though masculinity threat affected men's foreign language interest and intentions, I also found in chapter 2 that male foreign language learners did not differ from non-learners in how much they believed masculinity to be precarious. I was somewhat surprised by this finding because it seems to imply that although masculinity threats affect foreign language interest, men who do choose foreign language study do not necessarily reject the idea that it is possible to lose their masculinity. One possible explanation is that it is not personal belief in precarious masculinity that matters, but knowledge of the cultural stereotype. In other words, men may be primarily worried that others will think they are feminine if they study foreign language, regardless of personal level of belief that "manhood is hard won and easily lost."

It also remains unclear whether these findings are valid cross-culturally. In these studies, I have primarily studied Anglo-Canadian students learning languages other than English. The global status of English as an international *lingua franca* and the global power and status of Anglophone countries such as the U.K., the U.S.A., and Canada means that the experiences of Anglophone students studying other languages may be very different from the experiences of students in other countries studying English. Global status differentials between different languages and the countries where those languages are spoken may prove to be an important predictor of which languages men are more willing to learn. However, multiple studies suggest that even among students required to learn English in countries like China and Japan, boys and men see learning English as less valuable and less motivating than girls and women do (Kobayashi, 2002; Yashima et al., 2016; You & Dornyei, 2014). Furthermore, the stereotypes of the genderedness of foreign language subjects and abilities reported in Chapter 3 were consistent among students born outside Canada who did not have English as a native language. Taken together, this suggests that issues surrounding men, language learning, and gendered stereotypes may be globally widespread and in need of further study internationally.

Some aspects of men's gender beliefs would also benefit from further cross-cultural investigation. The precarious nature of manhood has been established across several nations and ethnicities (Vandello & Cohen, 2008), but there appears to have been little examination of antifemininity as an aspect of the male gender role across cultures. A recent study suggests that although antifemininity is a highly salient aspect of masculinity for American men, Danish men contrast manhood not with womanhood but with boyhood (Dimuccio, Yost, & Helweg-Larsen, 2017). It also appears that experiments using masculinity threat paradigms have yet to be conducted across a wide variety of cultural contexts; though masculinity threat effects have been

demonstrated in Poland, Italy, and Australia (Hunt, Fasoli, Carnaghi, & Cadinu, 2015; Hunt &

Gonsalkorale, 2014; Kosakowska-Berezecka, Besta, Adamska, Jaśkiewicz, & Vandello, 2016),

my searches revealed no studies of masculinity threat outside Europe, North America, and

Australia. Though gender differences in foreign language motivation and enrolment appear to

exist across many cultures, it is possible that the reasons underlying these differences may differ

if the stereotypical content of masculinity differs culturally.

One question I would like to explore in future research is whether the existence or

strength of antifemininity norms vary cross-culturally. My hypothesis is that countries with less

gender equality in economic and political arenas may have lower levels of antifemininity

because in these countries, men's superiority is more strongly affirmed by societal relations and

structures. In more egalitarian countries, on the other hand, men may feel that their privileged

status is under threat, and may therefore seek to affirm their distinctiveness from women.

Hofstede's (2001) cultural dimension of masculinity, with its emphasis on assertiveness, might

also be related to antifemininity norms, with relatively "masculine" countries like the United

States having stronger antifemininity norms than "feminine" countries like Denmark. If this is

the case, it provides an explanation for findings that gender differences in personality are larger

in more egalitarian countries, with the effect being driven by men (Schmitt, Realo, Allik, &

Voracek, 2008).

Although I found little evidence for stereotype threat (and hence competence concerns)

affecting men in language domains across four studies, it is possible that this null result was due

to limitations of my studies such as their moderate statistical power or the overt nature of the

threat manipulations. It may also be that stereotype threat effects for men in verbal domains

exist, but are very small in effect size, even taking into account the moderators I addressed with

my study designs. Alternatively, it may be that if, rather than studying male university students (or ESL-speaking students) in general, studying men in a specific foreign language class and giving men a test in that language—for example, studying men in high school Spanish classes and giving them a Spanish test as the dependent variable-- would yield significant stereotype threat effects. However, I did not have access to a sample of male learners of a single foreign language that was of sufficient size and homogeneity to run such a study with even moderate levels of statistical power.

My findings do not provide an answer for questions of why men underperform on language tests. I observed no differences in men's language aptitude after stereotype or masculinity threats. Men's language aptitude also did not differ from women's in Chapter 3, stereotype threat study 1, nor did language aptitude differ between men in foreign language classes and men not studying foreign language in Chapter 2. Based on this, I have no evidence to suggest a direct cause for gender differences in language test performance or grades. It is possible that such differences may emerge over time as a result of differences in motivation and interest, but that remains to be confirmed by future research.

Implications of the findings

The findings presented in this dissertation suggest an explanation for men's lack of motivation in language domains. Stereotypes that language is a feminine domain do appear to have implications for men's behavior, and in particular their value for, interest in, attitudes towards, and intention to study foreign languages. In investigating how gender stereotypes relate to foreign language learning, I found that though stereotypes of men's lesser ability in verbal and foreign language domains were robust, these stereotypes did not appear to affect men's sense of belonging to language domains. Instead, gender stereotypes were related to language attitudes

and foreign language motivation. Men concerned about asserting their masculinity distance themselves from foreign language learning.

The effect sizes I observed in chapters 2 (regarding difference between foreign language learners and non-learners) and 4 (regarding masculinity threat and masculinity ideology) ranged from small to medium. These effect sizes are fairly typical of effect sizes in social psychology as a whole; an analysis by Richard, Bond Jr., and Stokes-Zoota (2003) found that effects in social psychology averaged to a Pearson's *r*-value of .21 with a standard deviation of .15, providing a 95% confidence-interval ranging from very small to medium-sized effects. Effect sizes for gender differences in children's socialization have also been found to range from small to medium (Lytton & Romney, 1991), as have gender differences in children's reading achievement (Lynn & Mikk, 2009). Although these effect sizes may mean the present findings are a piece of a larger puzzle, my results bring us closer to understanding men's underrepresentation in foreign languages and highlight a way in which gender stereotypes place limits on men. Some psychologists have argued that even statistically small effects may have large societal impacts in cases where the effect in question is one that affects large numbers of people or affects persons repeatedly over time (Greenwald, Banaji, & Nosek, 2015). Given that men represent about half of humanity and that it seems plausible for gender stereotypes to influence the life course multiple times, I consider these modest results worthy of further investigation due to the possibility that they may be indicative of a larger cumulative societal consequence.

These findings illustrate that future research cannot assume that the same social psychological processes operating for women in STEM provide an adequate model for studying men in female-dominated domains. Though the stereotype that "math is for boys, but language is for girls" is likely an example of a complementary gender stereotype (Jost & Kay, 2005),

processes distinct to the masculine gender role appear to contribute to men's underrepresentation, at least in the domain of foreign language study. In avoiding female-dominated fields, men may be affirming a masculine identity for themselves. On the other hand, women who avoid male-dominated fields have not been shown to be affirming their femininity in doing so. Instead, research with women in STEM has focused on perceptions of ability, hostile classroom and work climates, and anticipation of discrimination. Though later research may find that some of these factors also affect men, at this juncture it appears that concern about stereotypes of men's language ability does not have a sizeable effect on men's educational choices. Gender identity affirmation motivates men's choices, but it is unlikely to be a driving force behind women's choices. Though there may prove to be overlap, researchers should consider processes that deter women from STEM independently of those that deter men from fields such as the humanities and the caring professions.

This research program represents one step towards addressing inequalities in gender representation in society from the "man's side." Recent research shows that when gender equality is framed as an issue that affects both men and women, men are more willing to take action to remedy gender inequality (Subasic, 2018). By examining how gender roles and gender stereotypes limit men's educational choices, we open new avenues for framing gender equality as a men's issue, thereby increasing opportunities for collective action.

Better understanding the social psychological reasons why men are underrepresented in female-dominated fields also brings us closer to learning how to increase gender diversity in these fields, which may have implications for later recruitment into these fields and even for closing the gender pay gap. Research by sociologists indicates that as more women enter an educational domain or an occupation, it becomes devalued (England & Li, 2006; Karlin,

England, & Richardson, 2002; Levanon, England, & Allison, 2009; Mandel, 2013; Murphy & Oesch, 2016). As more women enter a university major, fewer men enter that major (England & Li, 2006). Similarly, evidence suggests that pay gaps are not caused by men selecting high-paying jobs and women preferring relative lower-paying jobs. Instead, feminization of an occupation leads to devaluation and lower pay for that occupation over time (Levanon et al., 2009; Mandel, 2013; Murphy & Oesch, 2016). If research into men's underrepresentation in these fields allows us to reverse those trends and improve the gender balance not just of STEM fields, but also of female-dominated fields such as caring and communicative professions, the pay and prestige of these educational fields and occupations might increase.

Final Conclusion

Taken together, this research suggests that it is not stereotypes of men's competence that hold men back from FL study. Instead, stereotypes about appropriate behavior for men appear to be a more important deterrent. In other words, it appears to be ideas about what men *should* do rather than ideas of what they *can* do that matter. This research begins to address the gender gap in female-dominated fields, which is both intransigent and under-studied (Croft et al., 2015). These and future studies can help researchers to address gender inequality and the effects of gendered stereotypes from both sides of the issue, as well as bringing attention to the fact that gender stereotypes and gender inequality are not just women's issues, but concerns that can also affect and limit men.

References

Aaltio-Marjosola, I. (1994). Gender stereotypes as cultural products of the organization.

Scandinavian Journal of Management, *10*(2), 147–162. http://doi.org/10.1016/0956-5221(94)90017-5

Abu-rabia, S. (1997). Gender differences in Arab students' attitudes toward Canadian society

and second language learning. *Journal of Social Psychology*, *137*(1), 125–128.

http://doi.org/10.1080/00224549709595420

Adesope, O. O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A systematic review and

meta-analysis of the cognitive correlates of bilingualism. *Review of Educational Research*,

80(2), 207–245. http://doi.org/10.3102/0034654310368803

Aronson, J., Fried, C. B., & Good, C. (2002). Reducing the effects of stereotype threat on african

american college students by shaping theories of intelligence. *Journal of Experimental

Social Psychology*, *38*(2), 113–125. http://doi.org/10.1006/jesp.2001.1491

Aronson, J., Lustina, M. J., Good, C., Keough, K., Steele, C. M., & Brown, J. (1999). When

white men can't do math: Necessary and sufficient factors in stereotype threat. *Journal of

Experimental Social Psychology*, *35*(1), 29–46. http://doi.org/10.1006/jesp.1998.1371

Bacon, S. M. C., & Finnemann, M. D. (1992). Sex differences in self-reported beliefs about

foreign-language learning and authentic oral and written Input. *Language Learning*, *42*(4),

471–495. http://doi.org/10.1111/j.1467-1770.1992.tb01041.x

Baker, S. C., & MacIntyre, P. D. (2000). The role of gender and immersion in communication.

Language Learning, *50*(2), 311–341. Retrieved from https://doi.org/10.1111/0023-8333.00119

Bernhardt, E. B., & Kamil, M. L. (1995). Interpreting relationships between L1 and L2 reading:

Consolidating the linguistic threshold and the linguistic interdependence hypotheses.

Applied Linguistics, *16*(1), 15–34. http://doi.org/10.1093/applin/16.1.15

Boyraz, G., Horne, S. G., Owens, A. C., & Armstrong, A. P. (2013). Academic achievement and college persistence of African American students with trauma exposure. *Journal of Counseling Psychology*, *60*(4), 582–592. http://doi.org/10.1037/a0033672

Briggs, S. R., & Cheek, J. M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, *54*, 106–148. https://doi.org/10.1111/j.1467-6494.1986.tb00391.x

Canadian Council on Learning. (2009). Why boys don't like to read: Gender differences in reading achievement. *Lessons in Learning.* Retrieved from http://files.eric.ed.gov/fulltext/ED519285.pdf

Bosson, J. K., & Michniewicz, K. S. (2013). Gender dichotomization at the level of ingroup identity: What it is, and why men use it more than women. *Journal of Personality and Social Psychology, 105*, 425-442. http://doi.org/10.1037/a0033126

Boyraz, G., Horne, S. G., Owens, A. C., & Armstrong, A. P. (2013). Academic achievement and college persistence of african american students with trauma exposure. *Journal of Counseling Psychology*, *60*(4), 582–592. http://doi.org/10.1037/a0033672

Carr, J., & Pauwels, A. (2006). *Boys and foreign language learning: Real boys don't do languages*. Palgrave Macmillan. Retrieved from http://eprints.soas.ac.uk/9632/

Cejka, M. A., & Eagly, A. H. (1994). Gender-stereotypic images of occupations correspond to the sex segregation of employment. *Personality and Social Psychology Bulletin, 25,* 4, 413-423. https://doi.org/10.1177/0146167299025004002

Chaffee, K. E., Lou, M., & Noels, K. A. (2018). *Effects of stereotype threat on men's language learning.* Manuscript in preparation, University of Alberta.

Chaffee, K. E., Noels, K. A., & McEown, M. S. (2014). Learning from authoritarian teachers: Controlling the situation or controlling yourself can sustain motivation. *Studies in Second Language Learning and Teaching*, *4*(2), 355–387. http://doi.org/10.14746/ssllt.2014.4.2.9

Cheryan, S., Cameron, J. S., Katagiri, Z., & Monin, B. (2015). Manning up: Threatened men compensate by disavowing feminine preferences and embracing masculine attributes. *Social Psychology, 46*, 218-227. http://dx.doi.org/10.1027/1864-9335/a000239

Cheryan, S., Ziegler, S. A., Montoya, A. K., & Jiang, L. (2017). Why are some STEM fields more gender balanced than others? *Psychological Bulletin*, *143*(1), 1–35. http://doi.org/10.1037/bul0000052

Clark, J. L. D. (1981). Language. In T. S. Barrows (Ed.), *A survey of global understanding: Final report.* (pp.87-100). New Rochelle, NY: Change Magazine Press.

Clark, E. K., Fuesting, M. A., & Diekman, A. B. (2016). Enhancing interest in science: exemplars as cues to communal affordances of science. *Journal of Applied Social Psychology*, *46*(11), 641–654. http://doi.org/10.1111/jasp.12392

Cohn, A. M., Seibert, L. A., & Zeichner, A. (2009). The role of restrictive emotionality, trait anger, and masculinity threat in men's perpetration of physical aggression. *Psychology of Men & Masculinity*, *10*(3), 218–224. http://doi.org/10.1037/a0015151

Coleman, J., Galaczi, Á., & Astruc, L. (2007). *Motivation of UK school pupils towards foreign languages: A large-scale survey at Key Stage 3*. *Language Learning Journal* (Vol. 35). http://doi.org/10.1080/09571730701599252

Coleman, J. M., & Hong, Y.-Y. (2008). Beyond nature and nurture: The influence of lay gender theories on self-stereotyping. *Self and Identity*, *7*(1), 34–53. http://doi.org/10.1080/15298860600980185

Craik, F. I. M., Bialystok, E., & Freedman, M. (2010). Delaying the onset of Alzheimer disease. *Neurology*, *75*, 1726–1729. http://doi.org/10.1212/WNL.0b013e3181fc2a1c

Croft, A., Schmader, T., & Block, K. (2015). An underexamined inequality: Cultural and psychological barriers to men's engagement with communal roles. *Personality and Social Psychology Review, 19*, 343-370. http://doi.org/10.1177/1088868314564789

Csizér, K., & Dörnyei, Z. (2005). The internal structure of language learning motivation and its relationship with language choice and learning effort. *The Modern Language Journal*. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.0026-7902.2005.00263.x/abstract

Dale, P. S., Harlaar, N., & Plomin, R. (2012). Nature and nurture in school-based second language achievement. *Language Learning*, *62*(SUPPL. 2), 28–48. http://doi.org/10.1111/j.1467-9922.2012.00705.x

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. Retrieved from http://www.tandfonline.com/doi/abs/10.1207/S15327965PLI1104_01

Devine, P. G. (1989). Stereotypes and prejudices: Their automatic and controlled components. *Journal of Personality and Social Psychology*, *56*(1), 5–18. http://doi.org/10.1037/0022-3514.56.1.5

Dewaele, J.-M. (2005). Sociodemographic, psychological and politicocultural correlates in Flemish students' attitudes towards French and English. *Journal of Multilingual and Multicultural Development*, *26*(2), 118–137. http://doi.org/10.1080/01434630508668400

Dewaele, J.-M., MacIntyre, P. D., Boudreau, C., & Dewaele, L. (2016). Do girls have all the fun ? Anxiety and Enjoyment in the Foreign Language Classroom. *Theoy and Practice of*

Second Language Acquisition, *2*(1), 1–22.

Dimuccio, S. H., Yost, M. R., & Helweg-larsen, M. (2017). A Qualitative analysis of perceptions of precarious manhood in U. S. and Danish Men. *Psychology of Men & Masculinity*, *18*(4), 331–340. http://doi.org/0.1037/men0000062

Dörnyei, Z. (2010). *Questionnaires in Second Language Research: Construction, Administration, and Processing*. New York: Routledge.

Eccles, J. S. (1994). Understanding women's educational and occupational choices. *Journal of Women Quarterly*, *18*, 585–609. http://doi.org/10.1111/j.1540-4560.2011.01718.x

Eccles, J. S. (2005). Studying gender and ethnic differences in participation in math, physical science, and information technology. *New Directions for Child and Adolescent Development*, *110*(110), 7–14. http://doi.org/10.1002/cd.146

Eccles, J. S. (2011). Gendered educational and occupational choices: Applying the Eccles et al. model of achievement-related choices. *International Journal of Behavioral Development*, *35*(3), 195–201. http://doi.org/10.1177/0165025411398185

Ehrtmann, L., & Wolter, I. (2018). The impact of students' gender-role orientation on competence development in mathematics and reading in secondary school. *Learning and Individual Differences*, *61*(May 2017), 256–264. http://doi.org/10.1016/j.lindif.2018.01.004

Elmore, K. C., & Oyserman, D. (2012). If "we" can succeed, "I" can too: Identity-based motivation and gender in the classroom. *Contemporary Educational Psychology*, *37*, 176–185. http://doi.org/10.1016/j.cedpsych.2011.05.003

England, P., & Li, S. (2006). Desegregation stalled: The changing gender composition of college majors, 1971-2002. *Gender and Society*, *20*(5), 657–677. http://doi.org/10.1177/0891243206290753

Flaherty, C. (2018, March 6). U Wisconsin-Stevens Point to eliminate 13 majors. *Inside Higher Ed.* Retrieved from https://www.insidehighered.com/quicktakes/2018/03/06/u-wisconsin-stevens-point-eliminate-13-majors

Flaherty, C. (2018, March 19). L'œuf ou la Poule? *Inside Higher Ed.* Retrieved from https://www.insidehighered.com/news/2018/03/19/mla-data-enrollments-show-foreign-language-study-decline

Flore, P. C., & Wicherts, J. M. (2015). Does stereotype threat influence performance of girls in stereotyped domains? A meta-analysis. *Journal of School Psychology*, *53*(1), 25–44. http://doi.org/10.1016/j.jsp.2014.10.002

Fortin, N. M., Oreopoulos, P., & Phipps, S. (2015). Leaving boys behind: Gender disparities in high academic achievement. *Journal of Human Resources, 50*, 549-579. http://doi.org/10.3368/jhr.50.3.549

Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. London: Arnold, Edward.

Gardner, R. C. (2010). *Motivation and Second Language Acquisition: The Socio-educational Model*. New York: Peter Lang.

Gardner, R.C., Tremblay, P.F., Masgoret, A. (1997). Towards a full model of second language learning: An empirical investigation. *The Modern Language Journal, 81*, 344-362. doi:10.2307/329310

Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology*, *70*(3), 491–512. http://doi.org/10.1037/0022-3514.70.3.491

Glick, P., Gangl, C., Gibb, S., & Weinberg, E. (2007). Defensive reactions to masculinity threat:

More negative affect toward effeminate (but not masculine) gay men. *Sex Roles, 57*, 55-59.

doi:10.1007/s11199-007-9195-3

Glick, P., Wilkerson, M., & Cuffe, M. (2015). Masculine identity, ambivalent sexism, and

attitudes toward gender subtypes. *Social Psychology*, *46*(4), 210–217.

http://doi.org/10.1027/1864-9335/a000228

Glowka, D. (2014). The impact of gender on attainment in learning English as a foreign

language. *Studies in Second Language Learning and Teaching*, *4*(4), 244–259.

http://doi.org/10.14746/ssllt.2014.4.4.3

Good, C., Aronson, J., & Inzlicht, M. (2003). Improving adolescents' standardized test

performance: An intervention to reduce the effects of stereotype threat. *Journal of Applied*

Developmental Psychology, *24*, 645–662. http://doi.org/10.1016/j.appdev.2003.09.002

Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of belonging and

women's representation in mathematics. *Journal of Personality and Social Psychology*,

102(4), 700–717. http://doi.org/10.1037/a0026659

Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and

individual difference investigation. *Journal of Personality and Social Psychology*, *52*(5),

890–898. http://doi.org/10.1037//0022-3514.52.5.890

Greenwald, A. G., Banaji, M. R., & Nosek, B. A. (2015). Statistically small effects of the

Implicit Association Test can have societally large effects. *Journal of Personality and*

Social Psychology, *108*(4), 553–561. https://doi.org/10.1037/pspa0000016

Guo, J. (2014, December 11). Women are dominating men at college. Blame sexism. *The*

Washington Post. Retrieved from

https://www.washingtonpost.com/news/storyline/wp/2014/12/11/women-are-dominating-

men-at-college-blame-sexism/?utm_term=.cce2fee21f34

Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J. S., & Dicke, T. (2017). Extending expectancy-value theory predictions of achievement and aspirations in science: Dimensional comparison processes and expectancy-by-value interactions. *Learning and Instruction*, *49*, 81–91. http://doi.org/10.1016/j.learninstruc.2016.12.007

Hammen, C., Hazel, N. A., Brennan, P. A., & Najman, J. (2012). Intergenerational transmission and continuity of stress and depression: Depressed women and their offspring in 20 years of follow-up. *Psychological Medicine*, *42*(5), 931–942. http://doi.org/10.1017/S0033291711001978

Hartley, B. L., & Sutton, R. M. (2013). A stereotype threat account of boys' academic underachievement. *Child Development*, *84*(5), 1716–1733. http://doi.org/10.1111/cdev.12079

Henry, A. (2009). Gender differences in compulsory school pupils' L2 self-concepts: A longitudinal study. *System*, *37*(2), 177–193. http://doi.org/10.1016/j.system.2008.11.003

Henry, A., & Cliffordson, C. (2013). Motivation, gender, and possible selves. *Language Learning*, *63*(2), 271–295. http://doi.org/10.1111/lang.12009

Heyder, A., Kessels, U., & Steinmayr, R. (2017). Explaining academic-track boys' underachievement in language grades: Not a lack of aptitude but students' motivational beliefs and parents' perceptions? *British Journal of Educational Psychology, 87*, 205–223. http://doi.org/10.1111/bjep.12145

Hirnstein, M., Coloma Andrews, L., & Hausmann, M. (2014). Gender-stereotyping and cognitive sex differences in mixed- and same-sex groups. *Archives of Sexual Behavior*, *43*(8), 1663–1673. http://doi.org/10.1007/s10508-014-0311-5

Hirnstein, M., Freund, N., & Hausmann, M. (2012). Gender stereotyping enhances verbal

fluency performance in men (and women). *Zeitschrift Fur Psychologie / Journal of*

Psychology, *220*(2), 70–77. http://doi.org/10.1027/2151-2604/a000098

Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and*

organizations across nations. Thousand Oaks, Calif: Sage Publications.

Hunt, C. J., Fasoli, F., Carnaghi, A., & Cadinu, M. (2015). Masculine self-presentation and

distancing from femininity in gay men: An experimental examination of the role of

masculinity threat. *Psychology of Men & Masculinity*, *17*(1), 108–112.

http://doi.org/10.1037/a0039545

Hunt, C. J., & Gonsalkorale, K. (2014). Who cares what she thinks, what does he say? Links

between masculinity, in-group bonding and gender harassment. *Sex Roles*, *70*(1–2), 14–27.

http://doi.org/10.1007/s11199-013-0324-x

Jost, J. T., & Kay, A. C. (2005). Exposure to benevolent sexism and complementary gender

stereotypes: Consequences for specific and diffuse forms of system justification. *Journal of*

Personality and Social Psychology, *88*(3), 498–509. http://doi.org/10.1037/0022-

3514.88.3.498

Karlin, C. A., England, P., & Richardson, M. (2002). Why do "women's jobs" have low pay for

their educational level? *Gender Issues*, *20*(4), 3–22. http://doi.org/10.1007/s12147-002-

0020-6

Keller, J. (2007). When negative stereotypic expectancies turn into challenge or threat: The

moderating role of regulatory focus. *Swiss Journal of Psychology*, *66*(3), 163–168.

http://doi.org/10.1024/1421-0185.66.3.163

Kemmelmeier, M. (2008). Is there a relationship between political orientation and cognitive

ability? A test of three hypotheses in two studies. *Personality and Individual Differences*,

    45, 767–772. http://doi.org/10.1016/j.paid.2008.08.003

Kissau, S. (2006). Gender differences in motivation to learn French. *The Canadian Modern*

    Language Review / La Revue Canadienne Des Langues Vivantes, *62*(3), 401–422.

    http://doi.org/10.1353/cml.2006.0020

Kissau, S., Kolano, L. Q., & Wang, C. (2010). Perceptions of gender differences in high school

    students' motivation to learn Spanish. *Foreign Language Annals*, *43*(4), 703–721. Retrieved

    from http://onlinelibrary.wiley.com/doi/10.1111/j.1944-9720.2010.01110.x/full

Kobayashi, Y. (2002). The role of gender in foreign language learning attitudes: Japanese female

    students' attitudes towards English learning. *Gender and Education*, *14*(February 2015),

    181–197. http://doi.org/10.1080/09540250220133021

Koenig, A. M., & Eagly, A. H. (2005). Stereotype threat in men on a test of social sensitivity.

    Sex Roles, *52*(7–8), 489–496. http://doi.org/10.1007/s11199-005-3714-x

Kosakowska-Berezecka, N., Besta, T., Adamska, K., Jaśkiewicz, M., & Vandello, J. A. (2016).

    If my masculinity is threatened I won't support gender equality? The role of agentic self-

    stereotyping in restoration of manhood and perception of gender relations. *Psychology of*

    Men and Masculinity, *17*(3), 274–284.

Kray, L. J., Thompson, L., & Galinsky, A. D. (2001). Battle of the sexes: Gender stereotype

    confirmation and reactance in negotiations. *Journal of Personality and Social Psychology,*

    80, 942–958.

Lauermann, F., Tsai, Y.-M., & Eccles, J. S. (2017). Math-related career aspirations and choices

    within Eccles et al.'s Expectancy-Value Theory of achievement-related behaviors.

    Developmental Psychology, *53*, 1540–1559. http://doi.org/10.1037/dev0000367

Levanon, A., England, P., & Allison, P. (2009). Occupational feminization and pay: Assessing

causal dynamics using 1950-2000 U .S. census data. *Social Forces*, *88*(2), 865–891.

http://doi.org/10.1353/sof.0.0264

Levant, R., Richmond, K., Cook, S., House, a. T., & Aupont, M. (2007). The femininity

ideology scale: Factor structure, reliability, convergent and discriminant validity, and social

contextual variation. *Sex Roles*, *57*, 373–383. http://doi.org/10.1007/s11199-007-9258-5

Lou, N. M., & Noels, K. A. (2016). Changing language mindsets: Implications for goal

orientations and responses to failure in and outside the second language classroom.

Contemporary Educational Psychology, *46*, 22–33.

http://doi.org/10.1016/j.cedpsych.2016.03.004

Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's

social identity. *Personality and Social Psychology Bulletin*, *18*(3), 302–318. Retrieved from

http://psp.sagepub.com/content/18/3/302.short

Lytton, H., & Romney, D. M. (1991). Parents' differential socialization of boys and girls: A

meta-analysis. *Psychological Bulletin*, *109*(2), 267–296. http://doi.org/10.1037/0033-

2909.109.2.267

Maass, A., Cadinu, M., Guarnieri, G., & Grasselli, A. (2003). Sexual harassment under social

identity threat: the computer harassment paradigm. *Journal of Personality and Social

Psychology*, *85*(5), 853–870. http://doi.org/10.1037/0022-3514.85.5.853

Mandel, H. (2013). Up the down staircase: Women's upward mobility and the wage penalty for

occupational feminization, 1970-2007. *Social Forces*, *91*(4), 1183–1206.

http://doi.org/10.1093/sf/sot018

Masgoret, A.-M., & Gardner, R. C. (2003). Attitudes, motivation, and second language learning:

A meta-analysis of studies conducted by Gardner and associates. *Language Learning*, *53*(S1), 167–210. http://doi.org/10.1111/1467-9922.00227

McCroskey, J. C. (1992). Reliability and validity of the willingness to communicate scale. *Communication Quarterly*, *40*(1), 16–25. http://doi.org/10.1080/01463379209369817

McGlone, M. S., & Pfiester, R. A. (2015). Stereotype threat and the evaluative context of communication. *Journal of Language and Social Psychology*, *34*(2), 111–137. http://doi.org/10.1177/0261927X14562609

Meara, P. (2015). The LLAMA Language Aptitude Tests [online software]. Available from http://www.lognostics.co.uk/tools/LLAMA/

Meece, J. L., Glienke, B. B., & Burg, S. (2006). Gender and motivation. *Journal of School Psychology*, *44*(5), 351–373. http://doi.org/10.1016/j.jsp.2006.04.004

Miller, D. I., Eagly, A. H., & Linn, M. C. (2015). Women's representation in science predicts national gender-science stereotypes: Evidence from 66 nations. *Journal of Educational Psychology*, *107*(3), 631–644. http://doi.org/10.1037/edu0000005

Moss-Racusin, C. A., & Good, J. J. (2015). Measure of a man: Outcomes of gender stereotyping for men and masculinity. *Social Psychology, 46*, 179-181. doi:10.1027/1864-9335/a000225

Murphy, E., & Oesch, D. (2016). The feminization of occupations and change in wages: A panel analysis of Britain, Germany, and Switzerland. *Social Forces*, *94*(3), 1221–1255. http://doi.org/10.1093/sf/sov099

National Center for Education Statistics. (2014). *Digest of Education Statistics [Postsecondary education tables]*. U.S. Department of Education, Retrieved from http://nces.ed.gov/programs/digest/current_tables.asp477

Nguyen, H.-H. D., & Ryan, A. M. (2008). Does stereotype threat affect test performance of

minorities and women? A meta-analysis of experimental evidence. *The Journal of Applied Psychology*, *93*(6), 1314–34. http://doi.org/10.1037/a0012702

Noels, K. A., Chaffee, K. E., & Elcheson, L. (2018). *Differences between language learners and non-learners: Gender roles and beliefs.* Manuscript in preparation, University of Alberta.

O'Brien, L. T., & Crandall, C. S. (2003). Stereotype threat and arousal: Effects on women's math performance. *Society for Personality and Social Psychology, Inc.*, *29*(6), 782–789. http://doi.org/10.1177/0146167203252810

Oxford, R. L., Park-Oh, Y., It, S., & Sumrall, M. (1993). Japanese by satellite: Effects of motivation, language learning styles and strategies, gender, course level, and previous language learning experience on Japanese language achievement. *Foreign Language Annals*, *26*(3), 359–371. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1944-9720.1993.tb02292.x/abstract

Pansu, P., Régner, I., Max, S., Colé, P., Nezlek, J. B., & Huguet, P. (2016). A burden for the boys: Evidence of stereotype threat in boys' reading performance. *Journal of Experimental Social Psychology*, *65*(July 2016), 26–30. http://doi.org/10.1016/j.jesp.2016.02.008

Piedmont, R. L., & Hyland, M. E. (1993). Inter-item correlation frequency distribution analysis: A method for evaluating scale dimensionality. *Educational and Psychological Measurement*, *53*(2), 369–378. http://doi.org/10.1177/0013164493053002006

Plante, I., De la Sablonnière, R., Aronson, J. M., & Théorêt, M. (2013). Gender stereotype endorsement and achievement-related outcomes: The role of competence beliefs and task values. *Contemporary Educational Psychology*, *38*(3), 225–235. http://doi.org/10.1016/j.cedpsych.2013.03.004

Retelsdorf, J., Schwartz, K., & Asbrock, F. (2015). "Michael can't read!" Teachers' gender

stereotypes and boys' reading self-concept. *Journal of Educational Psychology*, *107*(1),

186–194. http://doi.org/10.1037/a0037107

Richard, F. D., Bond, C. F., & Stokes-Zoota, J. J. (2003). One Hundred Years of Social

Psychology Quantitatively Described. *Review of General Psychology: Journal of Division

1, of the American Psychological Association, 7,* 331-363.

Rosin, H. (2010, July). The end of men. *The Atlantic*. Retrieved from

https://www.theatlantic.com/magazine/archive/2010/07/the-end-of-men/308135/

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: basic psychological needs in

motivation, development, and wellness*. New York: Guilford Press.

Schmenk, B. (2004). Language learning: A feminine domain? The role of stereotyping in

constructing gendered learner identities. *TESOL Quarterly*, 514–524. Retrieved from

http://onlinelibrary.wiley.com/doi/10.2307/3588352/abstract

Schmitt, M. T., & Branscombe, N. R. (2001). The good, the bad, and the manly: Threats to one's

prototypicality and evaluations of fellow in-group members. *Journal of Experimental Social

Psychology*, *37*, 510–517. doi:10.1006/jesp.2001.1476

Schmitt, D. P., Realo, A., Allik, J., & Voracek, M. (2008). Why can't a man be more like a

woman? Sex differences in Big Five personality traits across 55 cultures. *Journal of

Personality and Social Psychology*, *94*(1), 168–82. http://doi.org/10.1037/0022-

3514.94.1.168

Sinclair, S., & Carlsson, R. (2013). What will I be when I grow up? The impact of gender

identity threat on adolescents' occupational preferences. *Journal of Adolescence*, *36*(3),

465–474. http://doi.org/10.1016/j.adolescence.2013.02.001

Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math

performance. *Journal of Experimental Social Psychology*, *35*(1), 4–28. http://doi.org/10.1006/jesp.1998.1373

Statistics Canada. (2016). *Table 477-0019: Postsecondary enrolments by institution type, sex and field of study*. Retrieved from Statistics Canada: http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/educ72c-eng.htm

Steele, C., Aronson, J., & Spencer, S. J. (2007). Stereotype threat. In R. Baumeister and K. D. Vohs (Eds.), *Encyclopedia of Social Psychology* (943–944). California: Sage. http://doi.org/10.1146/annurev-psych-073115-103235

Steffens, M. C., & Jelenec, P. (2011). Separating implicit gender stereotypes regarding math and language: Implicit ability stereotypes are self-serving for boys and men, but not for girls and women. *Sex Roles*, *64*(5–6), 324–335. http://doi.org/10.1007/s11199-010-9924-x

Stice, E., Schupak-Neuberg, E., Shaw, H. E., & Stein, R. I. (1994). Relation of media exposure to eating disorder symptomatology: An examination of mediating mechanisms. *Journal of Abnormal Psychology*, *103*(4), 836–840. http://doi.org/10.1037/0021-843X.103.4.836

Stoet, G., & Geary, D. C. (2013). Sex differences in mathematics and reading achievement are inversely related: Within- and across-nation assessment of 10 years of PISA Data. *PLoS ONE*, *8*(3). http://doi.org/10.1371/journal.pone.0057988

Strauss, V. (2017, December 20) The surprising thing Google learned about its employees — and what it means for today's students. *The Washington Post*. Retrieved from https://www.washingtonpost.com/news/answer-sheet/wp/2017/12/20/the-surprising-thing-google-learned-about-its-employees-and-what-it-means-for-todays-students

Streiner, D. L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment*, *80*(1), 99–103.

http://doi.org/10.1207/S15327752JPA8001

Subasic, E. (2018). "We for she": Mobilising men and women to act in solidarity for gender

equality. *Group Processes & Intergroup Relations*.

Sung, H., & Padilla, A. (1998). Students motivation, parental attitudes, and involvement in the

learning of Asian langauges in elementary and secondary schools. *The Modern Language

Journal*, *82*(2), 205–216. http://doi.org/10.1111/j.1540-4781.1998.tb01193.x

Swanson, P., & Mason, S. (2018). The world language teacher shortage: Taking a new direction.

Foreign Language Annals, *51*(1), 251–262. http://doi.org/10.1111/flan.12321

Swartz, J. (2017, April 14). The future of jobs: More men doing 'women's work.' *USA Today*.

Retrieved from https://www.usatoday.com/story/tech/2017/04/14/jobs-projections-could-

mean-change-gender-occupations-men-women-employment/100381242/

Swim, J. K., Aikin, K. J., Hall, W. S., & Hunter, B. A. (1995). Sexism and racism: Old-fashioned

and modern prejudices. *Journal of Personality and Social Psychology*, *68*(2), 199–214.

http://doi.org/10.1037/0022-3514.68.2.199

Thompson, E. H., & Pleck, J. H. (1986). The structure of male role norms. *American Behavioral

Scientist*, *29*(5), 531–543. http://doi.org/0803973233

Tokar, D. M., & Jome, L. M. (1998). Masculinity, vocational interests, and career choice

traditionality: Evidence for a fully mediated model. *Journal of Counseling Psychology*,

45(4), 424–435. http://doi.org/10.1037/0022-0167.45.4.424

van der Vleuten, M., Jaspers, E., Maas, I., & van der Lippe, T. (2016). Boys' and girls'

educational choices in secondary education. The role of gender ideology. *Educational

Studies*, *42*(2), 181–200. http://doi.org/10.1080/03055698.2016.1160821

Van Loo, K. J., Boucher, K. L., Rydell, R. J., & Rydell, M. T. (2013). Competition in

stereotyped domains: Competition, social comparison, and stereotype threat. *European Journal of Social Psychology*, *43*(7), 648–660. http://doi.org/10.1002/ejsp.1977

Vandello, J. A., Bosson, J. K., Cohen, D., Burnaford, R. M., & Weaver, J. R. (2008). Precarious manhood. *Journal of Personality and Social Psychology*, *95*(6), 1325–1339. http://doi.org/10.1037/a0012453

Vandello, J. A, & Cohen, D. (2008). Culture, gender, and men's intimate partner violence. *Psychology*, *2*, 652–667.

Voyer, D., & Voyer, S. D. (2014). Gender differences in scholastic achievement: A meta-analysis. *Psychological Bulletin*, *140*(4), 1174–1204. http://doi.org/10.1037/a0036620

Walton, G. M., & Cohen, G. L. (2003). Stereotype lift. *Journal of Experimental Social Psychology*, *39*(5), 456–467. http://doi.org/10.1016/S0022-1031(03)00019-2

Watt, H. M. G., Shapka, J. D., Morris, Z. A., Durik, A. M., Keating, D. P., & Eccles, J. S. (2012). Gendered motivational processes affecting high school mathematics participation, educational aspirations, and career plans: A comparison of samples from Australia, Canada, and the United States. *Developmental Psychology*, *48*(6), 1594–1611. http://doi.org/10.1037/a0027838

Weisgram, E. S., Bigler, R. S., & Liben, L. S. (2010). Gender, values, and occupational interests among children, adolescents, and adults. *Child Development, 81*, 778–796. doi:10.1111/j.1467-8624.2010.01433.x

Wigfield, A., & Eccles, J. S. (2002). Expectancy–value theory of achievement motivation. *Journal of Asynchronous Learning Network*, *6*(1), 68–81. http://doi.org/10.1006/ceps.1999.1015

Willer, R., Rogalin, C. L., Conlon, B., & Wojnowicz, M. T. (2013). Overdoing gender: A test of

the masculine overcompensation thesis. *American Journal of Sociology*, *118*(4), 980–1022. http://doi.org/10.1086/668417

Williams, J. E., Satterwhite, R. C., & Best, D. L. (1999). Pancultural gender stereotypes revisited: The five factor model. *Sex Roles*, *40*, 513–525. http://doi.org/10.1023/A:1018831928829

Williams, M., Burden, R., & Lanvers, U. (2002). "French is the language of love and stuff": Student perceptions of issues related to motivation in learning a foreign language. *British Educational Research Journal, 28*, 503–528. http://doi.org/10.1080/0141192022000005805

Yashima, T., Nishida, R., & Mizumoto, A. (2016). Influence of learner beliefs and gender on the motivating power of L2 selves. http://doi.org/10.1111/modl.12430

Yashima, T., Noels, K. A., Shizuka, T., Takeuchi, O., Yamane, S., & Yoshizawa, K. (2009). The interplay of classroom anxiety, intrinsic motivation, and gender in the Japanese EFL context. 外国語教育研究, *17*, 41–64. Retrieved from http://w3.kansai-u.ac.jp/fl/publication/pdf_education/17/00_yashima_44.pdf

You, C. J., & Dörnyei, Z. (2014). Language learning motivation in China: Results of a large-scale stratified survey. *Applied Linguistics*, *37*(ii), 1–26. http://doi.org/10.1093/applin/amu046

You, C. J., Dörnyei, Z., & Csizér, K. (2016). Motivation, Vision, and Gender: A Survey of Learners of English in China. *Language Learning*, *66*(1), 94–123. http://doi.org/10.1111/lang.12140

Appendix A: Partial Correlation Tables Controlling for Faculty Language Requirement

Table A1. Partial correlations between gender variables and motivational variables controlling for faculty language requirement in correlational study.

	Gender Ident.	FIS	MRNS	Gender Ess.	Precar. Masc.	Hostile Sexism	Benev. Sexism	Modern Sexism	Old-Fash. Sexism
FL Career Interest	-0.06	-0.12	-0.11	-0.17*	0.02	-0.13	-0.16*	-0.13	0.02
FL Class Interest	-0.02	-0.02	0.03	-0.13	0.10	-0.01	0.00	-0.06	0.00
LangID	-0.01	0.02	-0.03	-0.09	0.07	-0.03	-0.06	-0.07	0.05
FL Ability	-0.23**	-0.10	-0.09	-0.19*	0.00	-0.12	-0.12	-0.19*	-0.02
Can-Do	-0.26**	0.03	-0.06	0.00	0.05	0.04	0.01	0.02	-0.02
STEM Career Interest	-0.05	0.21**	0.32**	0.14	0.14	0.15*	0.19**	0.21**	0.21**
STEM Class Interest	-0.03	0.18*	0.31**	0.16*	0.18*	0.20**	0.25**	0.25**	0.22**
STEM Ability	-0.03	0.21**	0.26**	0.25**	0.15*	0.14	0.18*	0.21**	0.15*
Language Aptitude	0.03	-0.07	-0.17*	0.06	-0.03	-0.15*	-0.19**	0.01	-0.19*
Language Use Anxiety	0.23*	-0.09	-0.01	-0.05	-0.07	-0.02	-0.13	-0.03	-0.04
Willingness to Communicate	-0.19*	-0.01	-0.03	0.02	0.05	0.04	0.05	0.09	0.11
RAI	-0.13	-0.16*	-0.28**	-0.05	-0.11	-0.29**	-0.21**	-0.09	-0.18*
Ideal Self	-0.13	0.08	0.00	0.02	0.08	0.00	0.01	-0.06	0.12
Integrative Orientation	-0.12	0.01	-0.03	-0.03	0.11	-0.06	-0.01	-0.06	0.01
Fixed Mindset	0.05	0.25**	0.26**	0.19*	0.16*	0.31**	0.14	0.16*	0.25**
Growth Mindset	0.02	-0.09	-0.07	0.00	0.04	-0.09	0.00	-0.04	-0.16*

*. Significant at the .05 level (2-tailed).

**. Significant at the .01 level (2-tailed).

Table A2. Partial correlations among motivational variables controlling for faculty language requirement in correlational study.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. FL Career Interest	0.47**	0.39**	0.32**	0.11	0.12	0.03	-0.06	0.02	-0.16*	0.23**	0.21**	0.33**	0.35**	0.10	0.05
2. FL Class Interest	---	0.41**	0.27**	0.25**	0.13	0.20**	0.04	0.05	-0.29**	0.22**	0.19*	0.33**	0.39**	0.02	0.06
3. FL Ability		---	0.40**	0.41**	0.13	0.02	0.09	0.14	-0.39**	0.33**	0.26**	0.48**	0.39**	-0.12	0.06
4. LangID			---	0.36**	-0.01	-0.05	0.03	0.16*	-0.46**	0.36**	0.32**	0.63**	0.54**	-0.16*	0.17*
5. Can-Do				---	0.15*	0.15*	0.18*	0.04	-0.77**	0.61**	0.13	0.44**	0.47**	-0.05	0.01
6. STEM Career Interest					---	0.71**	0.60**	-0.08	-0.07	0.12	-0.21**	0.06	0.10	0.11	0.11
7. STEM Class Interest						---	0.68**	-0.03	-0.06	0.11	-0.22**	0.02	0.07	0.08	0.11
8. STEM Ability							---	0.05	-0.18*	0.14*	-0.09	0.11	0.14	0.01	0.16*
9. Language Aptitude								---	-0.05	-0.04	0.30**	0.11	0.16*	-0.02	-0.04
10. Language Use Anxiety									---	-0.68**	-0.19**	-0.55**	-0.52**	0.04	-0.03
11. Willingness to Communicate										---	0.20**	0.45**	0.45**	-0.07	0.16**
12. RAI											---	0.41**	0.38**	-0.21**	0.15*
13. Ideal Self												---	0.71**	-0.13	0.21**
14. Integrative Orientation													---	-0.02	0.06
15. Fixed Mindset														---	-0.65**

*. Significant at the .05 level (2-tailed).

**. Significant at the .01 level (2-tailed).

Table A3. Partial correlations among gender variables controlling for faculty language requirement in correlational study.

		2	3	4	5	6	7	8	9
1.	Gender Identification	0.23**	0.22**	0.19**	0.13*	0.17**	0.18**	0.08	0.13*
2.	Femininity Ideology	---	0.64**	0.37**	0.34**	0.55**	0.48**	0.42**	0.59**
3.	Masculinity Ideology		---	0.40**	0.54**	0.60**	0.56**	0.41**	0.51**
4.	Gender Essentialism			---	0.28**	0.46**	0.37**	0.44**	0.28**
5.	Precarious Masculinity Beliefs				---	0.47**	0.44**	0.21**	0.18**
6.	Hostile Sexism					---	0.48**	0.54**	0.44**
7.	Benevolent Sexism						---	0.28**	0.24**
8.	Modern Sexism							---	0.40**
9.	Old-Fashioned Sexism								---

*. Significant at the .05 level (2-tailed).

**. Significant at the .01 level (2-tailed).

Appendix B: Materials and Procedures for Masculinity Threat Study

Full text of the letter explaining the cover story for the false feedback and instructions for interpretation of scores, including the example figure (Figure S1) appear below:

Trial Program: Mass Testing Feedback Scores

Enclosed please find some selected results from the mass testing questionnaire you completed at the beginning of the term. This feedback is being provided to you as part of a trial program being tested by the Department of Psychology. Students in past semesters have expressed interest in receiving some feedback, so this trial program is aimed at evaluating how best to provide feedback and how students feel about their feedback. For privacy reasons, no identifying information has been included on your feedback sheet.

Interpreting Your Scores

The enclosed sheet tells you your scores on five personality dimensions measured in the mass testing questionnaire. Also shown are the average ranges for University of Alberta students over the past 3 semesters. 75% of students score within the average range. For personality dimensions that have shown large gender differences, average ranges will be separated by gender. Your score is reported both numerically and visually in comparison to other students.

The x-axis of each graph represents the score, and the height of the distribution on the y-axis represents how common a particular score is, with a greater height indicating that that score was achieved by a large number of students. In the case of characteristics with gender differences, the distributions of male and female scores will be shown separately, with the female distribution indicated by a dotted line. The average ranges on the figure are indicated beneath the x-axis by a **}** symbol.

Students received average feedback scores on all filler dimensions in both the masculinity threatened and affirmed conditions; only masculinity feedback differed (see Figures B2 & B3).

Figure B1: Example feedback given to participant as part of the instructions for how to interpret their false

feedback scores.

Example Feedback
Your score (example): 22
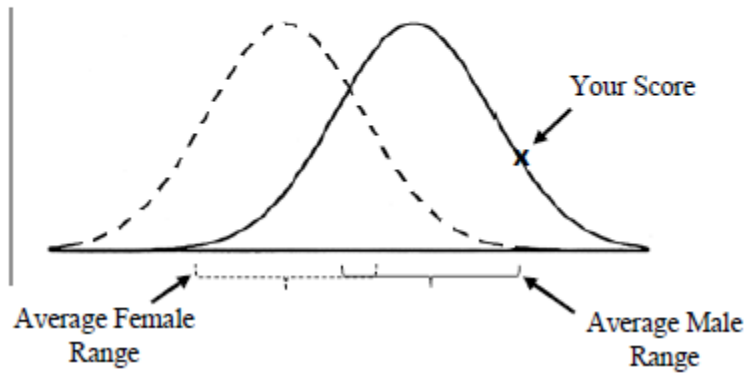Average range: 10-17 (female), 15-22(male)

Figure B2: Threat Condition Feedback

Your Results

Masculinity
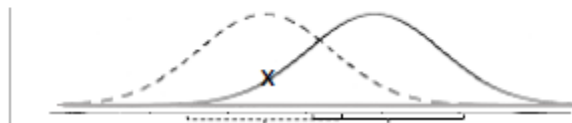Your Score: 33
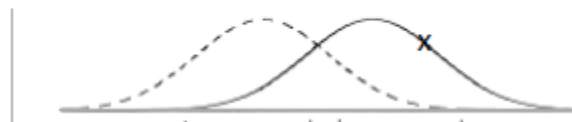Average range: 18-55 (female), 52-78 (male)

Figure B3: Affirmation Condition Feedback

Your Results

Masculinity
Your Score: 73
Average range: 18-55 (female), 52-78 (male)

Appendix C: Descriptive Statistics and Intercorrelations for Masculinity Threat Study

Table C1: Means, standard deviations, and correlation coefficients of variables used in major analyses

		Mean	SD	1	2	3	4	5	6	7	8	9	10
1.	Condition	--	--										
2.	MRNS	4.04	1.30	−.03	--								
3.	Intention to Study Foreign Language	2.71	1.05	−.10	−.06	--							
4.	Interest in Foreign Language Majors	2.06	.87	−.12	.04	.55**	--						
5.	Interest in STEM Majors	3.37	1.00	−.08	.16*	.14	.25**	--					
6.	Interest in Language-related Jobs	1.78	.77	−.01	−.13	.37**	.45**	−.06	--				
7.	Interest in STEM-related Jobs	2.53	.86	.00	.26**	.12	.13	.69**	.08	--			
8.	Attitudes Towards Language Learning	5.03	.92	−.05	−.01	.49**	.50**	.11	.39**	−.04	--		
9.	Self-perceived Foreign Language Ability	3.38	1.72	−.02	.04	.38**	.49**	.04	.24**	.03	.37**	--	
10.	STEM Ability	5.94	1.70	−.05	.17*	.07	.06	.77**	−.19*	.57**	.03	.22**	--
11.	Language Aptitude	51.38	17.40	−.04	−.23**	.09	.01	.09	.15*	.08	.10	.02	.07

*. Significant at the .05 level (2-tailed).

**. Significant at the .01 level (2-tailed).