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## Social psychological barriers to a gender balanced labor market

The role of gender identity threats, friendship priorities, and perceived discrimination

Sinclair, Samantha

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# Social psychological barriers to a gender balanced labor market:

The role of gender identity threats, friendship priorities,  
and perceived discrimination

Samantha Sinclair



**LUND**  
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DOCTORAL DISSERTATION

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Abstract Gender remains a key predictor of vocational choice. The present thesis aimed to investigate three social psychological barriers to nontraditional career choice. <b>Study I</b> showed that threats to gender identity may lead to more gender-typical occupational preferences among adolescents. The results suggested a unique effect of gender identity threat, as a control threat did not have the same effect. Moreover, individual differences in gender identity concerns predicted gender-typed preferences. <b>Study II</b> proposed an effect of gender-typical educational choice as a consequence of social needs. Because people tend to have predominantly same-gender friends, those who adjust their choice of education to be with their friends are likely to acquire a more gender-typical education and, consequently, occupation. The findings suggest that adolescents are more likely to adjust their educational choice in line with same-gender friends. Furthermore, perceived education compromise in line with friends was related to having selected a more gender typical field of study. <b>Study III</b> revealed that people's perceptions of gender discrimination in hiring are guided by discrimination prototypes of the typical discrimination victim, rather than same-gender bias. Both men and women tend to interpret an ambiguous outcome on the labor market as discrimination if the applicant is female. Furthermore, observing a woman being declined job interviews in male-typed occupations led to work-seeking discouragement, and this effect was mediated by attributions to discrimination. Discrimination attributions in prototypical cases were found to be exaggerated compared to the prevalence of actual gender discrimination in hiring. To conclude, the present thesis suggests that gender identity threat, friendship priorities, and perceived discrimination may prevent individuals from exploring their full range of career opportunities. First, gender identity threat may affect adolescents so that they do not even form aspirations for gender atypical occupations. Second, even if there is some interest in nontraditional occupations, the need to preserve close relationships will push people away from domains where they have no friends (usually domains where their gender is in minority). Finally, when young men and women are about to enter the labor market, exaggerated perceptions of the prevalence of discrimination can become an obstacle to their motivation to pursue certain careers.		
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**Front cover:** Photo taken by Pontus Persson and photo manipulation by Samantha Sinclair and Pontus Persson. The image illustrates an example of the strong association with gender for some occupations.

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When I first enrolled in university studies, I chose to study psychology simply because it was the topic that I found the most interesting. Today I am glad that I dared to follow my true interests, in particular because it opened up for an invaluable opportunity - PhD studies. It has truly been a challenging and exciting time. And it's safe to say, I couldn't have done it without the help and support from several people.

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# Abstract

Gender remains a key predictor of vocational choice. The present thesis aimed to investigate three social psychological barriers to nontraditional career choice.

Study I showed that threats to gender identity may lead to more gender-typical occupational preferences among adolescents. The results suggested a unique effect of gender identity threat, as a control threat did not have the same effect. Moreover, individual differences in gender identity concerns predicted gender-typed preferences. Study II proposed an effect of gender-typical educational choice as a consequence of social needs. Because people tend to have predominantly same-gender friends, those who adjust their choice of education to be with their friends are likely to acquire a more gender-typical education and, consequently, occupation. The findings suggest that adolescents are more likely to adjust their educational choice in line with same-gender friends. Furthermore, perceived education compromise in line with friends was related to having selected a more gender typical field of study. Study III revealed that people's perceptions of gender discrimination in hiring are guided by discrimination prototypes of the typical discrimination victim, rather than same-gender bias. Both men and women tend to interpret an ambiguous outcome on the labor market as discrimination if the applicant is female. Furthermore, observing a woman being declined job interviews in male-typed occupations led to work-seeking discouragement, and this effect was mediated by attributions to discrimination. Discrimination attributions in prototypical cases were found to be exaggerated compared to the prevalence of actual gender discrimination in hiring.

To conclude, the present thesis suggests that gender identity threat, friendship priorities, and perceived discrimination may prevent individuals from exploring their full range of career opportunities. First, gender identity threat may affect adolescents so that they do not even form aspirations for gender atypical occupations. Second, even if there is some interest in nontraditional occupations, the need to preserve close relationships will push people away from domains where they have no friends (usually domains where their gender is in minority). Finally, when young men and women are about to enter the labor market, exaggerated perceptions of the prevalence of discrimination can become an obstacle to their motivation to pursue certain careers.

# Swedish summary

## Socialpsykologiska hinder för en könsbalanserad arbetsmarknad: betydelsen av könsidentitetshot, vänskapsprioriteringar och upplevd diskriminering.

Den horisontella segregeringen på grund av kön är idag den största på arbetsmarknaden; betydligt större än bland annat segregering på grund av etnicitet. Trots att vi kommit långt med arbetet för jämställdhet, tenderar män och kvinnor fortfarande att välja olika typer av utbildningar och yrken. Dessa tendenser finns redan i gymnasieskolan, där det råder könsdominans inom de flesta program (SOU 2009:63:112). Trots att den vertikala segregeringen i utbildningsnivå försvunnit i Sverige, kvarstår den horisontella segregeringen på en stabil nivå (Jonsson, 1999). Syftet med denna avhandling är att undersöka tre socialpsykologiska förklaringar till den horisontella könssegregeringen på arbetsmarknaden.

Delstudie I visar att ungdomar som upplever ett ifrågasättande av könsidentiteten, det vill säga ett ifrågasättande av huruvida man är tillräckligt manlig/kvinnlig, kan komma att förstärka könsstereotypa yrkespreferenser som ett sätt att återställa den hotade könsidentiteten. Denna effekt jämfördes experimentellt med effekten av ett hot som inte relaterar till kön. Resultaten indikerade att könsidentitetshot har en unik effekt för förstärkningen av könsstereotypa yrkespreferenser. Vidare visade resultaten på att ungdomar som är särskilt måna om sin könsidentitet också är mer benägna att föredra könsstereotypa yrken.

Delstudie II visar att ytterligare en bidragande faktor till könssegregeringen är att ungdomar kan komma att prioritera att vara med sina vänner över egentliga studieintressen vid val av gymnasieprogram. Eftersom att det finns tydliga tendenser hos båda könen att ha fler vänner av samma kön som man själv tillhör, innebär sådana vänskapsprioriteringar vid utbildningsval att man oftare kommer att justera valet i linje med någon som tillhör samma kön som man själv. Detta ökar därmed sannolikheten för val av utbildning som är i linje med könsstereotyper. Denna hypotes fick preliminärt stöd i två empiriska delstudier.

Slutligen undersöker delstudie III vilka konsekvenser unga mäns och kvinnors uppfattningar om könsdiskriminering på arbetsmarknaden kan få för deras motivation att söka arbete. Resultaten visade att både män och kvinnor i hög grad tror att kvinnliga sökanden blivit diskriminerade i rekryteringsprocessen på

grund av kön, och att denna uppfattning inverkar negativt på deras motivation att söka arbete inom mansdominerade yrken. Vi fann även att människor tolkar in könsdiskriminering vid rekrytering i högre utsträckning än vad som är befogat med tanke på den faktiska förekomsten av könsdiskriminering på arbetsmarknaden.

Skollagen (1 kap. 2 §) säger att skolan aktivt och medvetet ska främja kvinnors och mäns lika rätt och möjligheter, och vidare att eleverna ska uppmuntras att utveckla sina intressen utan fördomar om vad som är manligt och kvinnligt (Lpf 94). Avhandlingens fynd bidrar till att underlätta för detta arbete genom att synliggöra tre viktiga faktorer som kan påverka könssegregeringen inom utbildningsväsendet och i arbetslivet.

# List of papers

- I. 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. doi: 10.1016/j.adolescence.2013.02.001  
(Reprinted with permission from Elsevier)
- II. Sinclair, S., Carlsson, R., & Björklund, F. (2014). The role of friends in career compromise: Same-gender friendship intensifies gender differences in educational choice. *Journal of Vocational Behavior*, 84(2), 109-118. doi: 10.1016/j.jvb.2013.12.007  
(Reprinted with permission from Elsevier)
- III. Carlsson, R., Sinclair, S., & Agerström, J. The role of prototypes and same-gender bias in attributions to gender discrimination in hiring. Unpublished manuscript.

# Introduction

Not very long ago, men and women had different roles in society where the man was the breadwinner and provider, while the woman stayed at home and took care of children and domestic chores. Nowadays, the most common picture in many societies is for both men and women to work outside of the home. Thus, when chatting with a new acquaintance at a party you would probably ask “So, what do you do for a living?” regardless of whether your conversation partner was male or female. However, as you receive the response from your male conversation partner, you would probably find yourself surprised to hear that he is a nurse, or a kindergarten teacher. The reason why you would be surprised is of course that men seldom work as nurses and kindergarten teachers. Similar, very few women are firefighters or mechanics. In fact, gender is a key predictor of vocational choice, and most occupations are dominated by one gender. This can be considered problematic at several levels. First, because work is often intertwined with virtually all other domains of life (Fouad, 2007), and work satisfaction is of importance for general well-being (Heller, Watson, & Ilies, 2004; Lent & Brown 2008), it is of importance that people do not settle for a career that they find less interesting simply because it is considered more gender appropriate. For example, if people surrender to pressure to conform to gender norms this could limit their chances of fulfilling their true potential. Second, as the distribution of men and women into different types of occupations explains a fair share of the gender gap in wages (Hegewisch, Liepmann, Hayes, & Hartmann, 2010; Petersen & Morgan, 1995), the gender segregated labor market can pose a threat to gender equality in society. It may also be in the interests of employers to reduce gender segregation, as gender equality and diversity at work can improve organizational performance (Krishnan & Park, 2005). Evidently, it is important to search for factors that determine gender-typed career attainment.

Why, then, do men and women differ when it comes to their careers? The fact that the labor market is highly segregated by gender is a problem where several levels of analysis are warranted – there may be barriers to nontraditional choice in society; in the immediate environment; and within individuals. The focus in this thesis is on psychological explanations; more specifically, how individuals may come to adjust their career related preferences and choices depending on how they perceive their social environment. Because external barriers such as discrimination may be insufficient to fully explain the large occupational division by gender, it appears to in part be explained by gender differences in preferences

and choice. However, pursuing one's interests does not necessarily come without psychological costs (e.g., Dasgupta, 2011). Rather, some social pressures may restrain the priority given to actual vocational preferences, or they may even re-shape preferences. The present thesis proposes three social psychological explanations for gender differences in vocational preferences.

## Aims of the thesis

There has been numerous research efforts aimed at understanding cognitive, affective, and behavioral differences between men and women. Still, the question why men and women differ in their career choices remains far from completely understood and continues to be somewhat of a controversial issue.

The aim of the present thesis is to investigate three social psychological contributors to gender segregated labor markets. These three explanations are rooted in different theoretical assumptions and assumed to occur independently of each other; starting when occupational interests are developed (Study I), to the point where interests may have to stand back for other priorities when it comes to educational choice (Study II), to finally, perceptions of labor market outcomes that influence work-seeking motivation in young adults who are about to enter the labor market (Study III).

More specifically, I propose that threats to gender identity put adolescents at risk of shifting their occupational preferences in line with gender stereotypes. Because adolescents may sometimes feel that their gender status (being masculine/feminine) is questioned, they may attempt to resolve this issue by acting in a gender-typed manner. This is investigated in Study I. Second, Study II suggests that friendship priorities in adolescence may lead to gender typical choice: Because people have more friends of the same gender as themselves, adjusting one's choice of education to be with friends will result in preserved gender segregation in education (and in the long run, on the labor market). Third, as young men and women are about to enter the labor market, observing others being rejected from job interviews and attributing these events to gender discrimination may cause discouragement from working in certain domains. This is investigated in Study III. The mechanisms proposed in this thesis are directly relevant for horizontal occupational gender segregation and aim at explaining women's as well as men's career related preferences.

The remainder of this thesis begins with an overview of the contemporary literature on explanations for gender segregation on the labor market. This is followed by a rationale for the three studies that make up this thesis, a summary of the studies, and finally, an extended discussion.

# The gender segregated labor market

Occupational segregation refers to the differential distribution of groups defined by ascribed characteristics (e.g., gender or ethnicity) across occupations (Weeden, 2007). A situation of perfect segregation would occur when occupation and group membership correspond perfectly, and contrary, perfect integration occurs when there is no association between occupation and group membership, meaning that groups hold the same proportion of positions in the occupation as they do in the labor force. Gender segregation on the labor market has remained moderate to large in industrialized countries, compared to countries with low levels of gross domestic product (Blackburn, Brooks, & Jarman, 2001a). Illustrative of this is an estimation that for occupational gender segregation to disappear in the US, as many as 50% of employees would have to change occupations, from an occupation dominated by their own gender into one that is dominated by the other gender or one that is gender balanced (Hegewisch et al., 2010). In the U.S., although change was observed in the 1970's and 1980's, it has stagnated since the mid 1990's, and occupational segregation by gender is substantially larger than segregation by ethnicity. In Sweden, where the research presented in this thesis was conducted, the situation is similar. In fact, despite being ranked among the most gender equal countries in the world, the Swedish labor market is highly segregated by gender (OECD, 2012). It is often assumed that when gender equality goes up, gender segregation on the labor market will go down. However, what we find is actually the opposite: In countries where women's empowerment is greater, the level of gender segregation is also larger (Blackburn, Browne, Brooks, & Jarman, 2002; Blackburn, Jarman & Brooks 2000). This is mainly explained by women's increased entrance on the labor market (e.g., fewer housewives, Blackburn et al., 2002; Löfström, 2005).

The gender segregation on the labor market can be divided in two components: vertical and horizontal. The two are often not clearly distinguished in the literature, causing confusion as one of them is directly related to gender equality whereas the other one is not (Blackburn et al., 2002). The vertical aspect refers to men's domination on the highest status positions (in all occupations), whereas horizontal segregation concerns gender differences in the type of work performed. The former is directly related to gender inequality as it involves unbalance in the distribution of power, although the horizontal segregation can also contribute to inequality e.g. via differential earnings (Blackburn et al., 2002). The horizontal divide tends to be considerably larger than the vertical (Blackburn et al., 2001a), and the present thesis is restricted to horizontal segregation.

The horizontal segregation looks qualitatively similar for several industrialized countries with for example health care and child care domains being clearly female-dominated and engineering, computer science, and construction (among others) being dominated by men (Hegewisch, et al., 2010, Löfström,

2005). Although women have increasingly entered traditionally male-dominated occupations (with the exception of several manual labor occupations such as carpenter and electrician; Hegewisch et al., 2010), men seem to be as likely as ever to stick with traditionally male occupational choices.

## Previously proposed explanations for gender differences in occupational attainment

Explanations offered for the gender segregated labor market can be divided in two types; those concerning behavior on part of the employers (demand), and those mainly concerned with factors on behalf of the workforce (supply). Which focus is emphasized differs somewhat depending on the scientific field. In sociology, explanations focusing on demand are popular, while supply oriented perspectives are more common in economics. Psychologists tend to ask questions that probe the internal (e.g., traits, beliefs, attitudes); social (group norms and roles, cultural expectations); and, to less extent, structural factors (e.g., organizational arrangements) that may impact individuals' career decisions (from the supply perspective) or people's discriminatory behavior (from the demand perspective; Stockdale & Nadler, 2013). In sum, psychological theories often take both demand and supply side perspectives into account.

### **Demand side explanations**

The most obvious explanation for labor market gender segregation related to demand is that of gender discrimination. Although discrimination is studied in the social sciences generally, the specific focus differs between disciplines. In psychology, demand explanations are often proposed in the form of conscious or unconscious gender stereotypes on behalf of employers that lead to discrimination (e.g., Glick, 1991; Heilman, 1983). Gender stereotypes bring expectations for behavior that consist of both the "shoulds" (prescriptions) and the "should nots" (proscriptions) for each gender. These stereotypes are typically described with agentic (e.g., confident, assertive; male-typed) and communal traits (e.g., expressive, friendly; female-typed; Burgess & Borgida, 1999; Prentice & Carranza, 2002). Individuals who violate these gender norms may face backlash in the form of social and economic penalties. For example, agentic women (Rudman, 1998; Rudman & Glick, 2001), and modest men (Moss-Racusin, Phelan, & Rudman, 2010) have been suggested to risk backlash on the labor market. An impressive set of studies has been devoted to demonstrating that women striving for leadership roles suffer backlash when they violate gender stereotypes by exhibiting agentic qualities (e.g., Heilman, Wallen, Fuchs, & Tamkins, 2004;



Phelan, Moss-Racusin, & Rudman, 2008; Rudman, 1998; Rudman & Glick, 2001). Because agency is required of leaders, women have been suggested to face a Catch-22 situation; being viewed as unqualified to lead if they conform to gender norms, but risking backlash when violating them (Eagly & Karau, 2002).

Gender discrimination is also the main focus among demand explanations in economics and is referred to as taste based discrimination and statistical discrimination, respectively (Reskin & Bielby, 2005). The theory of statistical discrimination (Phelps, 1972) is concerned with beliefs on part of the employer that workers of one group are more costly or unprofitable than the other. An example would be an employer who is looking to hire and chooses between two equally competent applicants in their early thirties, a man and a woman. The employer likes both applicants equally, but knows that women generally take more parental leave, and therefore hires the man. These cost-benefit driven judgments are of more "objective" nature, similar to discrimination based on stereotypes of groups as studied in social psychology. An important difference however is that in psychology, the use of stereotypes are often assumed to lead to poor judgments, whereas in economics, the underlying assumption is that the stereotypes are fairly accurate (hence the term "statistical" discrimination). If the cost of gaining information about the individual applicants exceeds the cost associated with assuming that the stereotype holds true for this particular case, the employer will have made a rational choice by picking the male applicant. In economics, although human capital theory (Becker, 1957) is generally the basic model (Stockdale & Nadler, 2013), there are exceptions. Taste based discrimination may be such an exception, referring to employers' subjective preferences for one group, e.g., men over women. This corresponds roughly to the affect (prejudice) driven discrimination studied in psychology.

In the sociological tradition (see e.g., Kmec, 2005; Reskin & Bielby 2005), gender discrimination is one of the main explanations offered in the literature on labor market gender segregation, and gender segregation is often emphasized as a causal mechanism that create additional differences between men's and women's careers. Although gender differences in preferences and/or skills are sometimes recognized as a contributor to labor market segregation (Reskin & Bielby 2005), caution is sometimes advised that overstating these differences leads to legitimization of women's and men's concentration in different activities (including work). A distinction can be made between direct discrimination (applying different standards to individuals because of their group membership; also called disparate treatment), and indirect discrimination in the form of gendered organizational practices and policies (disparate impact, e.g., facilitating part-time work in female-dominated jobs to a greater extent than in male-dominated jobs, or failing to provide gear that fit females in male-dominated jobs such as firefighter). There has been a lot of attention in sociological research on disparate impact. For example, a positive association has been found between level of bureaucratization in personnel practices and gender segregation in the

workplace (Reskin & McBrier, 2000), but bureaucratization has also been suggested to have the opposite effect, by limiting employers' ability to act on their gender stereotypes and biases (Reskin, 2003).

Feminist sociologists are generally skeptical of supply-side explanations that place responsibility on gender differences in the workforce (Ridgeway, 1991). Those who adopt Marxist or feminist approaches tend to be particularly interested in power disparities between groups and forces that operate to structure social relations that favor powerful entities (Chafetz, 1997). One such theory dedicated to explain gender segregation is patriarchy theory (e.g. Hartmann, 1976; Walby, 1986). The essential ideas include male power and control; exclusion of women from top jobs and positions and generally exploiting women as workers in- and outside of the home. This theory has sometimes been used in a descriptive sense, and at other times as an explanation of gender segregation. The latter has been criticized, as male dominance is explained by the fact that men dominate (Blackburn et al., 2002). Furthermore, an underlying assumption seems to be that overall segregation (including horizontal) can serve as a measure of vertical segregation.

Another sociological theory is expectations states theory (Berger, Rosenholtz, & Zelditch, 1980; Ridgeway, 1991), which elucidates demand-side factors that perpetuate beliefs about gender and status. According to this theory, traits such as competence and authority are attributed to individuals who are presumed to be high in status. In line with widespread gender stereotypes, men are presumed to possess agentic characteristics that are highly valued in most work-related roles, whereas women are presumed to possess likeable, but less valued, communal traits. Thus, expectations states theory offers an explanation for why men are selected more often for desirable jobs (contributing to occupational gender segregation).

In sum, gender discrimination has been proposed as one of the main reasons for occupational gender segregation, in psychology as well as in related disciplines. The differences lie in part in different levels of analysis. Sociology is mainly interested in discriminating structures in society that may facilitate inequality between groups. Economics on the other hand is primarily concerned with the prevalence of discrimination and its potential consequences, for example, if it results in less efficient workplaces. And finally, psychology is concerned with a) psychological explanations of why people discriminate; these could be personality focused (e.g., individual differences in right wing authoritarianism) or social psychological (e.g., focus on group processes), and b) focus on psychological consequences for individual targets of discrimination (e.g., reduced self-esteem).

## **Empirical support for demand side explanations**

The evidence seems to suggest that hiring discrimination may not be one of the main reasons for occupational gender segregation, at least in formal recruitment where callback to interviews is measured (e.g., Bertrand & Mullainathan, 2004; Carlsson, 2011; Riach & Rich, 2006). This has been demonstrated by field experiments conducted in Sweden (Carlsson, 2011; Carlsson, 2010), as well as the United States (Bertrand & Mullainathan, 2004), with slightly higher, but still low, discrimination occurring in the UK (Riach & Rich, 2006), Austria (Weichselbaumer, 2004), and Australia (Booth & Leigh, 2010). Similarly, a recent field experiment (Carlsson, Agerström, Björklund, Carlsson, & Rooth, 2014) on real-life hiring discrimination found no backlash effects against agentic women or communal men. Such field experiments are strongly conclusive because they systematically manipulate the group membership of the job applicant (e.g., female vs. male first names) while holding all other variables constant, and are typically based on several thousands of observations. Moreover, as these observations are completely unobtrusive, employers have no chance of concealing discriminating behavior.

Being invited to a job interview does of course not come with any guarantee of actually getting the job; however, although discrimination may still occur in other stages of employment, the vast part of hiring discrimination seem to occur during this early stage of the recruitment process. This is concluded in a review (Riach & Rich, 2002) of studies where discrimination was measured at several stages; in interview callbacks as well as in actual employment offerings, using trained actors as applicants, who are matched on relevant criteria but differ in group membership. When discrimination is detected, it tends to occur during the initial stage in the hiring process.

Although the evidence seems to suggest that gender discrimination in hiring is perhaps not the main reason behind occupational gender segregation, perceived discrimination may still be of importance. The proposition that people's perceptions of who are the most likely targets of gender discrimination can affect their work motivation is thus investigated in Study III.

## **Supply side explanations**

In a meta-analysis from 2005, Hyde concluded that gender differences in cognitive abilities, communication, well-being and other dimensions are quite small (with the exception of aggression and motor behavior). However, gender differences in vocational interests have actually been nominated as one of the largest gender difference identified among psychological dimensions (Lubinski, 2000; Su,

Rounds & Armstrong, 2009). Ceci and colleagues (Ceci, Williams, & Barnett, 2009), who have extensively reviewed the evidence for why women are underrepresented in the top of math-intensive fields; also conclude that gender differences in preferences constitute the most powerful explanatory factor. Women and men show large differences in their position on the people–things dimension of interests, with women being more people-oriented and men more things-oriented (Lippa, 1998, 2005; Su et al., 2009). More specifically, men tend to be more interested in realistic (e.g., carpenter, mechanic), investigative, and math and science related occupations, while women typically have stronger artistic and social interests (Su et al., 2009). These gender differences in interests have been observed in a wide range of countries (see Fouad, 2007, for a review), and they also seem fairly resistant to change over time, as they have remained similar for decades (Hansen, 1988). Interests are in general also quite stable within individuals over time, in fact even more so than personality traits (Low, Yoon, Roberts, & Rounds, 2005; Su, et al., 2009). Despite the proportion and scope of these gender differences, scholars have yet to reach consensus on what explains them.

#### *Human capital and rational choice theories*

There are a number of theories that attempt to explain supply side factors. Within economics, proposed explanations for occupational gender segregation include gender differences in preference for competition (Kleinjans, 2009), and differences in general personality characteristics (Rosenbloom, Ash, Dupont, & Coder, 2008). The most influential theory, however, is probably rational choice theory. This theory posits that people choose to act in ways that best serve their interests. For example, Becker's (1985) model of the allocation of effort accounts for gender differences in labor market outcomes on the basis of job seekers' utility maximizing choices. This perspective implies that because women take on more responsibility for childcare, women with family responsibilities allocate less effort to their jobs compared to men. The neoclassic tradition also suggests that women's motivation to increase their prospects for marriage influences gendered occupational decisions. Although it may seem irrational for women to decrease their chances of high earnings by investing less in marketable human capital, some argue that such investments appear more rational when considered as part of a family unit (e.g., Berk & Berk, 1983). However, studies investigating the issue of whether mate-selection factors put differing pressure on occupational investments for men and women show mixed findings (e.g., Badgett & Folbre, 2003; Sprecher, Sullivan, & Hatfield, 1994). The rational choice argument has been criticized for depending on the fact that men tend to be paid more than women, while disregarding the reasons for the differences in pay, making the situation self-producing: Because men can earn more, their employment is prioritized, and because women take on household responsibilities, they are more likely to enter part-time jobs that pay less (Blackburn et al., 2002).

In the case of education, rational choice theory posits that individuals rationally consider the pros and cons of various educational alternatives, whereby they reach a decision in favor of the alternative which they believe maximizes their utility. For example, Jonsson (1999) has assessed the rational choice model for explaining gender differences in educational choice. In his model, the expected probability of successfully completing the course of study, the expected total cost of the education, and the expected benefits that will eventually follow are weighted for each alternative, whereby a decision is made based on the ranking of the perceived utility of each alternative. Expected benefits could include for example the perceived ease of combining work with family, and expected costs could revolve around, for example, expecting to be discriminated in occupations where one's gender is in minority. The rational choice model has been accused of neglecting the role of intrinsic rewards for work and personal interests, and for assuming that actors have perfect labor market information (Dex, 1988).

### *Self-efficacy*

The literature on gender differences in career attainment tends to center around the lack of women in math-intensive fields. This can be explained by the fact that women have traditionally held jobs with lower status. Inspired by the women's movement, a wave of research has been devoted on how to encourage women to explore their full range of potential occupations (O'Brien & Fassinger, 1993), and to promote nontraditional careers in order to help women reach greater advancement. This research has largely focused on how women develop their self-efficacy beliefs for nontraditional fields (e.g., Betz & Hackett, 1981), and this has also been embraced in the work of career counselors (Heppner & Heppner, 2008). Self-efficacy beliefs refer to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Hackett and Betz (1981) introduced Bandura's self-efficacy construct into the career development literature as a conceptual framework for understanding the career development of women. They and other authors (Betz & Hackett, 1981; Betz, Harmon, & Borgen, 1996) found that women's efficacy ratings predicted preference for gender traditional careers. Self-efficacy has remained a widely popular explanation for women's underrepresentation in a variety of domains, e.g., leadership roles (Dickerson & Taylor, 2000), and entrepreneurial careers (BarNir, Watchon, & Hutchins, 2011). In contrast, self-efficacy is rarely suggested, and may be less intuitive, as a determinant of men's vocational choices.

### *Theories focusing on goal endorsement and gender role socialization*

It has also been suggested that gender differences in vocational interests stem from gender differences in values and goals. Goal-congruity theory posits that individuals will pursue occupations that they perceive as a good fit with their goals and values (Brown & Diekmann, 2010). Even though women are now similar to

men in level of agentic goals (Diekman, Clark, Johnston, Brown, & Steinberg, 2011; Twenge, 1997b) and endorsement of power values (Weisgram, Bigler, & Liben, 2010; Weisgram, Dinella, & Fulcher, 2011), they still tend to place higher value on communal goals (Diekman, Brown, Johnston, & Clark, 2010; Konrad, Ritchie, Lieb, & Corrigan, 2000; Lippa, 1998; Morgan, Isaac, & Sansone, 2001). For example, Eccles (2007a) found that women were more likely than men to aim for careers in health care because they valued working with people to a higher extent than males, and that this remained true when controlling for their mathematical abilities. Women are also less willing than men to seek out careers that are perceived as incompatible with communal goals (Diekman et al., 2010). More specifically, Diekman and colleagues (Diekman et al., 2011) have showed that STEM (science, technology, engineering and math) careers are believed to be relatively dissociated from communal goals. In sum, this line of research indicates that communal goals and values is an important predictor of gender differences in occupational preferences.

Of the supply explanations proposed in sociology, some concern gender differences in job search methods and networking (Drentea, 1998; Torres & Huffman, 2002). However, gender socialization explanations that focus on cultural influences have perhaps been most influential (e.g., Marini, Fan, & Finley 1996; Tobin et al., 2010). For example, Correll (2001) has suggested that cultural beliefs about gender and task competence bias individuals' perceptions of their own competence and thus make women and men select careers in line with these perceptions. This is similar to the focus on self-efficacy beliefs in psychology. An assumption that is often shared in both psychological and sociological models is that people behave in ways that are congruent with gender roles and stereotypes because society reinforces this behavior (Eagly, 1987). The perhaps most influential gender socialization model within psychology is social role theory (Eagly, 1987; Eagly, Wood, & Diekman, 2000), which posits that people select careers and roles based on the stereotypes that they hold. Gender differences in behavior are regarded as having arisen historically from the societal position of women as homemakers and men as full-time paid employees. These two roles create different expectancies about characteristics for each gender: communal (such as nurturance and interdependence) in the case of the homemaker role and agentic (such as assertiveness and independence) in the case of the breadwinner role (Prentice & Carranza, 2002). Consistent with the traditional division of labor, female-dominated occupations are indeed associated more with communion, whereas male-dominated occupations are more linked to agency (Cejka & Eagly 1999). According to social role theory, expectancies turn into behavioral gender differences through two processes. First, individuals come to learn gender-typed skills and beliefs through socialization processes, and second, there is also a more direct influence of expectancies associated with gender roles on people's behavior and dispositions.

The expectancy value model of achievement-related task choices (Eccles, 1983; 1994; 2011) holds that educational and vocational choices are determined by two sets of beliefs: expectations for success; and the attached subjective importance or value for the different options that are perceived as available. In a sense, the model bears some similarity to a rational choice perspective because of its focus on expected success and subjective importance. However, it is also heavily influenced by a gender socialization perspective as these beliefs in turn are suggested to be shaped by causal attributions, socializing agents (in particular parents and teachers), gender role beliefs, self-concept, and perceptions of the task.

Gottfredson's (1981) circumscription and compromise theory also accounts for the socialization of gender roles, but takes on a developmental perspective. This model states that gender is crucial in the development of the self-concept, affecting the subsequent perceived desirability of various careers. Three developmental processes are proposed: the development of perceptions of one's self and the occupational world; followed by the selective narrowing of career options under consideration; and finally, reaching compromise with regards to reality. These processes start in early childhood and develop through adolescence. Additionally, the theory suggests that individuals resist violating their vocational gender self-concept after having internalized these aspects as parts of their identity (Gottfredson & Lapan, 1997).

### *Stereotype threat*

A widely influential theory in psychology that accounts for the influence of stereotypes on targets is stereotype threat theory (e.g., Davies, Spencer, & Steele, 2005; Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995). This theory holds that expectations of being judged according to a negative stereotype about one's group lead to underperformance in the stereotyped domain. Stereotype threat is typically manipulated experimentally by telling the participants that the test they are about to take produces gender differences (e.g., Spencer et al., 1999), or by reminding participants of the stereotype in a more subtle manner, e.g. having them state their gender prior to the test (see Stricker & Ward 2004). Further, prolonged exposure to the negative stereotype has been suggested to cause disidentification with the domain, where the target distances herself from the domain in order to maintain her self-esteem (Cokley, 2002; Davies et al., 2005). For example, girls would first sense a stereotype of women as inferior to men in the math domain, and this awareness would make them underperform on tests. Eventually, they would come to disengage from the math domain in order to protect their self-esteem. In this way, stereotype threat has been suggested to cause psychological (decreased work satisfaction and commitment) and behavioral (absence and turnover) withdrawal from the workplace (Block, Koch, Liberman, Merriweather, & Roberson, 2011; Roberson & Kulik, 2007). A similar theory is the stereotype inoculation model (Dasgupta, 2011), which describes how minority group members will navigate away from domains that feel like an uncomfortable fit

because of stereotypes; and instead move toward areas where they experience more belonging. Further, the model suggests that ingroup experts and peers will serve as social vaccines that increase social belonging and inoculate fellow group members' self-concept against harmful stereotypes.

Stereotype threat theory has remained popular both within the scientific community and in the media for explaining gender differences, in particular when it comes to math performance and enrollment. However, less is known about the mechanisms by which stereotype threat influence performance and motivation, and the assumptions of the theory have not gone unquestioned (Stricker & Ward, 2004; Stoet & Geary, 2012). In several countries (including Sweden) there are no gender gaps in math achievement (Guiso, Ferdinando, Sapienza, & Zingales, 2008), and in other countries (such as the US), the gender gap in performance and course completion is restricted to certain types of math levels, and are steadily shrinking (Hyde, Lindberg, Linn, Ellis, & Williams, 2008). Furthermore, the math-gender stereotype on which stereotype threat is based seems to be fading (Martens, Johns, Greenberg, & Schimel, 2006). In fact, people are actually more likely to be accurate or to underestimate gender differences in general than to overestimate them (Swim, 1994). Typically, people correctly estimate the direction of cognitive gender differences, but underestimate the size of these differences (Halpern, Straight, & Stevenson, 2011). However, even if explicit math-gender stereotypes are fading, implicit associations between math and gender may be of importance, as they have been found to predict math self-concept, academic achievement, and enrollment preferences in girls (Steffens, Jelenec, & Noack, 2010).

Field experiments by Stricker and Ward (2004) have put stereotype threat theory to the test outside of the laboratory by examining the effects of inquiring about ethnicity and gender on the performance of students taking standardized tests. The authors established that the inquiry did not have any effects on the test performance of female (or ethnic subgroups) of students that were both statistically and practically significant. Furthermore, Stoet and Geary (2012) recently conducted a meta-analysis of studies with experimental designs that could have replicated the original findings by Spencer, Steele, and Quinn (1999) of stereotype threat effects on females' math performance. They concluded that although stereotype threat may indeed affect some women, the existing state of knowledge does not support the current level of enthusiasm for stereotype threat as a mechanism underlying the gender gap in mathematics performance and participation. Too much weight on the stereotype explanation may therefore stand in the way of research and implementation of effective interventions that aim to increase women's participation in math intensive domains (Ceci et al., 2009; Stoet & Geary, 2012).



### *The evolutionary perspective*

Finally, some authors take on an evolutionary perspective. For example, Browne (2006) has suggested that evolved sex differences in competitiveness, dominance/status-striving, and some cognitive (e.g., spatial) abilities have led to men and women selecting different types of occupations. These differences have been suggested to stem from the difference in parental investment between men and women (Archer, 1996; Browne, 2006).

This evolutionary/essentialist view stands in contrast to the view of social constructionists, who believe that biological differences between the sexes do not produce any general patterns of psychological sex differences (e.g., Bohan, 1993). Instead, social constructionists tend to consider gender inequalities or differences to be a product of relations between people and the language that they use to describe their world, and social role assignments in that men and women “do gender” as a set of behaviors that they learn to display in social interaction (West & Zimmerman, 1987). For example, at least a couple of decades ago, it could suffice to label a perceptual-motor task as either needlework (female-typed) or electronics (male-typed), in order to reverse a gender gap in performance on the task (Davies, 1986; Hargreaves, Bates, & Foot, 1985).

Evolutionary psychologists also recognize that gender differences are not fixed but vary according to context. This is explained by contingent evolved dispositions: Because the optimal fitness-producing behaviors shifted reliably with environmental changes, particular environments should trigger alternative forms of a disposition (Caporael, 2001). In the context of occupational preferences, this could for example happen if differential parental investment led to evolved dispositions for higher competitiveness in males than females, but this gender difference would not manifest itself unless the immediate environment demanded competitive behavior.

The mechanism through which these evolved dispositions would operate is sex hormones (Ellis, 2011). Males generally have twice the levels of testosterone than women, and this has been suggested as an explanation for the difference in men’s and women’s vocational interests (Govier, 2003; Manning, Reimers, Baron-Cohen, Wheelwright, & Fink, 2010). Some empirical findings suggest that testosterone levels relate to women’s occupational choices (Manning et al., 2010): The higher the testosterone levels (as measured with correlates of prenatal and adult testosterone) the higher was the likelihood of women working in male dominated occupations. Somewhat surprisingly though, this relationship between testosterone and occupational choice has not been observed in men (Manning et al., 2010; Sapienza, Zingales, & Maestripieri, 2009). This could possibly be due to ceiling effects in the measures; because prenatal testosterone is generally high in males, there may be a threshold over which additional increases do not have further effects on occupational choices (Manning et al., 2010). A feedback model is generally advocated in the literature, in which testosterone affects dominant

behavior and is in turn affected by such behavior and its outcomes (e.g., Mazur & Booth, 1998; Wood & Eagly, 2000). Overall, it is hard to conclude that these biological mechanisms are responsible for stable patterns of gender differentiation in agentic and communal interests (Croft, Schmader, & Block, 2015).

In an attempt to blend essentialist and social constructivist perspectives, Wood and Eagly (2002) have proposed a biosocial model. They suggest that because of two factors - child bearing and the difference in physical size - men and women have been distributed into social roles (e.g. men hunting, women taking care of children). This different placement of men and women produces sex-differentiated behavior through a variety of proximal, mediating processes. One such process is the formation of gender roles, with expectations placed on individuals to exhibit psychological characteristics that equip them for the tasks that their gender group typically performs. These gender roles then provide guidance of social behavior, which in turn is mediated by socialization processes, social psychological processes of expectancy confirmation, and self-regulation. Biological processes, especially hormonal changes, are also considered in the model but in the form of a consequence of the performance of social roles. Evolutionary psychologists nevertheless asserts that this biosocial theory leaves some important questions unanswered as it disregards the effects of sex hormones on psychological functioning; and that even if a division of labor arose as a completely social construction, one might suspect it to have over time resulted in biological sex differences through natural selection (Browne, 2006).

Stewart-Williams and Thomas (2013) have argued that the males-compete/females-choose (MCFC) model applies to many species but that it is misleading when applied to human beings, where a mutual mate choice (MMC) model is more applicable. This is because human males tend to contribute to the rearing of the young, making the sex difference in parental investment smaller (Geary, 2000). This means that both genders need to be choosy about long-term mates, and both sexes compete for desirable mates. Consequently, differences between men and women are relatively modest and the focus on the MCFC model in evolutionary psychology may have led to exaggerations of the magnitude of human sex differences. A consistent pattern of both gender stereotypes and gendered social learning is found in most cultures. The coevolutionary approach treats socialization not as something that is separate from human nature, but as something closely interrelated with biology (Archer, 1996). Variation in gender socialization across cultures can also be viewed from a coevolutionary perspective as representing ways in which gendered socialization is adapted to specific requirements of different social environments.

## Reasons for adopting a social psychological perspective with a focus on both men and women

Even if gender discrimination in the hiring process was pervasive, demand-related explanations such as discrimination in formal (e.g., Riach & Rich, 2006) or informal recruitment (i.e., referral hiring, Beaman, Keleher, & Magruder, 2012; Tassier, 2008) would not be sufficient to alone explain the horizontal gender segregation on the labor market. This is because gender conformity begins in childhood (Martin & Ruble, 2004) and gender segregation starts in school with differences in course enrollment (Watt, 2008). Similar to occupational segregation, the horizontal gender segregation is larger than the vertical segregation in education (Charles & Bradley, 2002). Females are often underrepresented in engineering and math/computer science, while men are underrepresented in education, humanities, and health fields. The gender segregation in education can be narrowed to a humanistic-scientific divide, as well as a care-technical divide (Barone, 2011). This divide inevitably shapes the division of men and women into different occupations (Smyth & Steinmetz, 2008). Although it is possible to change careers later in life, many opportunities will be constrained by early choices. For example, taking math courses at school may determine later access to math-intensive education (an additional factor is of course that it might be costly to invest in a second career).

Charles and Bradley (2002) investigated correlates of tertiary gender segregation in education in twelve industrialized countries (including Sweden). They argue that the often found tendency to conceptualize “women’s status” as a uni-dimensional property that varies along a single causal variable such as female economic independence or ideological egalitarianism is inappropriate to explain the gender segregation. This is because cross-national variability in tertiary gender segregation is weakly related to measures of women’s status in other social areas. For example, even in countries where women are well represented in elite sectors of education and where enrollment rates for women have been growing rapidly, vast gender differences across field of study is still prevalent (Bradley, 2000; Jonsson, 1999). Charles and Bradley (2002) found support indicating that horizontal segregation in education is more resistant than vertical segregation to gender-egalitarian cultural pressures. These findings thus suggest that gender segregation in labor markets may not disappear simply because gender egalitarian attitudes are encouraged.

Occupational aspirations in adolescence predict later career achievement (Cochran, Wang, Stevenson, Johnson, & Crews, 2011; Schoon, 2001; Trice & McClellan, 1993) and selection into gender typical careers starts with young boys’ and girls’ occupational interests and educational choice. As adolescents’

occupational preferences are often in line with gender stereotypes (Miller & Budd, 1999; Sikora & Pokropek, 2012), the choices being made at this age make a significant contribution to the gender segregated labor market. Gottfredson (1981) suggested that children around the age of 6-8 come to sort occupations based on gender role traditions, and thereby that gender type makes up one of the first lenses through which individuals think of desirable occupations. Indeed, a longitudinal study by Helwig (2004) where children were followed from second to 12th grade found support for Gottfredson's theory regarding the development of both boys and girls.

This leaves us with the question of which factors shape these gendered preferences. Today, most behavioral scientists agree on the basic premise that humans are adapted for living in groups (Brewer & Caporael, 2006). Many of the evolved characteristics that have permitted us to adapt to a wide range of physical environments are characterized by dependence on collective knowledge and cooperation. Because of this, human beings are obligatory interdependent, meaning that interdependence at the group level serves as the primary survival strategy. In other words, the meaning of the term "social" goes beyond exchange relationships with other individuals (Caporael & Brewer, 1995). Because of our interdependent nature, we are highly sensitive to social cues in the environment (e.g., Morrison & Matthes, 2011). This is true even to the extent that the mere sense of social connectedness – defined as small cues of social connectedness to another person or group, such as sharing the same birthday with someone else in a performance domain – can enhance achievement motivation in that domain (Walton, Cohen, Cwir, & Spencer, 2012).

There are several plausible reasons for gender differences in occupational interests that do not involve the social context (e.g., gender differences in personality). However, even if biological differences between men and women contribute, there are limitations to their impact on behavior because they have boundaries within the social context. That is, the extent to which these biological predispositions can operate is in part determined by the social context, as social norms largely determine in what ways we are free to behave. For example, let us presume that because males, due to higher testosterone levels, are in general more risk prone than females (Bateup, Booth, Shirtcliff, & Granger, 2002), this makes them more drawn to risky occupations such as firefighter. If there is simultaneously a social pressure for girls to take more risks, this could cancel out the biologically induced gender difference (Gneezy, Leonard, & List, 2009).

The proportion of women is increasing in previously male-dominated fields and women are also becoming more educated than men overall (Ceci et al., 2009). This rapid increase in women's agentic traits and behaviors is difficult to explain in terms of biological adaptations on sex-specific genes (Croft, Schmader, & Block, 2015). Rather, a cultural evolutionary perspective emphasizes the importance of social learning processes for changing beliefs and norms (Richerson & Boyd, 2005). In conclusion, there are reasons to believe that biological aspects

and demand explanations are insufficient in alone accounting for the large gender segregation on the labor market, and that social psychological mechanisms should also be of importance.

When it comes to social psychological explanations for gender differences in occupational attainment, several theories and research efforts have been put forward. Although previous studies have made important contributions, little is still known about what motivates men's choices, as many of the proposed explanations concern only the lack of women in male-dominated fields. For example, popular theories such as those concerning stereotype threat and self-efficacy seem less intuitively appealing to explain the lack of men in female-dominated occupations (as these have traditionally been of lower status than male-dominated occupations). Indeed, the focus on women's low self-efficacy and confidence in male-typed domains stands in contrast to the focus on men's psychological adjustment and coping with work in female domains (see e.g. Hayes, 1989). One might wonder why female-typed jobs are regarded as so simple that men's self-efficacy is not even considered in this context (Heppner & Heppner, 2009). The focus on women can be explained by the fact that women have a history of being far less privileged than men on the labor market. However, in order to understand psychological mechanisms behind gender segregated labor markets a focus on only women is insufficient (Tokar & Jome 1998). Contrary to women who have entered many previously male-dominated occupations, men remain absent from traditionally female-dominated occupations. Furthermore, norms seem to correspond to this pattern: People think it is fine for women to hold either male- or female-typed jobs, but at the same time they still believe that men should stick to male-typed occupations (DiDonato & Strough, 2013). In fact, men who succeed in female-typed occupations are less respected than both successful women in male-typed occupations and men in male-typed occupations (Heilman & Wallen, 2010). Overall, people tend to express more negative attitudes to gender nonconformity displayed by boys or men compared to girls or women (Blakemore, 2003; Heilman & Wallen, 2010; Kane, 2006; Martin, 1990; Rudman & Fairchild, 2004). The need for more research on barriers to men's entrance in female-typed occupations has recently been recognized (Croft, Schmader, & Block, 2015).

In sum, the ways in which social psychological factors may affect gender-typed career choices are still far from completely understood. The present thesis proposes three social psychological effects on women's and men's career related preferences that are directly relevant to horizontal occupational segregation. I will now turn to introduce each of these.

## Gender identity threat

Gender is generally considered an essential element of human identity (Egan & Perry, 2001). Given that one's gender assignment tends to be immutable and that many life tasks (e.g., recreational, occupational, and relationship related activities) that one is expected to pursue are in part directed by gender, it seems likely that most people would at times reflect on questions like "How well do I fit with my gender category?", and "Must I adhere to the stereotypes for my gender or can I explore cross-gender options?". Egan and Perry (2001) have proposed that starting in childhood, answers to these and similar questions are contemplated and that they reflect components of a person's gender identity. Considering that gender is one of the most basic categories for sorting people, and that there are stereotypes that dictate appropriate behavior for men and women (Prentice & Carranza, 2002), individuals may be sensitive to suggestions that they are failing to live up to the expectations for members of their gender category.

It has been suggested that any event, interaction, or outcome that signals to an individual that he or she is not prototypical of a salient in-group category should be experienced as threatening (Schmitt & Branscombe, 2001). Being deviant with respect to a major social category such as gender may be threatening considering that it can lead to rejection or ridicule (Schmitt & Branscombe, 2001). When a social identity is threatened, the individual should be motivated to secure the identity in some way, in order to diminish the threat (Jetten, Branscombe, & Spears, 2002). Study I in this thesis proposes that when gender identity is questioned and thus becomes threatened, this will be compensated for by increasing one's preferences for gender typical things, and that a suitable domain for restoring one's gender status is that of occupational preferences.

### **Compensating for threat by adjusting occupational preferences**

Vocational interests can be defined as "the expression of personality in work, school subjects, hobbies, recreational activities, and preferences" (Holland, 1973, p. 7). In this view, interests matter for career development because individuals tend to seek environments in which they can express their interests. Contrary to this view of interests as outgrowths of personality development is the notion of interests as a direct reflection of an individual's identity (i.e., the way we think of ourselves) that is best conceptualized in terms of a person's motives, goals, values, and aspirations (Hogan & Blake, 1999). In this perspective, interest measures are actually a more direct expression of an individual's identity, compared with personality measures, which rather tend to reflect an individual's reputation (i.e.,

the way others see us). When thinking of occupational interests this way, it makes sense that they could be adjusted as a means of restoring an important aspect of one's identity. Besides being an important part of identity, another aspect is the extent to which the domain in question is convincing as proof of gender typicality. That is, in order to restore an aspect of one's identity, the threat compensation should occur in an area that is unambiguously relevant to the threatened domain. Considering that occupations are clearly stereotyped with respect to gender (Cejka & Eagly, 1999) and that this gender-typing is present already in childhood (Wilburn & Kee, 2010), this could be a highly suitable domain for restoring a threatened gender identity.

Identity development is considered a crucial task during adolescence (e.g., Eccles, 1994; Erikson, 1968; Higgins, 1987). Although most theories on identity development have focused only on personal identity, some have suggested an additional psychosocial stage of group identity in early adolescence (Newman & Newman, 1976; Tanti, Stukas, Halloran, & Foddy, 2011). This is also a time when individuals make their first career founding choices. Study I tested whether adolescents will prefer gender typical occupations as a means of restoring a threatened gender status. If adolescents increase their gender typical preferences as a consequence of gender identity threat, an implication would be that reduced exposure to such threat could perhaps be a step towards a more gender balanced labor market.

### **Is manhood more precarious than womanhood?**

Although the concept of people experiencing threat when their gender identity is questioned is in line with widely influential theories within social psychology such as social identity theory (Tajfel & Turner, 1979) and self-categorization theory (Turner, 1985), several authors have proposed that such a threat is much more likely to affect men compared to women. For this reason, it has often been referred to as masculinity threat. Vandello and colleagues (Vandello & Bosson, 2013; Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008) have found support for the perspective that manhood is a precarious state, in that people seem to have a better understanding of statements about men losing their manhood than of women losing their womanhood (Bosson, Vandello, Burnaford, Weaver, & Wasti, 2009; Vandello et al., 2008). Vandello et al. (2008) propose two possible explanations for manhood as more precarious; one of them suggests that evolved dispositions that have their origin in men's competitive acquisition of social status and resources to gain access to female mates are responsible. The other explanation suggests that a belief that manhood can be lost may reflect people's tendency to attribute psychological qualities to men and women based on the role-relevant behaviors that are most strongly associated with these groups.

The idea that manhood (compared to womanhood) is a precarious state makes sense when considering that attitudes toward gender deviance tend to be harsher for males (DiDonato & Strough, 2013; Kane, 2006; Martin, 1990); that people agree on statements about manhood as easily lost (Vandello et al., 2008), and that there are rituals for proving manhood in several cultures. However, this perspective has received criticism for assuming that womanhood is a fixed state that does not need to be demonstrated or proven (Addis & Schwab, 2013; Chrisler, 2013). Even if the concept of losing manhood is more well-known, this does not necessarily mean that womanhood cannot be precarious as well; for example, womanhood may be demonstrated in other domains such as in physical appearance or motherhood. Because previous studies often had only male participants (e.g., Bosson, et al., 2009; Weaver, Bosson, & Vandello, 2013), it is difficult to conclude whether women react similarly or differently to men in response to these threats.

Another methodological aspect is that in the few studies on gender identity threat that did include female participants, the experimental manipulation given to men differed from the one given to women (for example, men receiving gender typicality feedback on a sports/auto mechanic/home repair knowledge test, while women received feedback on a childcare/fashion/cooking knowledge test; e.g., Rudman & Fairchild, 2004; Vandello et al., 2008). Because the content of the male knowledge test may differ from the female test in for example status, this makes interpretations of the results somewhat difficult. For example, it is unclear whether feedback on cooking and childcare knowledge is the ideal way of creating a gender identity threat in a sample of college women (Chrisler, 2013). Furthermore, that men and women respond to gender stereotyped items and then receive false feedback that their result was highly atypical might raise questions about the credibility of the threat, considering that people are generally aware of the content of gender stereotypes. The method for inducing threat used in Study I in this thesis avoids these problems by having the participants draw their own inferences about their level of gender typicality. Further, it allows for a gender fair test of the hypothesis, as the threat manipulation avoids introducing specific domains that may differ in status or other aspects.

### **Additional conceptual issues**

The suggestion that restoring an aspect of one's identity hinges on the compensation occurring in an area that is clearly related to the threatened domain implies that such compensation should not occur in a domain that is unrelated to the one under threat. But how do we know for sure that gender identity threat is unique? Because previous research has not compared the effects of gender identity threat to effects of threats to other aspects of identity, there is a possibility that occupational preferences will be adjusted in a gender typed direction regardless of



what type of threat one is exposed to. This outcome would be predicted by the meaning maintenance model (MMM; Heine, Proulx, & Vohs, 2006) which is grounded in the idea that people have a fundamental need for meaning (to perceive events as expected relations). The model proposes that when people's sense of meaning becomes threatened, they reaffirm alternative representations as a way to restore meaning. This process is also called fluid compensation because meaning can be reaffirmed in domains that are different from the domain in which the threat occurred.

No previous studies have raised the issue of whether gender identity threat produces unique effects on attempts to restore a threatened gender status. In Study I we attempted to answer this question by using an experimental design that included control conditions in the form of affirmed gender identity as well as a comparison threat to capability. According to Eccles (2009) identity is basically made up of two sets of self-perceptions: one being related to skills and competencies, and the other one related to personal values and goals. Gender identity can be thought of as representing the latter of these two (assuming that people value their social groups), whereas a threat to one's capability or competence corresponds to the former. In other words, we attempted to threaten (vs. affirm) two aspects of identity in order to see whether a threat to gender identity produces unique consequences for gender-typed career preferences.

Further, we attempted to test a gender identity hypothesis against the masculinity threat hypothesis, using a method for threat induction that relies on the participants' own inferences instead of procedures that differ for males and females (such as false feedback on different tests). Although this method has been used in a previous study that investigated the effect of men's threatened gender identity on financial risk taking (Weaver et al., 2013), that study did not include female participants in the design. In sum, Study I aimed at investigating whether male and female adolescents adjust their occupational preferences in line with gender stereotypes as a response to gender identity threat.

## Making a career compromise to be with friends

Just as adolescence is marked by identity development, another main preoccupation during this time is peer relations and friendship. Both the importance placed on peer acceptance and relationships, as well as the time spent with peers, become dramatically increased in adolescence (Fuligni & Eccles, 1993).

## **Friends as barriers to nontraditional choice**

Preserving close relationships with others is a core human need (Baumeister & Leary, 1995; Walton et al., 2012), and feeling lonely has actually been found to predict early death as much as health risk behaviors like smoking (Cacioppo & Patrick, 2008). When a valued relationship is threatened, people will strive to secure the safety of the relationship (Leary, Tambor, Terdal, & Downs, 1995). Because social needs are so powerful, and adolescence is marked by an upswing in these needs, wanting to stay close to friends may motivate some adolescents to adjust their choice of education in line with their friends' choices. This implies that some individuals may even be willing to compromise their actual career preferences for the sake of securing friendships. This is in line with Gottfredson's theory of circumscription and compromise (1981) which holds that individuals' perceptions of opportunities and barriers to obtain a certain type of job will be weighted with their interests to form into aspirations. Perceptions of external barriers can leave a certain career choice inaccessible, in which case a career compromise occurs where individuals adjust their occupational aspirations (Tsaousides & Jome, 2008). Besides Gottfredson's influential theory, the social cognitive career theory (SCCT) also emphasizes that career-related interests and choice behavior are affected by many contextual factors (Lent & Brown, 1996; Lent, Brown, & Hackett, 1994; 2000).

However, this willingness to prioritize friendship is unlikely to affect individuals in a random manner with regards to what field of study they will trade in their actual interests for. Rather, there may be a systematic direction that has implications for the gender divide in education. This is explained by the fact that, starting in childhood and continuing throughout the lifespan, people tend to become friends with those who are of the same gender as themselves (Mehta & Strough, 2010). Because the proportion of same-gender friends in adolescence is usually at least 70 percent (Mehta & Strough, 2010; Poulin & Pedersen, 2007), this means that adolescent girls who adjust their choice in line with friends will be more likely to choose a female-dominated (compared to male-dominated) field of study whereas adolescent boys will be more likely to choose a male-dominated education. For example, imagine Eric, who wants to remain with his high school friends when going off to college. He has a higher probability of adjusting his choice in line with the educational choice of male rather than female friends, the reason being that he has more of the former than the latter. This means that if Eric would like to pursue an education in nursing he may have to face the cost of losing touch with his friends, combined with a lowered probability of making new male friends at school. Considering that this social cost could be perceived as a barrier to career attainment, this implies that Eric would need to be quite strongly motivated to become a nurse in order to go ahead and pursue his dream profession.

On the other hand, a girl in Eric's class with the very same level of interest in becoming a nurse would be much more likely to have a friend who is also interested in this occupation, and she would then be free to pursue her aspirations without the social barrier. In sum, Study II in this thesis tested the hypothesis that the consequence of friendship priorities in educational choice is an increase in educational gender segregation.

### **Distinguishing the proposed effect from peer socialization, peer support, and stereotype conformity**

Previous studies on the role of peers focus on peer socialization or peer support (e.g., Dahling & Thompson, 2010; Hallinan & Williams, 1990; Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003; Kiuru, Aunola, Vuori, & Nurmi, 2007; Kiuru, Koivisto, Mutanen, Vuori, & Nurmi, 2010). Although these studies identify the peer group as an important source of environmental support and barriers (Kiuru et al., 2010), the focus is on the behavioral norms, attitudes, and support it provides. The hypothesis proposed in this thesis differs from previous work in that it involves no active influence on behalf of the friend, but rather a motivation on behalf of the individual to prioritize being close to the friend and adjusting his or her choice accordingly.

Previous work that focuses on friends' influence through peer socialization processes also differs from the mechanism proposed in this thesis as it describes a reciprocal exchange between friends, with attitudes and values changing gradually over time. Research suggests that friends are both similar to begin with and also tend to become more similar over time (Hafen, Laursen, Burk, Kerr, & Stattin, 2011; Urberg, Luo, Pilgrim, & Degirmencioglu, 2003). In contrast to these effects of peer modeling and pressures to conform, the hypothesis proposed in this thesis concerns a direct tradeoff between an individual's social needs (e.g., wanting to go to the same school or class as the best friend) and actual career preferences. Individuals who have particularly strong interpersonal needs, for example, a high fear of isolation, may be particularly willing to commit this tradeoff.

The effect of friendship priorities proposed in this thesis also differs from effects of conforming to gender stereotypes or norms. The individual is motivated to be close to his/her friend – regardless of whether the friend belongs to the ingroup or not. For example, an adolescent girl with more male than female friends would be more likely to make a gender atypical choice than a gender typical one. This is thus different from the notion of ingroup (in this case, same-gender) peers as role models emphasized by for example the Stereotype inoculation model (Dasgupta, 2011). In contrast, we suggest that a general social need (unrelated to the concept of in- and outgroups), in combination with the tendency to have more same-gender friends, will affect educational choice in a gender-typed direction.

An important aspect is that there would be no effect of friendship priorities on gender segregation if there were no gender differences in preferences to begin with. Therefore, the effect of adjustment towards friends' choices does not produce gender segregation per se, but rather serves to maintain and reinforce it. As such, it can help explain why gender differences in career related choice are resistant to change - as it explains why adolescents with nontraditional preferences are pulled back into more gender typical behavior.

## Consequences of making attributions to discrimination

A popular and intuitive explanation for the large segregation by gender on the labor market has been that of discrimination. However, the evidence suggests that gender discrimination in hiring is quite small (e.g., Albert, Escot, & Fernández-Cornejo, 2011; Bertrand & Mullanaithan, 2004; Carlsson, 2011, Riach & Rich, 2006). But even if the risk of being discriminated due to gender in the hiring process has been reduced, perhaps people stay away from occupations where they fear that they will be discriminated. It is well established that the subjective perception of being discriminated can have negative consequences for mental and physical health (e.g., Pascoe & Smart Richman, 2009; Stroebe, Barreto, & Ellemers, 2010) as well as for work satisfaction and turnover intentions (Madera, King, & Hebl, 2012). Although perceived discrimination is sometimes treated as evidence of actual discrimination in the literature, the two should be treated as distinguished concepts. This is because some people may fail to realize that they have been treated unfairly due to their social group membership (e.g., ethnicity, gender, age), while others may misinterpret ambiguous situations as discrimination when it was in fact fair treatment. Previous work shows that both internal and external factors play a role in attributions to having been the victim of discrimination (e.g., Pinel, 1999). This issue has attracted a great deal of attention in the literature as it has important practical implications for the way people identify discrimination (Kappen & Branscombe, 2001), and thereby possibly also for finding ways of reducing its prevalence. The term attributions to discrimination describes “whether people characterize the cause of a particular negative outcome (e.g., termination, failure to hire, etc.) as being based on discrimination (or conversely, as based on some other cause)” (Eyer, 2012, p. 1278).

A well-documented finding is that people often report very low experiences of personal discrimination, whereas they report higher prevalence of discrimination directed at their ingroup (Carvallo & Pelham, 2006; Quinn, Roese, Pennington, & Olson, 1999; Taylor, Wright, Moghaddam, & Lalonde, 1990). This has been labeled the personal/group discrimination discrepancy (Taylor et al., 1990). Considering that people generally do not seem to conclude that they are targets of discrimination, this is perhaps not very likely to explain occupational

gender segregation. But just as there is variation in subjective interpretations of being the victim of discrimination, there may be individual and situational factors influencing interpretations of whether other people have been discriminated. These interpretations may, apart from affecting the way people perceive and treat others, also be used as a base for guidance of one's own behavior, for example, affecting perceptions of risks and opportunities on the labor market. The issue of discrimination attributions is relevant for the problem of occupational gender segregation because it may actually produce similar effects as actual discrimination, even in its absence. This would be the case if, for example, women believe male-dominated firms to be discriminating against females, making them prone to avoid these firms, thereby resulting in an underrepresentation of women similar to if men had actually been favored in the hiring process.

### **Discrimination prototypes**

In the process of making judgments, people will compare incoming data against their cognitive template to see if they match - if there is too much dissimilarity, the template will be rejected as a suitable explanation, and the search will continue. This tendency for people to rely on their preexisting mental prototypes as a basis for making judgments is well-documented (e.g., Higgins, Rholes, & Jones, 1977), and applies to social as well as non-social judgments. The task of judging the extent of similarity between new data and pre-existing template relies on cognitive accessibility, and judgments of the likelihood that a particular causal explanation is correct are no exception. Cognitive accessibility, the ease of which a certain concept can be brought to mind, is influenced by a variety of personal (e.g., a general belief that the concept in question is relatively common) and situational factors (such as exposure of the concept via the mass media). When a concept is accessible, this tends to be interpreted as an indicator of the actual probability that the explanation is valid, such that cognitively accessible explanations are perceived to be more likely to be correct (the availability heuristic; Tversky & Kahneman, 1973).

The concept of prototype refers to the most representative or typical example of an item or event belonging to a certain category. To the extent that most people have preexisting cognitive prototypes for what constitutes discrimination, these prototypes should have a substantial influence on the extent to which particular events are attributed to discrimination. More specifically, the typical victim of gender discrimination is a woman, the typical perpetrator is a man, and the typical domain where gender discrimination occurs is male-dominated firms/fields. Similarly, the extent to which discrimination is a cognitively accessible explanation for negative outcomes on the labor market compared to other potential causes may have a significant impact on whether people make judgments of discrimination in certain contexts. Previous research supports the notion of

prototype effects in perceived discrimination (Inman & Baron, 1996; Baron, Burgess, & Feng Kao, 1991; Inman, Huerta, & Oh, 1998). This means that people are more prone to label an act as discrimination if the victim and the perpetrator fit the prototype of discrimination, for example, a white perpetrator combined with a black target, or a male perpetrator and a female target, and especially if the domain (e.g., a male-dominated occupation) fits the prototype (O'Brien, Kinias, & Major, 2008).

## **Same-gender bias**

In contrast to the prototype perspective, there is an alternative explanation in same-gender bias, which has also been called gender similarity bias (Elkins, Phillips, Konopaske, & Townsend, 2001). This perspective suggests that people are motivated to detect and label discrimination that is directed at their own gender group. This would presumably happen due to social identity processes (Elkins, Phillips, & Konopaske, 2002), although a same-gender bias does not necessarily mean intentionally favoring one's own gender group. Rather, it could just as well be explained by a tendency to more easily identify with people of one's own gender (i.e., an empathy gap), increasing the likelihood of also identifying discrimination (Elkins et al., 2001). Regardless of the underlying motive, in the case of same-gender bias, more discrimination is identified when the observer and target belong to the same gender group.

Whether people let themselves be guided by their prototypes of who is the typical victim, or if people simply favor their own gender when deciding whether someone has been discriminated should have quite different implications for the way they perceive, for example, risks and opportunities on the labor market. Unfortunately, it is hard to come across studies that have tested these two competing explanations against each other. In fact, research on attributions to discrimination against others is divided in two parallel fields: one focusing exclusively on prototypes and the other taking a social identity (same-gender bias) perspective. The latter line of research has focused on a courtroom context of discrimination allegations, whereas the former has not focused on a courtroom context. Study III in this thesis is the first to explicitly contrast these two explanations against each other in the context of hiring. The prototype and same-gender bias effects could in fact be operating simultaneously. For example, people in general may share the prototype of women as targets of gender discrimination. This would create a general tendency to detect more discrimination directed at female, than male, targets. At the same time, people may also exhibit a same-gender bias, and because this bias works in different directions for men and women, this would appear as an enhancer of the prototype effect for women, while acting as a negative moderator of the prototype effect for men. For example, a design with no male target of discrimination, but both male and female

participants (Blodorn, O'Brien, & Kordys, 2011; Elkins & Phillips, 1999) can detect same-gender bias. However, both men and women may share the same underlying discrimination prototype, and without a control to compare against (a male target) it is not possible to estimate such an effect. A similar problem occurs in a design where both male and female targets are included but where there are no male participants (e.g., Krumm & Corning, 2008): If the female participants are biased towards female targets, it is hard to tell whether this effect is best explained by prototypes or same-gender bias.

Furthermore, the domain where the (possibly discriminating) behavior takes place is important to consider. For example, if only a prototype-consistent (such as a male-dominated occupation), but not inconsistent domain is included, it makes the task of disentangling the prototype and same-gender bias effects more difficult. A study by O'Brien et al. (2008) confirms that the domain can moderate the victim-based prototype effect, with women being perceived as most discriminated in a male domain and men in a female domain. Likewise, the domain is also important in order to estimate a same-gender bias effect. Elkins et al. (2002) found that women were same-gender biased in the context of a hiring discrimination lawsuit, whereas men were same-gender biased in the case of a child-custody lawsuit, presumably because these two contexts were threatening to a different extent for men and women.

In sum, previous research on attributions to discrimination against third parties in hiring has been conducted in two parallel fields; one focusing exclusively on prototypes (outside a courtroom context) and the other having a strict social identity (same-gender bias; in a courtroom context) perspective. Study III in this thesis investigates the prototype effect while contrasting it with the same-gender bias effect, in the context of gender discrimination in hiring. Of key importance to the aims of this thesis is how these perceptions may affect people's motivation to work in gender-typed domains.

## **Consequences for work discouragement**

The two explanations of prototypes and same-gender bias have different implications for men's and women's work motivation. A possible consequence of same-gender bias could be that people shy away from jobs where they believe that their social group (and therefore possibly they personally) will be discriminated against. In this way, perceptions of discrimination may even result in comparable consequences to if actual discrimination was operating instead (Ahmed, 2005). That is, if a certain group (e.g., women) believe that discrimination toward their group is common within a certain field (e.g., computer science), these beliefs could motivate group members to abstain from this field, leaving it as male-dominated as it would have been if the lack of women was in fact due to actual gender discrimination.

But what if prototypes are the main mechanism behind discrimination attributions? If men as well as women tend to identify gender discrimination toward female targets (a discrimination victim prototype effect), perhaps men will also be inclined to avoid workplaces where they believe discrimination to be likely. This is because, just as people dislike being discriminated, they may also resist being unjustly favored due to their group membership (Heilman & Herlihy, 1984). If perceptions of what constitutes discrimination are guided primarily by discrimination prototypes, people would not be primarily motivated to avoid workplaces because their own group is being discriminated, but rather because they dislike non-egalitarian workplaces. If this is the case, then men and women alike will shy away from workplaces perceived as discriminating. People in general would then not be as discouraged from workplaces where a male target was rejected, because this is a poor fit with the discrimination prototype and therefore this situation will not be interpreted as discrimination. In sum, it is clear that the same-gender bias and prototype mechanisms should produce quite different consequences for work discouragement.

Study III focuses on the perceptions of young students who are soon about to enter the labor market but may still make adjustments to their career plans. For example, although a female computer specialist with a long career behind her will probably be less likely to swap careers to avoid discrimination, a young woman who has yet to choose whether to major in computer science may consider avoiding a potentially discriminating domain.

### **Do people perceive realistic amounts of discrimination?**

If the way people make attributions to discrimination depend on whether the event fits the discrimination prototype, and this in turn affects the observer's discouragement from working in the prototype consistent domain, we might ask whether the level of perceived discrimination is fairly accurate, or if it is over- or underestimated. If people perceive accurate amounts of discrimination, it seems reasonable to avoid discriminating workplaces. On the other hand, if hiring discrimination is greatly overestimated, discouragement effects may be damaging as they will keep people away from certain types of jobs based on misconceptions. Being able to detect when events are nondiscriminatory can thus be as important as detecting those that are discriminatory (Nier & Gaertner, 2012). Study III aimed at estimating whether people are generally realistic in their attributions to hiring discrimination due to gender. Social perceptual accuracy refers to "the correspondence between perceivers' beliefs about targets and what targets are actually like, independent of the perceivers' influence of them" (Jussim, Harber, Crawford, Cain, & Cohen, 2005). Estimations of what targets are actually like in this case refers to the probability that the target has been a victim of gender discrimination in the hiring process, based on what the results of extensive field



experiments conducted in Sweden (Carlsson, 2011) and other Western countries (e.g., Bertrand & Mullanaithan, 2004) say about the prevalence of disparate treatment discrimination in formal hiring. Disparate treatment is defined as applying different standards to individuals (applicants) depending on their group membership, in this case, gender (Gatewood & Field, 2001).

Accuracy levels should depend on whether the prototype or same-gender bias explanation is best suited to explain discrimination attributions: Perceptions guided by same-gender bias cannot increase the (overall) accuracy as the perceptions vary depending on the group membership of the observer. On the other hand, if perceptions are guided by prototypes they could be realistic, considering that the prototype mirrors the image of the typical discrimination victim, perpetrator, and domain. However, similar to how stereotypes are not necessarily accurate as they can be created by, for example, perceptions of status and competition (Caprariello, Cuddy, & Fiske, 2009), prototypes may also be inaccurate. Furthermore, even if a certain stereotype is accurate in general, applying it in judgments can result in errors in the individual case. Similarly, applying prototypes in judgments of individual agents on the labor market may lead to unrealistic expectations of whether gender discrimination has occurred. In Study III we therefore hypothesized that observing negative outcomes for prototypical discrimination victims (e.g., female applicants rejected from male-typed jobs) may result in unrealistic expectations of hiring discrimination.

Although recent field experiments have revealed substantial amounts of discrimination on the labor market (a 20–50 % difference in the probability of being invited to a job interview) due to race (Bertrand & Mullainathan, 2004), ethnicity (Carlsson & Rooth, 2007), and obesity (Agerström & Rooth, 2011), they have found only little hiring discrimination due to gender (e.g., Carlsson, 2011; 2010; Bertrand & Mullanaithan, 2004). Some gender discrimination has been found; generally in the form of women being discriminated in male-dominated domains and men in female-dominated domains, but even this effect has several exceptions (e.g., female computer specialists seem to be favored over males), and in both cases, gender discrimination in the hiring process is small, with the difference being merely a few percentage points in callbacks. This pattern is similar in laboratory based experiments (see Davison & Burke, 2000, for a meta-analysis). We based our comparisons on the results from two large field experiments with several thousands of observations conducted in Sweden (Carlsson, 2011; 2010). We allowed for a considerable margin of error when making the comparisons, meaning that we could extend our findings to western societies in general.

It is important to keep in mind that the accuracy comparisons do not generalize beyond discrimination in invitations to job interviews. That is, people may have exaggerated expectations of the likelihood of discrimination in this context, but still be correct when applying discrimination prototypes in other contexts (for example, regarding discrimination in salaries or promotions within firms).

# Summary of the studies

The aim of this thesis is to investigate three social psychological contributors to gender differences in career preferences. Study I experimentally tests the hypothesis that occupational preferences are adjusted in a gender-typed direction as a consequence of gender identity threat. Study II proposes a hypothesis of how willingness to compromise one's field of study in order to be with friends leads to larger gender differences in educational choice. Finally, Study III investigates the role of discrimination prototypes versus same-gender bias in perceived discrimination, whether these perceptions are realistic, and whether they affect work discouragement.

## Study I: The impact of gender identity threat on occupational preferences

The study aimed at investigating whether adolescents increase their gender-typical occupational preferences as a result of a threat to gender identity. Adolescents who deviate from gender norms may face ridicule or questioning from others (Perry & Pauletti, 2011), and this may make them more inclined to prefer occupations that adhere to gender norms. If so, this effect would stand in the way of the labor market becoming gender balanced.

Besides being the first study to investigate gender identity threat among adolescents, the experiment was the first to provide a comparison threat (besides a gender identity affirmation condition), which allowed for drawing conclusions about the unique effect of gender identity threat. The comparison threat was in the form of a threat to capability, which was hypothesized to result in less gender typical adjustment than the threat to gender identity.

Another previously unresolved issue concerned the theoretical assumption that manhood is a more precarious (and thus more likely to be defended) state than womanhood (Vandello et al., 2008). Unlike previous studies that either lacked female participants, or a gender fair (matched in status) threat induction, the methodological approach in this experiment allowed for a test of the precarious manhood vs. gender identity threat hypotheses.

A secondary aim of Study I was to investigate the role of individual differences in gender identity concerns, which we defined as the overall

importance placed on feeling masculine (boys) or feminine (girls), and on being viewed by others as such. It was predicted that adolescents with strong gender identity concerns would be especially likely to have developed gender stereotype consistent occupational preferences.

## **Method**

Two hundred and ninety-seven eighth graders (45% girls,  $M$  age = 14.4,  $SD$  = .54) were randomly assigned to four conditions: affirmed gender identity, threatened gender identity, affirmed capability, and threatened capability. An experimental procedure where the participants' own inferences about their qualities are manipulated was used. These inferences are based on the perceived ease versus difficulty of retrieval (see Schwarz et al., 1991). The participant in a threat condition is asked to provide a high number of behaviors that he/she has recently performed, and the perceived difficulty of retrieval creates the threat experience. In contrast, participants in the affirmation condition are asked to report only a few behaviors (which is an easy task), resulting in a perceived ease of retrieval, and thus a conclusion that one is highly representative of the quality in question (e.g., gender typicality). Instructions for the gender identity threat and affirmation conditions were:

“List ten (two) things that you have done during the previous month, that are typical for girls (boys). Most girls (boys) your age can think of twelve (only one) things.”

The instructions for the capability threat and affirmation conditions instead asked for “things you have done where you felt capable”.

Participants then rated how interested they would be in working with several occupations that were pre-tested to be gender-typical and matched on status and interest ratings by another eighth grade sample prior to the experiment. Last, individual differences in self-reported gender identity concerns were measured.

## **Results and discussion**

As predicted, adolescents who received a threat to their gender identity became more gender typical in job preferences, suggesting a causal link between threatened gender identity and gender-typed preferences. Importantly, the comparison threat to capability did not have this effect, suggesting a unique effect of gender identity threat. Although the predicted interaction effect between threat (versus affirmation) and type of task (gender identity vs. capability) was significant, the follow-up comparison between gender identity threat and affirmation conditions turned out only marginally significant, suggesting some caution in concluding that there is a pervasive effect of gender identity threat. This

somewhat weak effect could be due to the experimental manipulation being subtle (Weaver, Vandello, & Bosson, 2013).

As expected, individual differences in gender identity concerns predicted gender-typed preferences, and this finding was replicated with an independent sample ( $N = 242$ ). This suggests that some individuals may be chronically affected by concerns about being gender typical, making them more prone to monitor their career related choices to make sure that they adhere to gender norms, although more research is needed to further clarify this relationship. In sum, Study I found preliminary evidence that threats to adolescents' gender identity can contribute to the large gender segregation on the labor market.

## Study II: Career compromise as a result of friendship priorities

In Study II, we proposed that friendship priorities in school may serve as a barrier to a gender balanced labor market. People are generally driven by social needs (Baumeister & Leary, 1995). Therefore, the risk of being separated from a friend when changing schools may be perceived as a barrier to a certain education. Considering the power of social needs, this barrier may even be perceived as warranting a compromise when it comes to one's choice of education. Because people have more same-gender than other-gender friends, adjusting one's choice of education in order to stay close to friends results in a higher probability of making a gender typical choice. The required conditions for the proposed effect to have an impact on gender segregation would be that (1) adolescent boys and girls differ in their overall educational preferences to begin with, (2) wanting to stay close to friends motivates some adolescents to adjust their educational choice in line with their friends' choices, and (3) people have a higher share of same-gender, compared to other-gender, friends.

Study I investigated whether adolescents are willing to adjust their choice of high school program depending on what their friends will choose. We also investigated four factors that may motivate such friendship priorities. First, we hypothesized that a high fear of isolation increases the likelihood of compromising one's choice of education according to friends. Second, the tendency to adjust one's choice of education should be stronger for closer friends (e.g., best friends). Third, low academic self-concept (feeling like a low-achiever in school) may make some individuals more dependent on their friends; and finally, we reasoned that uncertainty about which education to choose may translate into a stronger tendency to adjust one's choice in line with friends.

Study 2 examined whether perceived compromise in line with friends, measured post-choice, relates to actual gender typical choice, while controlling for the perceived importance of parents, teachers, career counselors, and own interests and career priorities.

### **Study 1: Method**

Eighty-three adolescents (48 females and 35 males;  $M$  age = 14.33,  $SD$  = .52) were asked to list the first names of their five closest friends about the same age as themselves, and to rank them from the best down to the fifth best friend. This served as an unobtrusive measure of friendship gender segregation. They then indicated which high school programs they intended to apply for, whereby they proceeded to imagine that their best friend chose a program that they had not intended to apply to, but that they could nevertheless consider applying for. The participants indicated whether they would choose the same program as their best friend, and the same question was repeated for the remaining friends. Last, the participants answered scales measuring fear of isolation and academic self-concept.

### **Study 1: Results and discussion**

Supporting our prediction, because of the strong tendency to have same-gender friends, girls were much more likely to make a compromise in line with girls than boys, whereas boys were more likely to do so in line with boys than girls. As expected, the willingness to make an education compromise was also stronger for closer friends. Furthermore, fear of isolation was a significant predictor, whereas academic self-concept was marginally significant, and certainty of choice was in the expected direction but non-significant.

### **Study 2: Method**

The participants were 150 students (43.3% females;  $M$  age = 16.95,  $SD$  = .80) from different Swedish high school programs. The participants first reported which program they attended, and were then asked to think back of the time when they applied to high school, whereby they indicated perceived importance of the following factors for their choice of education: friends' educational choices; own interests and career concerns; and advice from career counselors, teachers, and parents. They were then asked to write down the first names of the friends who had been of importance with regards to their choice of education, and finally

responded to specific questions about the role of friends in their choice of education.

## **Study 2: Results and discussion**

Out of the 150 participants, 126 reported names of friends who had an impact on their choice of education. As expected, the names revealed that these were overwhelmingly same-gender friends. There was no difference between females and males in to what extent they felt that their choice had been compromised due to friends.

The average participant attended a program with 62% of students being same gender as the participant. In support of our hypothesis, the results revealed that compromising one's choice to be with friends meant choosing a program with in average 66% same-gender students. With the exception of perceived importance of career counselors, which unexpectedly was significant, none of the remaining control variables predicted gender typical choice.

In sum, the results confirmed that perceived education compromise in line with friends in retrospect corresponded to having made a gender typical choice. Even though a study consisting of retrospective self-reports would be of limited value on its own, together with Study 1 it served as a complementary piece of evidence to assess the friendship effect.

## **Conclusions**

In sum, Study 1 of adolescents' behavioral intentions supported the proposed effect of friendship priorities on education compromise. Furthermore, individual differences in fear of isolation were positively related to the tendency to make this compromise. Study 2 confirmed that higher perceived compromise (post-choice) in line with friends corresponded to a more gender typical education. In conclusion, the education compromise effect of friendship priorities may restrain individuals' true career interests and become an obstacle to the labor market becoming more gender balanced.

## Study III: Perceived discrimination and work discouragement

The way people interpret events that they observe on the labor market may influence work related attitudes, including work motivation. Previous research (e.g., Inman & Baron, 1996; O'Brien et al., 2008) suggests that interpretations of whether discrimination has occurred will depend on how well the target, perpetrator, and situation fits the prototype of what the typical case of labor market discrimination looks like. In the case of gender discrimination, a female applicant in a male-dominated occupation would be the closest fit with this prototype. In contrast, the same-gender bias account (e.g., Elkins et al., 2002) holds that perceptions of discrimination should be particularly likely when the target is from the same group as the observer (in this case, same gender). Study III was the first to examine which of these explanations best account for hiring discrimination attributions, and what consequences these attributions will have for women's and men's work discouragement. It was also the first attempt to estimate whether people's perceptions of gender discrimination in hiring can be considered realistic.

We predicted that the prototype explanation would be more suitable than a same-gender bias account for explaining attributions to gender discrimination in hiring; that people come to overestimate the likelihood of discrimination when faced with ambiguous cases of rejection on the labor market; that this leads to work discouragement, and that, similar to stereotypes, application of discrimination prototypes is resistant to change.

### Study 1: Method

In Study 1 we attempted to provide the participants ( $N = 310$ , 50% women,  $M$  age = 23.34,  $SD = 4.17$ ) with a case of competition between a male and a female applicant in a hiring situation, as this should give the ingroup bias explanation a fair chance (Hewstone, Rubin, & Willis, 2002). The participants were informed that both applicants were equally qualified but that only one of them was invited to a job interview. We also provided individuating information of both applicants, as this should serve as a stronger test of the predicted prototype effect, considering that the use of stereotypes generally decreases with access to such information in person judgment (Johnston & Macrae, 1994). The experimental design was a 2 (participant gender) x 2 (gender of rejected applicant) x 2 (occupation; nurse vs. computer specialist) between subjects factorial.



## **Study 1: Results and discussion**

In support of a prototype explanation, men and women alike found female applicants to be more discriminated in the male-typed occupation, while the female and male applicants were perceived as being treated equally in the female-typed occupation. In contrast, there was no hint of a same-gender bias effect.

## **Study 2: Method**

Study 2 aimed to estimate whether attributions to hiring discrimination are realistic compared to the actual evidence for gender discrimination in hiring. We predicted that accuracy would be lower for prototypical cases (i.e., female applicant in male-typed occupations). The participants ( $N = 126$ , 50% women,  $M$  age = 23.00,  $SD = 3.79$ ) responded to nine scenarios where either a man or a woman had applied for ten jobs. Because the average interview call back rate observed in the Swedish field experiments for highly qualified candidates was 30% (Carlsson, 2011), the applicants in the scenarios had realistic outcomes based on the binomial probability distribution with an expected mean value of .30 (invited to job interviews two, three and four times, respectively). The design was a 2 (participant gender) x 2 (applicant gender; between) x 3 (occupation: male-typed, female-typed, gender balanced; within) factorial. The scenarios read: “Maria (Eric) applied for ten jobs as a nurse. She had the right qualifications for the job and a good CV. Imagine that she was invited to be interviewed in three out of the ten cases. That is, seven of the ten employers chose not to invite Maria even though she was qualified for the job. How many of these seven cases where Maria was not invited to an interview do you think have to do with gender discrimination?”. The participants responded on a scale ranging from 0 - 7 (0 - 8, 0 - 6 times).

## **Study 2: Results and discussion**

Consistent with our predictions, female applicants were perceived as more discriminated overall, and there was an interaction with domain in that they were perceived as most discriminated in the male-typed occupation, less so in the gender neutral, and least in the female-typed. The most realistic guess of how many instances the applicants in the scenarios are discriminated would, according to field experiments, be close to 0. However, because gender discrimination is likely to occur in some instances, responding 0 could mean that the participant underestimates the occurrence of gender discrimination in hiring. We therefore regarded responses above 1 as overestimation (allowing for a considerable margin of error in the comparisons). Indeed, responses above 1 would suggest perceptions of gender discrimination in hiring to be of similar magnitude to that of race

(Bertrand & Mullanaithan, 2004) or ethnicity (Carlsson, 2010). Consistent with our predictions, discrimination was overestimated the most when female applicants applied for jobs in a male-typed occupation and was most realistic when male applicants applied for jobs in a gender neutral or male-typed occupation. Notably, the amount of discrimination perceived towards female applicants in the male-typed occupation was as much as three times what can be considered realistic.

### **Study 3: Method**

In Experiment 3 we put prototype activation to test by investigating whether merely observing a negative outcome for a person of unknown gender in a male-typed domain is enough to make men and women assume that the applicant was female.

A second question is why the outcome of being declined some hiring interviews is perceived as a situation that warrants suspicion of the illegal act of gender discrimination. Could this be due to inaccurate beliefs about interview callback base rates on the labor market? For example, if people believe that standard callback rates for applicants with good merits are 80% when they are in fact about 30%, this may open up for speculation that the rejected applicant was subjected to unfair treatment. We manipulated access vs. no access to this information (that the average qualified computer specialist looking for work is invited to hiring interviews 30% of the time). All participants ( $N = 119$ , 49.6% women,  $M$  age = 23.13,  $SD = 3.32$ ) were then informed that three out of four employed computer specialists are males. Next, this scenario followed:

“A person applied for ten jobs as a computer specialist. This person had the right qualifications for the job and a good CV. All ten positions were at medium sized firms. The applicant was invited to be interviewed in two out of the ten cases. That is, eight of the ten employers chose not to invite the applicant despite adequate qualifications for the job.”

The participants were asked to estimate the probability (0 to 100%) that the applicant was female. Next, the same scenario was repeated but with another applicant seeking ten other jobs and being invited to four interviews. Importantly, whereas both outcomes are highly probable on the labor market, being invited to two interviews is a more negative outcome than being invited to four interviews. Thus, we predicted probability estimations of the applicant being female to be higher in the case of two, compared to four, callbacks, indicating that the discrimination victim prototype had been activated.

### **Study 3: Results and discussion**

Consistent with a prototype effect, the likelihood of the applicant being female was judged higher in the case with two, compared to four, callbacks. Information about callback base rates did not significantly reduce the tendency to assume that the applicant was female; in other words, providing accurate base rates was not enough to prevent prototype activation. Because we found an effect of our base rate manipulation on a manipulation check, but not on our prototype activation measure, we concluded that the manipulation worked.

### **Study 4: Method**

In Experiment 4 we tested the hypothesis that learning about failures of prototypical victims on the labor market makes the observer become discouraged from applying for similar jobs, and that this is mediated by attributions of rejection as being due to discrimination. We used scenarios describing a friend who had been declined job interviews from summer jobs. We further pushed the prototype explanation by providing the participants ( $N = 120$ , 51.7% women,  $M$  age = 23.45,  $SD = 4.02$ ) with a more negative outcome of 1 out of 10 interview callbacks: This should make people more inclined to suspect that the male applicant was also discriminated. The experimental design was a 2: applicant gender (between groups) x 2: occupation (male- vs. female-typed; within groups) x 2: participant gender, factorial. The participants responded by ticking off one alternative between 0 to 9 times, and proceeded to answer how discouraged they would be from continuing to apply for similar jobs, if they were in their friend's situation.

### **Study 4: Results and discussion**

The pattern of discrimination attributions again supported a prototype rather than same-gender bias account. As expected, the participants were more discouraged in the case with a female applicant, in particular when the jobs were male-typed. In contrast, the participants were not more discouraged when observing a rejected applicant of the same gender as themselves, meaning that there was no same-gender bias. Supporting our predictions, the effect of applicant gender on discouragement from male-typed jobs was mediated by attributions to discrimination. Interestingly, this finding was similar for male and female participants, suggesting that it was not the fear of being discriminated that discouraged them, but rather a motivation to avoid areas where they believe that gender discrimination occurs.

## Study 5: Method

Perhaps it is possible to reduce discouragement effects by helping people realize that there may be other reasons for being rejected from job interviews besides gender discrimination. In Experiment 5 we aimed to replicate the finding with the strongest effect (male-typed occupations) from Experiment 4, but this time with an indirect method where we did not ask directly about discrimination but rather let the participants make spontaneous attributions and contemplate several reasons for rejection on the labor market. We expected the prototype effects on discouragement to be weaker (i.e., discouragement to be less dependent on gender of the applicant) when people are asked to contemplate different reasons. Another goal of having the participants make spontaneous attributions for the callback outcome was to rule out that the high amount of discrimination perceived in our previous experiments had been inflated by the direct questions about discrimination. The design was a 2: participant gender x 2: applicant gender, between subjects factorial. The participants ( $N = 158$ , 50% women,  $M$  age = 23.19,  $SD = 2.87$ ) were presented with the same scenario as in Experiment 4 and were then asked to list what they believed to be the main reasons for the applicant not being invited to a job interview in nine out of the ten cases. They then indicated how discouraged they would be from applying for similar jobs. Next (as in Experiment 4), we asked how many of the nine cases they believed to be due to gender discrimination.

## Study 5: Results and discussion

In line with our expectations, discrimination was mentioned in only 6% of the cases when the applicant was male, but in 59% when the applicant was female. The absence of an interaction between participant and applicant gender suggested that there was no same-gender bias. People's spontaneous attributions to discrimination and their answers to the direct questions were highly similar, making us confident that the results of experiments 1 - 4 were not inflated by asking direct questions. As in Experiment 4, discouragement levels were higher when the applicant was female compared to male, although in this experiment, the effect was marginally significant (this is not surprising considering that we predicted this prototype effect to be weaker than in Experiment 4; however, the lack of a clear significant effect meant that we could not proceed to replicate the mediation analysis from Experiment 4).

The scenarios in Experiment 4 and 5 correspond to realistic, yet different, examples of hearing about negative experiences of a friend; one where the friend asks whether you think the rejection was due to discrimination; and the other where the friend probes for the most likely reasons for rejection (without

mentioning discrimination). In both cases, people will apply discrimination prototypes and this may make them discouraged from certain jobs.

## **Conclusions**

Taken together, the results suggested that the prototype account is the main explanation behind attributions to gender discrimination in hiring. The participants relied on their discrimination prototypes in their interpretations of events on the labor market across several measures and contexts. Furthermore, comparisons to field experiment data suggested that people tend to overestimate the prevalence of gender discrimination in hiring, especially when faced with a prototypical victim (female) in a prototypical domain (male-typed occupation), and that contemplation of other reasons for rejection, knowing base rate levels for rejection, or having access to individuating information about applicants is not sufficient to decrease reliance on discrimination prototypes. Importantly, observing a case of rejection on the labor market that fits the discrimination prototype can lead to work discouragement because of attributions to discrimination. Taken together, these findings suggest that people are eager to identify injustice on the labor market, but may suffer negative consequences (discouragement) if they rely heavily on prototypes when facing ambiguous incidents. This may be of relevance to the problem with gender segregation on the labor market, although more research is needed to dig deeper into the effects of discrimination attributions on men's and women's work discouragement.

# Extended discussion

The division of men and women in different occupations is large and individuals, organizations, as well as society would benefit from it being reduced (Hegewisch et al., 2010; Krishnan & Park, 2005). Many factors are likely to play a part in explaining gender differences in occupational preferences and choice. With the assumption that people are strongly influenced by social motives in most aspects of their lives, this thesis focuses on social psychological mechanisms that can help explain why occupational gender segregation is resistant to change (Hegewisch et al., 2010). The aim was thus to investigate different ways in which perceptions of the social environment may affect career related preferences and motivation, which are directly relevant for horizontal gender segregation on the labor market.

As predicted, the results of this thesis indicate that social psychological mechanisms may at different stages prevent individuals from pursuing their true interests. First, I proposed that threats to gender identity lead to compensation efforts in line with gender stereotypes. This could affect some individuals so that they adjust their aspirations into more gender typical occupations. Second, basic social needs can push adolescents away from domains where their friends are absent. Friendship priorities in educational choice thus lead to larger gender segregation in education, which should ultimately extend to occupational segregation by gender. And finally, as people learn about the hiring process, exaggerated perceptions of discrimination can become an obstacle. That is, observing others being rejected from job interviews and attributing these events to gender discrimination can cause discouragement from male-typed jobs. I will now turn to discuss the relevance and implications of each of the explanations.

## Gender identity threat

The first research question dealt with in this thesis was whether preferences for gender-typed occupations increase as a consequence of threats to gender identity in adolescence. The results suggest that they do, although some caution is warranted as the effect was on the weak side and the study should thus be replicated. Consistent with previous research (Lippa, 1998; Su et al., 2009) the findings of Study I revealed large gender differences in occupational interests, and only a small portion of this difference can be explained by the gender identity

threat effect. However, even if the effect is small, its long term effects may be of significant relevance for many adolescents. Furthermore, in real life this threat is likely to be more intense, for example, in the form of classmates' questioning one's gender typicality. Indeed, a stronger threat manipulation would have been preferable; however, this is perhaps not advisable due to ethical concerns.

Occupational interests can be viewed as part of one's general identity (e.g., Holland, 1973), and the gender identity threat effect demonstrated in Study I is an example of how pressure to conform to gender norms may cause young individuals to adjust important aspects of their identity. This supports the notion shared by several psychological and sociological theories that these norms can indeed be powerful enough to produce consequences for occupational gender segregation.

The correlational finding observed in two independent samples further suggests that some individuals who are chronically more concerned with maintaining their gender identity are prone to develop gender-typical interests, although more research is needed to investigate this relationship and its development over time. Because we measured gender identity concerns last, there is a risk that the task of rating occupations could have affected the subsequent ratings of concerns. We tried to reduce this risk by using various filler items of mixed occupations. The reason why we chose not to measure gender identity concerns prior to the experimental manipulation was that this would mean risking to give away the study aims, and that it would activate gender concerns in the control threat (to capability) conditions.

Contrary to previous studies, the experimental design in Study I allowed for contrasting a precarious manhood hypothesis (men, but not women, defend their gender identity when threatened) against a general gender identity threat hypothesis (people in general compensate for threats to gender identity). The results supported a gender identity threat perspective, as there were no gender differences in threat susceptibility. In other words, adolescent males and females seem to adjust their occupational preferences in a similar manner as compensation for threats to gender identity. The previously proposed hypothesis that males should be more inclined than females to defend their gender status has been suggested to be due to men's higher status in society (Rudman, Dohn, & Fairchild, 2007). However, even if this is the case, it does not necessarily follow that females should defend their gender status to a lesser extent when threatened. This is because minority and lower status groups are actually often more likely to self-stereotype with group associated traits (Latrofa, Vaes, Cadinu, & Carnaghi, 2010; Simon & Hamilton, 1994), presumably as this can serve to affirm the individual's social identity in the face of threat (Latrofa et al., 2010; Latrofa, Vaes, Pastore, & Cadinu, 2009). Nevertheless, it is of course possible that manhood is more precarious in general and that adolescence is an exception where gender identity threats have an impact on adolescent girls as well as boys, considering that identity formation is a key developmental task (Nurmi, 1993). Future research may want to

further examine whether age moderates gender differences in susceptibility to gender identity threats.

Besides providing a gender fair threat manipulation (as opposed to using false feedback on different tests, e.g., Vandello et al., 2008), the inclusion of a comparison threat in the experimental design allowed for assessing the unique effects of gender identity threat. As the gender identity threat had an effect on gender-typed preferences that the comparison threat did not, it can be concluded that occupational preferences are not adjusted in a gender typed direction as an attempt to restore threats in general (as would be suggested by the meaning maintenance model; Proulx & Inzlicht, 2012), but to threats to gender identity specifically. This implies that in order to reduce threat effects on gender-typed preferences, it is important to target gender identity threats per se. Although the comparison to the gender identity affirmation condition assured that a threat effect could not be confounded by a mere activation of gender categories effect, a limitation in the experimental design of Study I is still that there was no measure of baseline level for preferences. The optimal replication study would thus add a control condition where participants do not receive any threats or affirmations.

## Friendship priorities

Socializing with friends is often proposed as one of the main tasks of adolescence. The findings presented in Study II suggest that the perceived need to maintain valued friendships can be quite strong, even to the point where it affects crucial career related decisions. The willingness to compromise one's field of study, and hence one's career, may seem irrational. However, in the light of what consequences may come of being deprived of functioning relationships, such as an abbreviated lifespan (House, Landis, & Umberson, 1988), it appears less so. Previous research also suggests that, compared to self-esteem threats that may be repaired by various indirect affirmations, threats to belonging tend to require self-affirmations directly relevant to the source of the threat (Knowles, Lucas, Molden, Gardner, & Dean, 2010), which in this situation could be expressed as active efforts to stay close to friends. The results further confirmed that the willingness to adjust one's educational choice was greater for closer friends, that a high concern of being alone is associated with an increased propensity to trade educational interests for staying close to one's friends and that confidence in one's academic abilities may buffer against trading interests for friends. Together, this suggests that when faced with the risk of losing friendships, some individuals are likely to restore this isolation threat by arranging to stay close to their friend, rather than trying to comfort themselves through alternative means.

The data do not suggest that the vast majority of adolescents will make this educational compromise due to friends. Indeed, we would not expect all



adolescents to make a compromise in line with a friend – if they did, no one would pursue their true interests and all educational choices would consist of compromises. Rather, it may be that individuals who have a higher than average fear of isolation are the ones prone to make such compromises. For these adolescents, short-term rewards such as being together with one's best friend may be regarded as more gratifying than long-term rewards such as obtaining a career that is congruent with one's true preferences. It is possible that the pros and cons of a potential future occupation is quite abstract, whereas the company of close friends is not. Future research may want to investigate whether the tendency to compromise one's field of study in line with friends' choices decreases with age and with the development of risk and reward calibration and emotion regulation.

Even though we should not expect all adolescents to make this compromise, there can still be an effect on the gender segregation in field of study that is of practical significance. Furthermore, the compromise effect may very well have been underestimated in Study II, as admitting to having based one's choice of education on friends' choices is probably not very socially desirable. Preferably, longitudinal data could help estimate the practical magnitude of this effect. The practical relevance of the effects that friendship priorities will have for occupational gender segregation should also be expected to differ depending on the educational system. Specifically, the more opportunity for specialization in the education system, the larger the effect of prioritizing friends can be for segregation on the labor market.

That homophily in networks play a role in inequalities in society has previously been proposed in sociology (DiMaggio & Garip, 2012) and also in economics (Calvó-Armengol, Patacchini, & Zenou, 2009). Although more attention has been devoted to the composition of networks and their outcomes in these fields, the proposed processes are the same as those offered in psychology (social learning and normative influence; Calvó-Armengol et al., 2009). The friendship effect in Study II differs from previous work in its focus on a direct tradeoff between educational preferences and the choices of friends. However, future research on the friendship priority effect may benefit from incorporating more advanced network models. One of sociology's strength is its emphasis on social structure, whereas this is often overlooked in social psychological work (Hill, 2006).

An important generalization of the friendship effect on career compromise is to other groups, besides gender. To the extent that one's friends belong to a particular social group, and the members of this group have similar career preferences, a segregation effect may occur. Take for example socio-economic background. An adolescent with predominantly blue-collar friends may be more likely to trade his educational choice into construction rather than law school; compared to if he had mostly white-collar friends. Indeed, segregation of social contacts is by no means restricted to gender but is often evident when it comes to ethnicity, income, education, religion, and other demographic variables

(McPherson, Smith-Lovin, & Cook, 2001; O'Reagan & Quigley, 1993). The effect may also extend to other contexts than educational choice, such as employee turnover on the labor market, i.e., when people consider switching to a new workplace. Workplaces where perceived social opportunities are high and social barriers are low should then be prioritized. Although there is less room for segregation effects to arise here compared to educational choice, they may still be of practical relevance.

Further research might also want to pinpoint the specific social cognitive mechanisms that explain friendship priorities, and to further estimate the boundaries of the effect; for example where the threshold for compromise is. It may be that the willingness to change education is restricted to programs or courses that are similar to one's actual preferences, and there could also be additional characteristics of friends that matters, besides the degree of closeness of the friendship.

## Discrimination attributions

Study III investigated attributions to gender discrimination in hiring and their consequences for motivation to apply for jobs. We tried to capture people's attributions of ambiguous outcomes on the labor market to gender discrimination by adopting various methods, such as asking about the actual number of cases as well as ratings on conventional scales, subtle prototype activation, and spontaneous attributions. The findings suggest that people tend to overestimate the likelihood that female applicants who were rejected in the hiring process had been victims of gender discrimination; that they make use of discrimination prototypes in their interpretations; and that this has a negative effect on their work motivation.

If people were instead motivated by same-gender bias in their discrimination attributions, they would be likely to interpret an event of rejection as discrimination if the applicant belonged to the same gender group as themselves. This could then produce consequences similar to if actual discrimination was operating instead, that is, women would avoid male-typed occupations, and men would avoid female-dominated occupations. The findings of Study III rather suggest that perceptions of what constitutes discrimination are guided primarily by discrimination prototypes, which means that people will suspect gender discrimination if the applicant is female, and especially so if she applies for a male-typed job. In contrast, people will not be discouraged from workplaces where a male target is rejected, because this incident is a poor fit with the discrimination prototype and hence it will not be interpreted as discrimination to begin with.

Theories that focus on hostile environments and backlash toward women (e.g., Dasgupta, 2011; Heilman et al., 2004; Walby, 1986) would predict that men would be motivated to look for work where they believe that women are

discriminated, as this situation would imply an advantage for them. Similarly, rational choice theory would also predict men's motivation to increase as they realize this advantage. Perhaps a more suitable explanation for the observed effects on both males' and female's work discouragement is that they reflect meritocratic values and the increased value placed on egalitarian norms in modern society (Twenge, 1997a). In line with theories on perceived organizational fit (Kristof, 1996), perceived fit on part of the applicant or employee does not necessarily have to be about group stereotype fit but can also be about values.

Men and women alike seem to be motivated to avoid male-dominated workplaces because this is where they expect unfair treatment of applicants to occur. In other words, men and women alike will tend to avoid the very same occupations. This raises doubts about perceived gender discrimination in hiring as an important contributor to occupational gender segregation. Still, there are some aspects that should be considered before drawing this conclusion. First, people tend to have predominantly same-gender friends (Mehta & Strough, 2009). Women should therefore be more likely to hear about the experiences of other women (rather than men) being rejected on the labor market. Moreover, men in the job-seeking process should be less likely than women to mention that they might have been discriminated due to gender, considering that this would be a poor fit with their own and other people's expectations. This implies that in the long run, women and men may end up attributing job-seeking failures to gender discrimination to a different extent, making women more discouraged than men from male-typed jobs. Whether these situational aspects will produce gender differences in discouragement is a question that might be pursued in future studies, possibly by looking into the role of men's and women's networks.

It is indeed interesting that men and women seem to have similar attitudes in expressing a wish to avoid workplaces that they believe are discriminating. The question remains, however, whether these attitudes will translate into actual behavior (applying for jobs). Could it be that same-gender bias in discouragement effects, although absent in Study III, is present when it comes to actual behavior? First, as there is no evidence of same-gender bias in actual hiring discrimination (Carlsson, 2011) or in laboratory experiments of discrimination (Davison & Burke, 2000), but rather (quite small) prototype effects, an intriguing notion is that perhaps gender is simply not a category for which judgments are primarily ingroup-outgroup based, but rather stereotype (or prototype) based.

Nevertheless, the answer to whether the prototype effect on discouragement will translate into actual behavior should in part depend on features of the specific context. Having plenty of jobs to choose between is a quite different situation from being unemployed and desperate: Even if people really endorse these attitudes, they may not necessarily act on them if faced with this situation. That is, even though the attitudes may reflect people's true intentions, people may act same-gender biased when they have much to gain from their own group being favored. Further research is needed to settle this question. For example, experimental

studies where people are presented with the opportunity to actually apply to different positions could indicate whether they will refrain from a firm that they believe is discriminating, and further, whether this depends on their current employment situation. An implication of this possibility of prototype consistent effects on discouragement as dependent on costs for declining job opportunities is that discouragement effects should be more likely before specialization occurs. For example, a person who has just graduated may feel the need to apply for all available positions, whereas a new student may choose not to specialize in a field where he or she suspects that unfair treatment is common.

The accuracy comparisons to data on real life discrimination in Study III also indicate that perceptions of the likelihood that discrimination has occurred may be exaggerated, and particularly so for the prototype consistent scenario of a female applicant in male-typed jobs. When making accuracy comparisons, it is of course of importance that the level of accuracy is based on solid ground. Taken together, the evidence suggests that gender discrimination in the form of disparate treatment in hiring (applying different standards to applicants depending on their gender) is not of substantial proportions, but that it can be expected to occur in some instances. We thus made sure to base our estimations of accuracy on the overall picture of disparate treatment due to gender in hiring, with a generous margin of error. Even if we would include not only field experiments but also quasi-experiments in this picture (where causation about discrimination cannot be determined; e.g., Åslund, 2012), that indicate higher levels of discrimination, our cutoff would still be generous. It is important to emphasize that it is not a question of whether gender discrimination does or does not occur, but rather how likely it seems as an explanation for rejection on the labor market. To use airplane crashes as an analogy: they do indeed occur, but if you believe that on average three out of ten planes crash, your perceptions are inaccurate. These perceptions are perhaps explained by the vivid way plane crashes are portrayed in the media, affecting the ease with which they come to mind; they are, however, still inaccurate. That being said, it could still be objected that people might have a tendency to overestimate the likelihood of events in general, and that perceptions of the likelihood of other events are just as overestimated as gender discrimination in hiring.

It can further be argued that field experiments are unsuitable as comparison as they fail to correspond with the actual hiring process because in real life, men's and women's applications aren't perfectly matched. For example, it is possible that women's applications more often emphasize communal competencies. If employers place lower value on communal competencies compared to agentic ones, men's and women's applications may end up being valued differently. However, this would be a case of disparate impact rather than disparate treatment.

If women are not significantly more likely than men to experience gender discrimination in hiring callbacks, this indicates that the prototype is inaccurate. If the discrimination prototypes that guide attributions to discrimination result in unrealistic expectations, then where do the prototypes come from and why do they

persist? It seems likely that they come from the historically greater prevalence in society of discrimination towards women. Furthermore, women may be still be more discriminated than men regarding other aspects, e.g., sexual harassment in the workplace, adding to the prototypical view of the general target of discrimination as female. However, this does not imply that people are correct when they infer gender discrimination as a highly probable explanation behind rejection in the hiring process.

The results revealed that attributions to gender discrimination in a prototypical case were three times as high as can be considered realistic. Moreover, we found that prototype effects are resistant to information about the (compared to people's beliefs) lower probability of being invited to job interviews even for applicants with the right qualifications for the job in question. Nevertheless, people's attributions of events to discrimination are likely to affect them in more than one way. For example, apart from having a negative impact on work discouragement they may make it easier to speak up in the case of witnessing discrimination at the workplace. Hopefully there can be a balance so that chances of detecting, acknowledging, and combating discrimination do not have to be compromised in order to reduce the negative effects on discouragement that comes with exaggerated perceptions.

An interesting question for future research is underestimation of gender discrimination *per se*. Just as some factors might make observers extra prone to detect gender discrimination, there are most likely situations where there are reasons to suspect that gender discrimination has occurred in the hiring process but where it passes undetected or is at least underestimated. For example, consider two recruitment situations where there is an equal distribution of male and female applicants, who are on average equally qualified. The first organization advertises 100 posts and the hiring outcome is 60 men and 40 women. The second organization advertises only four posts, and in this case, the outcome is four men and one woman. One of these situations warrants suspicion of unfair treatment such as gender discrimination whereas the other one does not. This is because with the small sample, the outcome of 75 % males is quite likely to have occurred by chance. With the large sample of 100 however, it is far less probable that the uneven gender distribution occurred by chance. Previous research on subjective probability judgments (Kahneman & Tversky, 1971) suggests that people often fail to take this "law of large numbers" into account. Consequently, the first organization might get away with discriminating against female applicants.

In a review on perceived discrimination, Eyer (2012) has concluded that most people think of discrimination as a phenomenon that is generally unlikely to occur in America's meritocratic society, and that these views significantly limit most people's willingness to make attributions to discrimination to the point where it takes compelling factual circumstances in order for them to suspect that it has occurred. The findings from Study III do not support this picture; for example, when participants provided their own attributions as to why an applicant had been

rejected from job interviews, as many as 59% who read about a female applicant spontaneously suspected discrimination. The possibility of course exists that our findings of high suspicions of discrimination toward prototypical victims do not generalize to Americans or to other cultures. Another possibility is that different findings in previous studies on perceived discrimination may depend on which groups have been the targets of discrimination in these studies. Unfortunately, reviews on perceived discrimination (Eyer, 2012; Nier & Gaertner, 2012) have not distinguished which target groups have been studied (e.g., race or gender). For example, it is possible that discrimination due to ethnicity is generally underestimated while discrimination due to gender is overestimated. This is a question that could be settled with further research on accuracy comparisons where group membership of the target (e.g., gender and ethnicity) is manipulated, combined with efforts to synthesize previous studies on perceived discrimination.

## Overall contributions

The question of why men and women continue to work in different fields has received attention from the scientific community as well as from policy makers. Previous research has to a large part been conducted in the sociological tradition with a focus on macro explanations. More research on psychological factors behind gendered choice is needed, such as how individuals are affected by their social environment when developing occupational preferences. The present thesis contributes to the literature by offering new perspectives and presenting preliminary evidence that social concerns such as being perceived as less gender typical; facing the risk of sacrificing friendships; and making attributions to discrimination can pose as barriers and result in a career compromise.

Previous psychological research seems to have overlooked reasons for men's underrepresentation in female-dominated domains. This thesis contributes to the literature by investigating potential explanations behind men's as well as women's occupational choices. There has also been a tendency to focus on the end product of career choice (adult populations). This approach will fail to provide a complete answer to why men and women end up in different occupations, considering that early choices (e.g., specialization such as course selection in school) put restrictions on future career choices. The present thesis therefore contributes to the field by taking early choices of adolescents into consideration regarding effects of gender identity threats and friendship priorities, while focusing on young adults regarding perceived discrimination.

Several vocational theories have suggested the role of perceived barriers to career attainment (e.g., Gottfredson, 1981; Jonsson, 1999; Lent & Brown, 1996). The findings of this thesis add to this literature by proposing additional barriers that may not even be recognized as barriers by the target person. For example,

adolescents who exhibit compensation effects of threats to gender identity may not be explicitly aware that they are doing so. Indeed, people sometimes lack complete awareness of how social contexts influence their personal decisions (e.g., Nisbett, & Wilson, 1977). This implies that a focus in future research that is restricted to only perceived barriers may lead to an underestimation of actual barriers. This highlights the advantage of experimental and indirect methods, such as the ones used in the present thesis, in the continued pursuit of barriers to career attainment.

## Overall limitations and directions for future research

The present thesis proposed three different explanations for horizontal occupational gender segregation and as such the scope is not narrow. However, the prize of broad scope is that of modest depth, and a thesis that focused on only one of these explanations could have expanded the research question to a greater extent.

The present thesis revolves around the research question of gender differences in career choice. With regards to this, the studies are limited in that they are mainly restricted to effects on preferences and attitudes. With this in mind, the suggested interventions are to be considered preliminary and contingent on the mechanisms being replicated with measures of actual behavior. The ideal would be a longitudinal interdisciplinary project that investigates the long-term effects of susceptibility to gender identity threat, education compromise due to friends, and perceived discrimination on actual educational and occupational choice. Such a project could provide some answers to questions like whether the tendency to prioritize social relationships over actual career preferences is restricted to the teenage years or if it continues into adulthood.

The three different mechanisms are assumed to be conceptually independent from each other – some individuals might experience one but not the others. But it is also possible that individuals who are susceptible to for example gender identity threat are also more likely to make a career compromise to be with friends. Moreover, to adjust one's preferences or behavior in line with stereotypes when threatened perhaps comes with the gain of easier holding on to friends (and thus experiencing a lower fear of isolation), through avoiding being perceived as gender deviant. These are questions for future research, such as the longitudinal project proposed above, to pursue. In addition to such a project, an interdisciplinary study where groups of friends are tracked over time would perhaps be informative. In sum, the ideas and findings of this thesis can hopefully inspire continued research efforts on psychological explanations behind gender-typed career choice.

Because the pattern of horizontal occupational gender segregation looks similar in industrialized countries, there is reason to believe that the effects

proposed in this thesis should generalize to such contexts. However, the generalizability may also depend on cultural differences in the prevalence of certain stereotypes and values. This might be the case for the prototype effect in perceived discrimination, due to cultural variation in egalitarian norms. When it comes to the friendship effect, there is reason to believe that the social needs that underlie the effect are universal, but that the educational system between countries will nevertheless affect the relevance of the effect. Further, cultural variation in the pressure to conform to gender roles should matter for the strength of the gender identity threat effect (the stronger the pressure, the stronger the threat compensation).

## Interventions to reduce social psychological barriers

A reduction of occupational gender segregation could bring benefits for organizations (Krishnan & Park, 2005) and society at large (Hegewisch et al., 2010), and many scholars and policy makers are concerned with how to reduce it. The findings of this thesis indicate that there may be psychological barriers standing in the way of individuals' true ambitions. This suggests that there may be costs for society as well as for individuals who miss out on opportunities to fulfill their potential. It is not necessarily the preferences per se that should be targeted, but the barriers.

One way to go could be attempting to reduce gender stereotypes that relate to occupations. If occupations were less associated with gender, occupational preferences should be a less probable domain for gender identity threat compensation; and the impact of perceived discrimination on work motivation should also be reduced. Another, perhaps more practically feasible, intervention would be to encourage adolescents to explore various career alternatives. Previous research indicates that when people are active in exploring career alternatives they come to obtain occupations that are more consistent with their sense of self, and to experience greater satisfaction with work (Blustein, Phillips, Jobin-Davis, Finkelberg, & Roarke, 1997; Vondracek, Schulenberg, Skorikov, Gillespie, & Wahlheim, 1995). This might thus serve as an indirect way to reduce the impact of the barriers presented in this thesis on gender typical career preferences.

The findings of this thesis suggest that perceived discrimination is perhaps not one of the main reasons for segregation and consequently not where resources to combat it should be allocated. This conclusion might change later on, for example, if future studies can determine the role of women's and men's networks and accessibility to discrimination prototype consistent information. For now however, the other two mechanisms of gender identity threat and friendship priorities seem like more important contributors and it may therefore be wise to



aim interventions for reducing gender typed career choice at them, provided that they receive further empirical support.

The findings from Study II suggest that the willingness of making a compromise due to friends is equally likely for male and female friends; and that it is a question of having more of one than the other. This implies that having friends of both genders would dilute the friendship effects on educational gender segregation (and at the same time this could perhaps decrease the occurrence of gender identity threat). Based on the findings of this thesis, it would thus be desirable to make gender categories less salient and to encourage mixed gender activities. This may reduce the pressure to conform to gender stereotypes, and at the same time provide opportunities for more diverse friendships to form. In contrast, a strong emphasis on strengthening ingroups might actually be counterproductive because of its emphasis on group boundaries. In line with previous suggestions among social psychologists to encourage intergroup contact as a means of increasing belonging among minority students and decreasing prejudice among majority students (e.g., Aronson & Osherow, 1980), it can be speculated that although group specific belonging may be important, general belonging could be even more so. In fact, previous work suggests that strategies to enhance a sense of general social connectedness to others in school and work settings may raise people's motivation and even their achievement (Walton et al., 2012).

The findings further indicate that some individuals may be at particular risk of compromising their vocational aspirations due to gender identity concerns, friendship priorities, or perceived discrimination. Although more research is needed to confirm which characteristics are most important, it is possible that individuals with for example low academic self-concept or a high dependency on others would especially benefit from interventions directed at reducing the impact of social psychological barriers.

Significant improvements have taken place when it comes to prejudice and discrimination due to gender, as egalitarian norms have grown stronger (e.g., Carlsson, 2011; DiDonato & Strough, 2013; Nier & Gaertner, 2012). However, if people who are about to enter the labor market suspect vast amounts of discrimination, this can also produce consequences for differential selection into occupations. This implies that interventions may be needed to help young people detect discrimination when it occurs while still realizing that being declined job interviews is a common outcome in the job hunting process and not necessarily an indication that unfair treatment has occurred. Based on the findings of this thesis it seems that providing base rate information about interview callbacks does not seem to suffice, but that contemplating a number of reasons for rejection on the labor market could perhaps help to some extent.

The overall findings of this thesis suggest that some social psychological barriers operate in a similar way for males and females. Although previous interventions has largely focused on encouraging girls' interest in male-typed

domains (e.g., Fadigan & Hammrich, 2004), similar interventions to encourage boys' participation in female-typed activities are needed.

## Concluding remarks

Despite the huge progress in women's establishment on the labor market, men and women still tend to end up in different occupations. Previous research suggests that people are highly sensitive to cues in their social environment on how they should behave (Caporael & Brewer, 1995). The findings of this thesis suggest that there are social psychological barriers that may stand in the way of individuals pursuing their career aspirations, and that these barriers may contribute to the horizontal gender divide on the labor market. Further research is needed in order to determine the practical and long-term effects of these barriers.

Previous research on reasons for occupational gender segregation has largely focused on demand side factors, such as discrimination and gender stereotypes on behalf of employers. However, because children develop attitudes about occupations that are in line with gender stereotypes at a young age (Helwig, 2004), and because boys and girls self-select into gender-typical educational paths years before they enter the labor market, there is a need to look at supply side explanations for the horizontal occupational divide. The findings of this thesis attest to the importance of early influences on the development of gender-typed aspirations, and thus imply the need for early interventions.

Another feature in the literature is the focus on reasons for women's absence in math and science domains. Consideration of only women's choices may leave an incomplete picture of the reasons behind occupational gender segregation (Hayes, 1989), and many firms will miss out on the competence that a more diverse workforce could bring (Krishnan & Park, 2005). Men who work in traditionally female-dominated domains (e.g., male nurses; Erikson & Einarsen, 2004) and men who are perceived by others as too feminine or not masculine enough (Berdahl, Magley, & Waldo, 1996) also risk being targets of sexism at work. The findings of the present thesis suggest that some social psychological barriers are similar for men and women. Considering that perceived career compromise leads to reduced work satisfaction (Tsaousides & Jome, 2008), both men and women should benefit from experiencing fewer psychological barriers to nontraditional careers.

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