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Masculinity Ideology, Covert Sexism, and Perceived Gender Typicality in Relation to Young Men's Academic Motivation and Choices in College

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This study examined young men's gender beliefs in relation to their academic motivation (self-efficacy and interests) and selection of traditional (e.g., economics, engineering), nontraditional (e.g., psychology, literature), or neutral (e.g., life sciences, history) fields. A sample of 342 undergraduate men ($M = 19.61$ years old) completed survey measures of masculinity ideology, perceived gender typicality, and covert sexism, and also rated their self-efficacy and interests in traditional and nontraditional fields. A series of regression analyses suggested ways that men's gender beliefs may be related to academic motivation and major choice in traditional or nontraditional fields. In addition, interests and self-efficacy appeared to mediate some associations between gender beliefs and academic choices.

Keywords: academic achievement, masculinity, occupational choice, sexism, sex role attitudes

The present study sought to examine whether and how young men's views about masculinity and gender equality may be related to aspects of their occupation-related self-concepts and choices. According to social-structural explanations, gender inequalities are both reflected and perpetuated by the gendered division of labor in society (Wood & Eagly, 2002). Dramatic changes in gender attitudes and roles have transpired within the United States and other societies during the last four decades (e.g., see Kite, 2001; Lueptow, Garovich-Szabo, & Lueptow, 2001; Twenge, 1997). Most women—including mothers with children—work outside of the home (e.g., see Lueptow et al., 2001, for a review). Moreover, women are increasingly entering traditionally masculine fields. In contrast, relatively few men are selecting traditionally feminine fields. For example, in 2004, men were responsible for the majority of master's

degrees in historically male-dominated domains such as business and management (58%), engineering (79%), and physical sciences (60%). Conversely, relatively fewer men attained master's degrees in more feminine-stereotyped fields such as literature (31%), visual or performing arts (43%), education (23%), or psychology (21%) (U.S. Department of Education and National Center for Education Statistics, 2007).

According to contemporary theories of motivation, achievement is strongly influenced by a combination of people's interests and self-efficacy in a domain. That is, individuals are motivated to pursue fields that they value and in which they expect to succeed, respectively (Bandura, 1997; Eccles & Wigfield, 2002; Harter, 1990). Consistent with these theories, males tend to demonstrate higher interest and self-efficacy relative to females in traditionally masculine fields with relatively more instrumental emphases such as science and technology; and to show lower interest and self-efficacy in traditionally feminine fields with relatively more socio-emotional emphases such as literature, the arts, and social sciences (see Leaper & Friedman, 2007; Watt, 2008, for reviews). Furthermore, people generally view jobs associated with men as having higher status than those associated

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with women (Liben, Bigler, & Krogh, 2001). Thus, as boys and young men develop their career aspirations, many are motivated to seek roles that will confer prestige and acceptance. At the same time, many of them are also motivated to devalue and to avoid feminine-stereotyped areas (see Levant, Hirsch, Celentano, & Cozza, 1992; Mahalik et al., 2003; Pleck, 1995).

Whereas there are average gender differences in achievement domains, there is also much within-gender variability. That is, men vary in the gender-typing of their interests, achievements, and academic choices. One of the factors that may affect men's achievement is their underlying ideology about masculinity (Jome, Surething, & Taylor, 2005; Jome & Tokar, 1998; Mahalik, Perry, Coonerty-Femiano, Cairao, & Land, 2006; Tokar & Jome, 1998). In North America and similar societies, masculinity ideology emphasizes self-reliance, aggression, achievement, attaining status, restricted emotionality, and avoiding the appearance of femininity or homosexuality (Levant et al., 1992; Mahalik et al., 2003). An increasing body of research on gender role strain has highlighted how men's rigid adherence to traditional notions of masculinity often limits their life options in debilitating ways (see Levant & Richmond, 2007; Pleck, 1995). As pressures on men to conform to traditional norms have relaxed in some sociocultural contexts, it has been possible for some men to embrace more flexible notions of masculinity (e.g., see Wood & Eagly, 2002). This may enable them to pursue nontraditional interests. In contrast, men with traditional masculinity beliefs may be more apt to pursue traditional areas for achievement. In support of this model, Tokar and Jome (1998) found men's masculinity ideology predicted their vocational interests and intended career choices. Moreover, they observed that interests mediated the association between masculinity ideology and career choice. The present study sought to replicate and build upon this research by considering multiple facets of academic motivation and gender beliefs. We took into account self-efficacy as well as interests as components of academic motivation. In addition, we considered covert sexism and gender typicality as well as masculinity ideology as aspects of men's gender beliefs. The meaning and relevance of each of these factors are reviewed next.

Our first set of analyses tested men's gender beliefs as possible predictors of their academic motivation and choices. The potential influence of masculinity ideology on academic achievement was addressed earlier in our introduction. Following earlier research, we hypothesized that masculinity ideology would be positively correlated with interest and self-efficacy in traditional achievement domains (e.g., business and technology-related fields), and would be negatively correlated with interest and self-efficacy in relatively nontraditional domains (e.g., psychology, literature, arts). Similarly, we expected that men who had selected gender-typed majors would score higher on traditional masculinity ideology than those who selected cross-gender-typed or neutral majors.

Second, we examined the possible influences of sexist attitudes. Masculinity ideology and traditional gender identities tend to maintain and perpetuate men's dominance in society (e.g., see Leaper, 2000, for a review). If so, men's attitudes toward gender equality might contribute independently to men's academic self-concepts and choices. Given the advances in women's rights and roles over the years, many individuals who continue to harbor sexist attitudes are reluctant to openly express their beliefs in blatantly hostile ways (e.g., endorsing the view that women are inferior to men). Instead, their attitudes are manifested in more covert forms, such as through denying the existence of gender discrimination or criticizing the feminist movement. These subtle forms of sexism are known as neosexism (Tougas, Brown, Beaton, & Joly, 1995) or modern sexism (Swim, Aikin, Hall, & Hunter, 1995). We hypothesized that men who hold covert sexist beliefs may be more likely to follow traditional occupational trajectories that reflect and favor men's dominance in society. That is, covert sexism may be positively related to academic motivation and choices in traditional fields; conversely, the same factor may be negatively correlated with motivation and choices in nontraditional fields.

The third facet of men's gender beliefs that we analyzed was perceived gender typicality. As explicated in Egan and Perry's (2001) model of gender identity, gender typicality refers to self-evaluations regarding how well one conforms to the behaviors and roles associated with persons of the same gender (e.g., "I am typical of men

my own age"). In our culture, boys and young men are generally concerned with being seen as masculine and typical of most men (e.g., Levant & Richmond, 2007; Sherriff, 2007). A man who is interested in traditional fields such as business or engineering may perceive himself as adhering to the cultural norm for the successful American man, whereas a man who is interested in less traditional fields such as the performing arts or psychology may not feel as representative (Harton & Lyons, 2003; Lewis & Seaman, 2004). Thus, we explored whether and how this component of gender identity might also contribute to young men's academic interests, self-efficacy, and choices.

We anticipated that all three aspects of men's gender beliefs would be intercorrelated. However, it was less clear whether and how they combine to predict men's academic motivation and choices. Thus, we tested the influences of masculinity ideology, covert sexism, and gender typicality on men's self-efficacy, interests, and choices regarding traditional and nontraditional fields. In addition to testing their independent influences, we also considered possible interaction effects to explore possible ways the factors might moderate one another. For example, perhaps the effect of masculinity ideology on academic achievement is especially strong among men with high perceived gender typicality.

In a final set of analyses, we tested whether academic motivation (self-efficacy or interests) mediated any significant associations between gender-related beliefs (masculinity, sexism, or typicality) and choice of academic major. As previously noted, research on academic motivation and achievement has underscored the influences of interests and self-efficacy. Also, Tokar and Jome (1998) observed that vocational interests fully mediated the association between masculinity ideology and intended career choice. Building on this work, we explored whether any associations between our three facets of men's gender beliefs and their academic major choices were mediated by either academic self-efficacy or academic interests.

Method

Participants

The sample was comprised of 342 men ($M = 19.61$ years, $SD = 1.42$, range = 18–26)

enrolled in undergraduate psychology classes. Participants were predominantly (94%) heterosexual and from mostly middle-class American families. Parents' education was ranked on a seven-point scale (1 = *elementary school* to 7 = *advanced degree*); the medians for mothers and fathers were attaining a bachelor's degree. The self-reported ethnic backgrounds of the sample were 69% White European, 13% Asian, 6% Latino, 3% Middle Eastern, and 9% other. The men's academic majors varied as follows: 14% physical/biological sciences, mathematics, or computers; 9% economics/business; 25% psychology, 11% other social sciences; 10% literature, 6% other humanities; 4% art or theater arts; 2% music; 6% film and digital media; and 12% undeclared. The distribution by year was 39% frosh, 27% sophomore, 21% junior, and 12% senior.

Procedure

Participants were asked to complete several survey measures in either a classroom, a research office, or online. These measures are described below. Unless indicated otherwise, items were rated on a six-point scale (1 = *strongly disagree* to 6 = *strongly agree*). The number of respondents completing each scale as well as other descriptive statistics appear in Table 1.

Male Role Norms Inventory. The Male Role Norms Inventory (Levant et al., 1992) assesses the degree of endorsement of traditional masculinity ideology in five areas: achievement and status (e.g., "A man should do whatever it takes to be admired and respected"), the avoidance of femininity (e.g., "Housework is women's work"), the rejection of homosexuals and homosexuality (e.g., "It is disappointing to learn that a famous athlete is gay"), restrictive emotionality (e.g., "Nobody likes a man who cries in public"), and nonrelational attitudes toward sex (e.g., "Hugging and kissing should always lead to intercourse"). A composite masculinity ideology score was created from the average of the 5 subscales; and this had high internal consistency ($\alpha = .89$).

Sexist attitudes. The Neosexism Scale (Tougas et al., 1995) was used to measure covert sexist attitudes. This scale includes 11 items that address opinions regarding sexism in contemporary society (e.g., "Discrimination

Table 1
Spearman Correlations and Descriptive Statistics for Study Variables

	1	2	3	4	5	6	7	8	9
1. Masculinity Ideology	.58***								
2. Covert Sexism	-.36***	.17**							
3. Gender Typicality	-.03	.01	-.01						
4. Traditional Efficacy	-.15**	-.12*	-.13*	.03					
5. Nontraditional Efficacy	.15**	.13*	.11*	.24***	-.23***				
6. Traditional Interests	-.11*	-.09	-.11*	-.15**	.18***	-.65***			
7. Nontraditional Interests	.13*	.10+	.11*	.09	-.11+	.52***	-.29***		
8. Traditional Major	-.14**	-.20***	-.14**	-.05	.21***	-.30***	.37***	.50***	
9. Nontraditional Major	.338	.341	.342	.342	.342	.342	.342	.342	.342
<i>N</i>	21.28	2.44	17.68	4.35	4.99	n/a	n/a	n/a	n/a
<i>M</i>	5.86	.63	4.40	1.22	1.01	n/a	n/a	n/a	n/a
<i>SD</i>									

Note. n/a = not applicable. Means and SDs are provided only for continuous variables. The following variables were dummy coded: traditional major (1 = traditional, 0 = nontraditional or neutral), nontraditional major (1 = nontraditional, 0 = traditional or neutral), traditional interests (1 = traditional, 0 = nontraditional or neutral), and nontraditional interests (1 = nontraditional, 0 = traditional or neutral). There were 40 participants who had not declared a major (i.e., neither traditional vs. nontraditional choice) and were not included in analyses involving academic major. Continuous variables were centered in the correlations.

+ $p < .06$. * $p < .05$. ** $p < .01$. *** $p < .001$.

against women in the labor force is no longer a problem in the United States”). Internal consistency was high ($\alpha = .82$).

Perceived gender typicality. We assessed self-perceived gender typicality using 5 items that ask respondents to evaluate how typical they considered themselves to other men (“I am typical of men who are my age,” “I don’t conform to traditional roles about gender,” “The kinds of things that I like are similar to what most other men like,” “My personality is similar to most men who are my age,” “I don’t fit in with most other men”). The items were adapted from the ones that Egan and Perry (2001) originally used to assess gender typicality in children; and that Smith and Leaper (2006) subsequently used to assess gender typicality in adolescents. Internal consistency among the five items was good ($\alpha = .75$).

Academic majors. Participants were asked to indicate their academic major. Those who were undeclared or did not provide a major ($n = 40$) were not included in any analyses involving selection of major. For the analyses, men’s majors were classified as either traditional, nontraditional, or neutral. These classifications were partly based on gender imbalances in the bachelor’s degrees offered in the United States. We used statistics from the U.S. Department of Education and National Center for Education Statistics (2007) and the National Science Foundation (2004) of the percentage of degrees offered to women and men in 2002–2003 or 2003–2004. (These percentages were similar to those for the participants’ university.) When national statistics for a particular major were not available, we referred to the most recent figures available from the participants’ university (noted below when applicable). In general, if one gender was responsible for approximately two-thirds of the bachelor’s degrees either nationally or at the participants’ university, we considered it either a traditional major (if mostly men) or a nontraditional major (if mostly women). However, there were a few exceptions to this general guideline. As explained below, these occurred when the magnitude of gender difference was somewhat smaller than our two-thirds criterion but the field is considered highly gender stereotyped (as documented in prior studies explained below).

Traditional majors included engineering ($n = 6$), physics ($n = 6$), math ($n = 3$),

economics ($n = 32$), and film ($n = 20$). Engineering and physics are two fields where men continue to dominate in numbers with 80% and 79% of bachelor's degrees in the United States, respectively. Although women have nearly attained parity with men in mathematics degrees—with 54% of recent bachelor's degrees in math awarded to men in the United States (and 62% to men at the participants' university)—we opted to include this major in the traditional category because of the long-standing stereotype of “math is for boys” (see Hyde, Fennema, Ryan, & Frost, 1990; Leaper & Friedman, 2007; Watt, 2008, for reviews). Economics (and business generally) is also a traditionally masculine domain (Beggs & Doolittle, 1993; White, Kruczek, Brown, & White, 1989); men in the United States recently accounted for two-thirds (67%) of the bachelor's degrees in economics. Finally, film is a generally male-dominated field (Lauzen, 2006), in which two-thirds (67%) of recent bachelor's degrees in the United States went to men.

Nontraditional majors were comprised of psychology ($n = 87$); sociology ($n = 10$); other social sciences ($n = 21$); literature, linguistics, or languages ($n = 40$); art ($n = 12$); and theater ($n = 2$). Psychology has emerged as a predominantly female field (Harton & Lyons, 2003) with three-fourths (78%) of recent bachelor's degrees in the United States going to women. Similarly, other social sciences, such as sociology, are enrolled mostly (70%) by women in the United States. In addition, relative to women, men have underachieved in the language arts during childhood and adolescence (Lupart, Cannon, & Telfer, 2004; Mendez, Mihalas, & Hardesty, 2006); and fewer men in the United States attain bachelor's degrees in fields such as literature (69% female) and foreign languages (70% female). Finally, among recent bachelor's degrees awarded in the United States, women accounted for the majority in art (65%) and theater (61%). (The proportion of theater arts degrees by women was 66% at the participants' university.) Theater and art are stereotypically feminine domains (Beggs & Doolittle, 1993; Lupart et al., 2004; White et al., 1989).

Neutral majors included music ($n = 8$); history, American Studies, and other humanities ($n = 14$); environmental studies ($n = 7$); biological sciences ($n = 30$); and chemistry ($n = 4$). Equal numbers

of men and women (50% male) in the United States recently attained bachelor's degrees in music. History and other humanities also have comparable enrollments by women and men (with 59% of recent history bachelor's degrees in the United States going to men). Environmental studies is not a standard major at most universities and was labeled as neutral because there was not a large gender difference in the percentage of majors at the university (57% male). Finally, although biology is still generally stereotyped as a masculine field (Beggs & Doolittle, 1993; Lupart et al., 2004; White et al., 1989), women have surpassed men in the biological sciences in the United States (with 62% of recent bachelor's degrees in biology going to women). Chemistry is another area that once was associated more with men than women, but where relative gender equity in bachelor's degrees has been attained in the United States (with 49% of these degrees awarded to women). Therefore, we classified these two majors as neutral.

In sum, there were 67 participants with traditional majors, 63 with neutral majors, and 172 with nontraditional majors; and there were 40 persons with undeclared majors. The relatively large size of the nontraditional group was due to our recruitment in psychology classes and the resulting high representation of psychology majors. (To assess whether the psychology majors strongly biased the direction of the results, we ran the analyses without including this group. The pattern of results was similar to those reported with the full sample in the present article.)

Academic interests. Participants were asked to nominate which one of the following 11 areas interested them the most: Computers, Engineering, and Technology; Physical Sciences and Math; Life and Health Sciences; Business and Economics; Environmental Sciences; Psychology; Education and Teaching; Culture and Society; Languages, Literature, and Communication; Humanities; Visual and Performing Arts. Academic advisors at the participants' university use these interest clusters to help students select majors and possible occupations.

We used the previously described classifications of majors to guide our subsequent coding of interest clusters. *Traditional* interest clusters were as follows: Computers, Engineering, and Technology ($n = 24$); Physical Sciences and Math ($n = 11$); and Business and Economics ($n = 34$).

Nontraditional interest clusters included the following: Psychology ($n = 99$); Education and Teaching ($n = 10$); Culture and Society ($n = 40$); Languages, Literature, and Communication ($n = 14$); and Visual and Performing Arts ($n = 50$). *Neutral* interest areas were: Environmental Sciences ($n = 8$); Life and Health Sciences ($n = 23$); and Humanities ($n = 29$). In sum, there were 69 men preferring traditional interest areas, 60 preferring neutral areas, and 213 preferring nontraditional areas. Although the Visual and Performing Arts interest area was classified as nontraditional, it could plausibly include those interested in film (traditional major) as well as art and theater (nontraditional major). Because we were especially interested in how traditional masculinity might steer some men away from traditionally feminine-stereotyped fields, we opted to label the Visual and Performing Arts interest area as nontraditional.

Academic self-efficacy. We measured participants' self-efficacy in each of the following academic areas: computer science, physics, math, psychology, literature, writing, performing arts, and visual arts. Based on prior academic self-efficacy scales (Bandura, 1997), respondents were asked to rate "how good you are at learning each of the following subjects" on a seven-point scale (1 = *not very well* to 7 = *very well*). To create a composite score for self-efficacy in *traditional* fields, we averaged participants' scores in computers, math, and physics ($\alpha = .71$). To create a composite score for self-efficacy in *nontraditional* fields, we averaged scores in literature, writing, psychology, visual arts, and performing arts ($\alpha = .72$).

Results

Means and *SDs* for the measures are presented in Table 1. Three sets of analyses were performed. First, we tested the bivariate correlations between all of the measures. Next, we tested the influences of gender-related beliefs—masculinity ideology, gender typicality, and sexist attitudes—on their interests, efficacy, and major choices. Finally, we considered whether interests or efficacy mediated the association between gender-related beliefs and choice of academic major.

Bivariate Associations Between Variables

Descriptive statistics and bivariate associations between the variables are summarized in Table 1. Some of the variables were dichotomous and others were based on ordinal rating scales; therefore, Spearman correlation tests were performed. As seen in the tables, the three facets of gender beliefs were intercorrelated. Each of these factors also predicted men's academic motivation and major choices. Furthermore, academic motivation and academic major were correlated. When summarizing the findings in the next section, we compare the patterns from the bivariate correlations with those from the regressions.

Gender-Related Beliefs in Relation to Academic Self-Efficacy, Interests, and Choices

In a series of regression analyses, we tested the independent influences of masculinity ideology, gender typicality, covert sexism, and their two-way interactions on men's academic self-efficacy, interests, and major. Missing values for continuous variables were replaced with means. Also, continuous variables were centered around their means to reduce multicollinearity (Aiken & West, 1991). The continuous variables included masculinity ideology, gender typicality, covert sexism, self-efficacy in traditional fields, and self-efficacy in nontraditional fields.

Predictors of Men's Self-Efficacy in Traditional and Nontraditional Fields

Linear regression analyses tested the influences of the predictor variables separately on self-efficacy in traditional fields (i.e., physics, math, and computers) and self-efficacy in nontraditional fields (i.e., arts, literature, and psychology).

Self-efficacy in traditional fields. The bivariate correlation tests indicated no significant associations between self-efficacy in traditional fields and either masculinity ideology, gender typicality, or covert sexism (see Table 1). The regression did not reveal anything different. The model was not significant (see Table 2). None of the individual variables nor any of their interactions were significant.

Self-efficacy in nontraditional fields. The bivariate correlations indicated that self-efficacy in

Table 2
Linear Regression Analyses for Self-Efficacy in
Traditional Fields

Variable	B	SE	β	t	p
Masculinity Ideology (M)	-.02	.02	-.08	-1.08	.28
Gender Typicality (T)	.00	.02	.01	.22	.82
Covert Sexism (S)	.14	.13	.07	1.06	.29
M \times T	.00	.00	-.02	-.34	.73
M \times S	.01	.02	.03	.43	.67
T \times S	.04	.03	.09	1.24	.22

Note. All continuous variables were centered. Model $F(6, 336) = .73$, $R^2 = .01$, $p = .63$.

traditional fields was significantly and negatively associated with masculinity ideology, gender typicality, or covert sexism (see Table 1). When these three factors and their 2-way interactions were entered into a linear regression with self-efficacy in traditional fields, the model was significant (see Table 3). There was a significant Sexism \times Typicality interaction. To interpret the effect, we performed a median split to divide participants who were low (below the median) versus high (above the median) in gender typicality. Among men low in covert sexism, there was a significant and negative association between gender typicality and self-efficacy in nontraditional domains ($\beta = -.22$, $R^2 = .05$, $p < .001$). In contrast, among men who were high in covert sexism, gender typicality and self-efficacy in nontraditional fields were unrelated ($\beta = .03$, $R^2 = .00$, $p = .88$). Thus, men were especially likely to score high in self-efficacy in nontraditional domains if they were both low in covert sexism and low in gender typicality.

Table 3
Linear Regression Analyses for Self-Efficacy in
Nontraditional Fields

Variable	B	SE	β	t	p
Masculinity Ideology (M)	-.02	.01	-.10	-1.35	.18
Gender Typicality (T)	-.01	.01	-.06	-1.10	.27
Covert Sexism (S)	-.08	.11	-.05	-.72	.47
M \times T	-.01	.00	-.13	-1.86	.06
M \times S	.00	.01	.01	.23	.82
T \times S	.07	.03	.19	2.67	.01

Note. All continuous variables were centered. Model $F(6, 336) = 2.93$, $R^2 = .22$, $p = .008$.

Predictors of Men's Academic Interests

In the next set of analyses, we tested the relative influences of masculinity ideology, gender typicality, covert sexism, and their two-way interactions in separate logistic regressions with traditional and nontraditional interests. (Logistic regression is used when the outcome is a dichotomous nominal variable. It tests the odds of belonging to one group versus the other based on the predictor.) In the first analysis of traditional interests, academic interests were dichotomized as 1 = *traditional* versus 0 = *traditional or neutral*. In the second analysis of nontraditional interests, academic interests were dichotomized as 1 = *nontraditional* versus 0 = *traditional or neutral*.

Traditional interests. In the bivariate correlations, traditional interests were significantly and positively correlated with masculinity ideology, gender typicality, and covert sexism (see Table 1). When these factors and their two-way interactions were entered into the logistic regression, the model was significant (see Table 4). A significant Masculinity \times Typicality interaction was indicated. Follow-up tests revealed a significant masculinity effect for those scoring high (above median) in typicality ($B = .07$, Wald's $\chi^2 = 5.71$, $p = .02$, odds ratio = 1.08); but not for those scoring low (below median) in masculinity ($B = .00$, Wald's $\chi^2 = .04$, $p = .85$, odds ratio = 1.01). Thus, traditional interests were especially likely among men who were high in both masculinity ideology and perceived gender typicality (see Figure 1).

Nontraditional interests. In the preliminary bivariate tests, masculinity ideology—but not

Table 4
Logistic Regression Analyses for
Traditional Interests

Variable	B	SE	Wald χ^2	p	Odds ratio
Masculinity Ideology (M)	.03	.03	.96	.33	1.03
Gender Typicality (T)	.04	.04	1.13	.29	1.04
Covert Sexism (S)	.42	.29	2.14	.14	1.52
M \times T	.02	.01	7.01	.01	1.02
M \times S	-.04	.04	1.32	.25	.96
T \times S	-.12	.07	3.13	.08	.89

Note. All continuous variables were centered. Model $\chi^2 = 18.17$, $p = .006$.

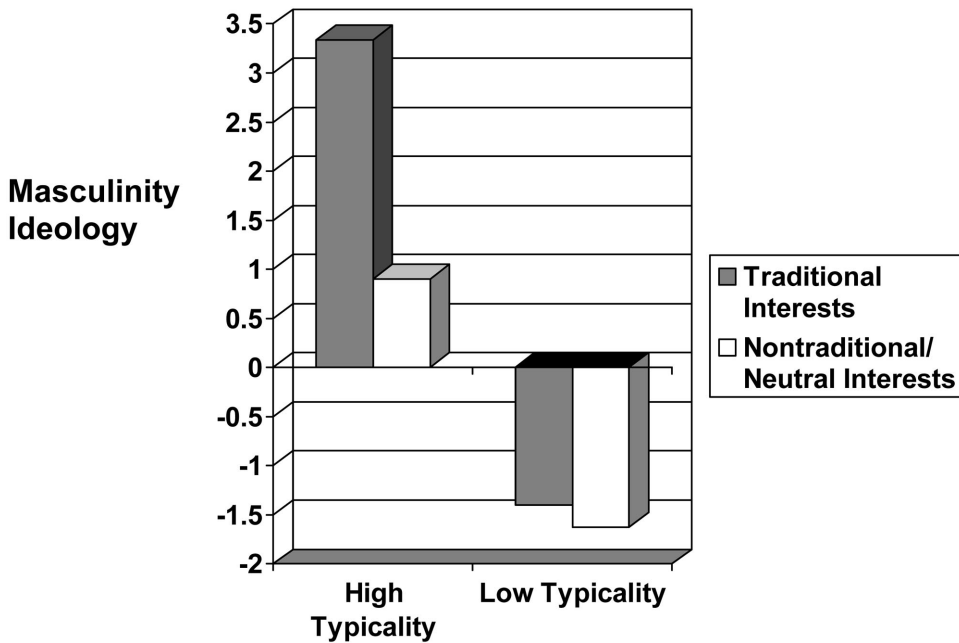


Figure 1. Men's academic interests in relation to gender typicality and masculinity ideology.

gender typicality or covert sexism—was significantly associated with nontraditional interests (see Table 1). The logistic regression with nontraditional interests was nearly significant ($p = .06$). However, none of the specific predictor variables (including masculinity ideology) were significant (see Table 5).

Predictors of Men's Choice of Major

We next considered the possible influences of our predictors on academic major choices. Sim-

ilar to the approach taken in the analyses of academic interests, we first ran a logistic regression with traditional major choice (1 = *traditional major* vs. 0 = *neutral or nontraditional major*), and then we ran a second logistic regression with nontraditional major (1 = *nontraditional* vs. 0 = *traditional or neutral*).

Traditional majors. Men's selection of traditional majors was significantly correlated with masculinity ideology and gender typicality in the bivariate tests (see Table 1). When these factors and their interactions were entered into the logistic regression, the model was significant (see Table 6). Although significant main effects were not indicated for either masculinity or gender typicality, there was a significant Gender Typicality \times Covert Sexism interaction. To interpret the interaction, we split those below and above the median on covert sexism. Among those low in covert sexism, there was a significant effect for gender typicality, $B = .16$, Wald's $\chi^2 = 9.97$, $p = .002$, odds ratio = 1.17. In contrast, among those high in sexism, there was no effect for gender typicality, $B = -.02$, Wald's $\chi^2 = .16$, $p = .69$, odds ratio = .98. Thus, selection of traditional majors was especially

Table 5
Logistic Regression Analyses for
Nontraditional Interests

Variable	B	SE	Wald χ^2	p	Odds ratio
Masculinity Ideology (M)	-.02	.03	.35	.56	.98
Gender Typicality (T)	-.04	.03	1.94	.16	.96
Covert Sexism (S)	-.29	.23	1.63	.20	.75
M \times T	-.01	.01	2.57	.11	.99
M \times S	.05	.03	2.81	.09	1.05
T \times S	.03	.05	.39	.53	1.03

Note. All continuous variables were centered. Model $\chi^2 = 11.89$, $p = .06$.

Table 6
Logistic Regression Analyses for Traditional Major

Variable	B	SE	Wald χ^2	p	Odds ratio
Masculinity Ideology (M)	.02	.03	.27	.61	1.02
Gender Typicality (T)	.06	.04	2.93	.09	1.06
Covert Sexism (S)	.34	.29	1.37	.24	1.41
M \times T	.01	.01	.66	.42	1.01
M \times S	.01	.03	.04	.84	1.01
T \times S	-.15	.07	5.15	.02	.86

Note. All continuous variables were centered. Model $\chi^2 = 13.74, p = .03$.

Table 7
Logistic Regression Analyses for Nontraditional Major

Variable	B	SE	Wald χ^2	p	Odds ratio
Masculinity Ideology (M)	.01	.03	.14	.71	1.01
Gender Typicality (T)	-.06	.03	4.72	.03	.94
Covert Sexism (S)	-.66	.23	8.15	.004	.52
M \times T	.00	.01	.18	.67	.99
M \times S	.02	.03	.28	.60	1.02
T \times S	.06	.05	1.35	.25	1.06

Note. All continuous variables were centered. Model $\chi^2 = 20.57, p = .002$.

unlikely among those low in covert sexism and low in gender typicality (see Figure 2).

Nontraditional majors. Men’s selection of nontraditional majors was negatively associated with masculinity ideology, covert sexism, and gender typicality in the bivariate tests (see Table 1). When these factors and their interactions were entered in the logistic regression with non-traditional majors as the outcome, the model was significant. However, only covert sexism and gender typicality were significant factors (see Table 7). There was a large effect for covert sexism, whereby men with nontraditional

majors were half as likely as other men to score high on covert sexism (odds ratio = .52). In addition, the effect for gender typicality revealed that men who selected nontraditional majors tended to score slightly lower in gender typicality (odds ratio = .94).

Exploring Possible Mediators Linking Gender Beliefs and Selection of Major

In our last set of analyses, we considered the possibility that academic self-efficacy or academic interests might mediate observed associations

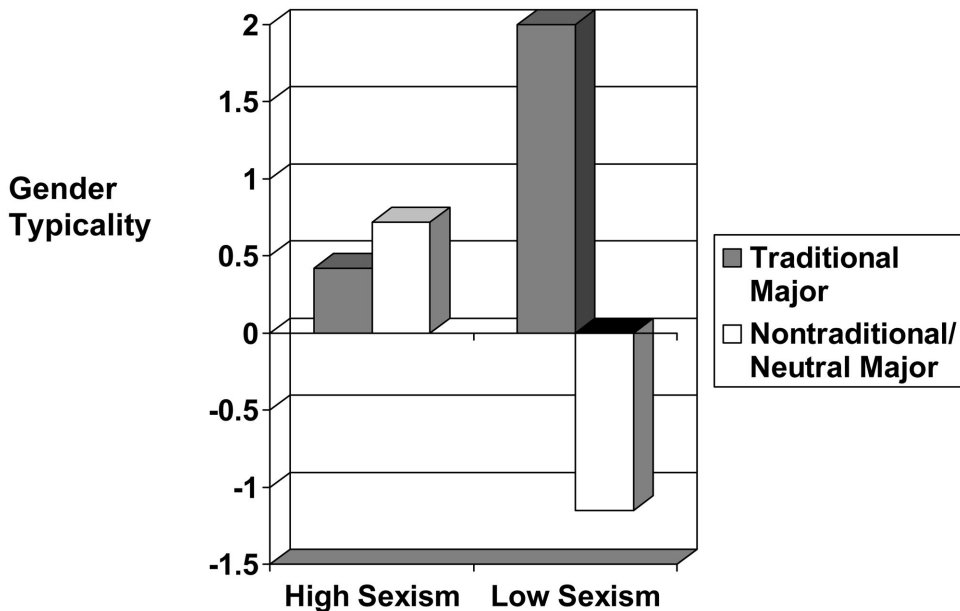


Figure 2. Men’s major choice in relation to covert sexism and gender typicality.

between men's gender beliefs and academic choices. To test for mediation, three preliminary conditions must be met (Baron & Kenny, 1986): First, the predictor variable (gender beliefs) must be associated with the outcome measure (selection of major). Second, the mediator variable (either self-efficacy or interests) must predict the outcome measure (selection of major). And third, the predictor variable and the mediator variable must be correlated. These steps can be assessed by examining the bivariate correlations in Table 1.

If the preliminary steps are met, further testing for mediation is warranted. To establish full or partial mediation, the association between the predictor and the outcome variables must be reduced after controlling for the influence of the mediator. Full mediation is indicated when the effect of the antecedent variable on the outcome variable is no longer significant after controlling for the mediator variable.

Testing Self-Efficacy as a Mediator

In this set of analyses, we tested whether self-efficacy mediated the association between gender beliefs and selection of major. There were three cases that met the preliminary conditions for testing mediation (i.e., the antecedent variable is correlated with the mediator variable and with the outcome variable; and the mediator variable is correlated with the outcome variable). For each of these, we examined whether the effect of each of the antecedent variables was significantly reduced after controlling for the mediator. These results are summarized below:

Masculinity ideology as antecedent variable. Masculinity ideology (antecedent variable) significantly predicted selection of nontraditional major (outcome variable), $B = -.04$, Wald's $\chi^2 = 5.69$, $p = .02$, odds ratio = .96. However, after controlling for self-efficacy in nontraditional fields (mediator variable), masculinity ideology was no longer significant, $B = -.04$, Wald's $\chi^2 = .01$, $p = .95$, odds ratio = .99. Thus, full mediation was implicated.

Covert sexism as antecedent variable. Covert sexism (antecedent variable) significantly predicted selection of nontraditional major (outcome variable), $B = -.63$, Wald's $\chi^2 = 11.97$, $p = .001$, odds ratio = .53. After controlling for self-efficacy in nontraditional fields (mediator

variable), gender typicality remained significant, $B = -.58$, Wald's $\chi^2 = 9.84$, $p = .002$, odds ratio = .56. Thus, mediation was not indicated.

Gender typicality as antecedent variable. Gender typicality (antecedent variable) significantly predicted selection of nontraditional major (outcome variable), $B = -.07$, Wald's $\chi^2 = 8.27$, $p = .004$, odds ratio = .93. After controlling for self-efficacy in nontraditional fields (mediator variable), gender typicality remained significant, $B = -.06$, Wald's $\chi^2 = 6.12$, $p = .01$, odds ratio = .94. Therefore, mediation was not implicated.

In summary, one incident of full mediation was observed. The association between masculinity ideology and selection of nontraditional major was fully mediated by self-efficacy in nontraditional fields. That is, men with traditional masculinity ideology may be less likely to experience self-efficacy in nontraditional fields; in turn, this may decrease the likelihood of selecting a nontraditional major.

Testing Academic Interests as a Mediator

We next tested whether interests mediated the association between gender beliefs and selection of major. Preliminary conditions for testing mediation were found for masculinity ideology in relation to traditional as well as nontraditional major, and for gender typicality in relation to traditional major. The mediation tests for these patterns are described below.

Masculinity ideology as antecedent variable. Masculinity ideology and traditional major were significantly related, $B = .05$, Wald's $\chi^2 = 4.88$, $p = .03$, odds ratio = 1.05. After controlling for traditional interests, however, this association was no longer significant, $B = .03$, Wald's $\chi^2 = .95$, $p = .33$, odds ratio = 1.03. Thus, traditional interests fully mediated the association between masculinity ideology and selection of traditional major.

Masculinity ideology also was significantly related to selection of nontraditional majors, $B = -.05$, Wald's $\chi^2 = 5.69$, $p = .02$, odds ratio = .96. But when traditional interests were taken into account, masculinity was no longer a significant predictor, $B = -.02$, Wald's $\chi^2 = 2.86$, $p = .09$, odds ratio = .97. Therefore, traditional interests mediated the association between masculinity ideology and selection of nontraditional major.

Gender typicality as antecedent variable. Gender typicality was positively related to selecting a traditional major, $B = .07$, Wald's $\chi^2 = 4.96$, $p = .03$, odds ratio = 1.08. But this link was not significant once traditional interests were controlled, $B = .05$, Wald's $\chi^2 = 1.74$, $p = .19$, odds ratio = 1.05. Hence, traditional interests fully mediated the association between gender typicality and selecting a traditional major.

In summary, the mediational tests suggest that holding traditional views about masculinity or feeling typical of other men may strengthen the likelihood that men will endorse traditional academic interests. In turn, having traditional interests may make selecting a traditional major more likely (and selecting a nontraditional major less likely).

Discussion

Our study considered men's gender-related beliefs in relation to their motivation and choices regarding traditional or nontraditional academic fields. Other researchers have previously investigated some of these factors. In particular, they examined masculinity ideology in relation to men's academic interests (Mahalik et al., 2006; Tokar & Jome, 1998) or their selection of major (Jome & Tokar, 1998; Tokar & Jome, 1998). We built on these earlier investigations by considering multiple facets of men's gender beliefs. These included masculinity ideology (Levant et al., 1992), covert sexism (Swim et al., 1995; Tougas et al., 1995), and perceived gender typicality (Egan & Perry, 2001). At the same time, we expanded the analysis of academic motivation to incorporate self-efficacy as well as interests (Bandura, 1997; Eccles & Wigfield, 2002; Harter, 1990). As discussed below, we observed ways that gender beliefs predicted men's motivation in traditional and nontraditional academic fields. Also, we observed that gender beliefs and motivation predicted men's selection of traditional or nontraditional academic majors.

Predictors of Academic Motivation

Our initial bivariate analyses showed that masculinity ideology, covert sexism, and gender typicality each predicted men's self-efficacy or interests in traditional and nontraditional ac-

ademic fields. Furthermore, all three predictors were negatively correlated with self-efficacy in nontraditional fields. But when all three predictors were taken into account simultaneously in regression analyses, none of the predictors had significant main effects with either academic interests or self-efficacy. Instead, there were some significant interaction effects. Thus, our findings suggested some ways that different facets of gender-related beliefs, in combination, may affect men's academic motivation.

One of our results was that men who were high in both masculinity ideology and gender typicality were most likely to hold traditional academic interests. Prior studies similarly observed that masculinity ideology predicted men's academic interests (Mahalik et al., 2006; Tokar & Jome, 1998). Our analysis suggests that this effect may be more pronounced when men see themselves as conforming to what most other men are like. The combination of masculinity ideology and perceived gender typicality may be a "double whammy" that forecloses men's exploration of nontraditional (or relatively neutral) fields.

Another finding was that self-efficacy in nontraditional fields was highest among men who were low in both covert sexism and gender typicality. When a man sees himself as low in gender typicality, holding gender-egalitarian attitudes may help him to justify and accept his nonconformity. In turn, it may be easier for these men to develop confidence and self-efficacy in nontraditional domains. Thus, egalitarian beliefs may function as a buffer against the potentially negative effects of feeling atypical for one's gender (see Egan & Perry, 2001; Smith & Leaper, 2006, regarding the correlates of gender typicality).

Predictors of Academic Choices

In the bivariate correlations, men's selection of traditional majors was positively related to masculinity ideology and gender typicality. Conversely, selection of nontraditional majors was negatively correlated with masculinity ideology, covert sexism, and gender typicality. As seen in the results for academic motivation, however, a different set of findings emerged when the predictors were entered together in regression analyses.

When we tested the influences of the three gender belief measures and their interactions, we found that selection of traditional majors was least likely among men who were low in both gender typicality and covert sexism. Also, selection of nontraditional majors was most likely among men who were either low in gender typicality or low in covert sexism. Whereas Tokar and Jome (1998) found that masculinity ideology predicted men's career-related choices, our findings suggest that gender typicality and covert sexism may better predict academic choices. To the extent that men are concerned with conforming to traditional gender norms, this may lead them away from nontraditional fields; conversely, men who do select nontraditional fields likely recognize they are less typical compared to other men. Gender attitudes may also shape the kinds of fields that men view as appropriate for their gender. In support of this interpretation, other studies have found an association between egalitarian or conservative attitudes and selection of certain academic majors: Students in fields that are relatively nontraditional for men, such as psychology or other social sciences, held more egalitarian and less conservative attitudes than did students in fields that are more traditional for men, such as business, math, or engineering (Beere, King, Beere, & King, 1984; Correll, 2001; Doyle & Shahade, 1977; Fernández, Castro, Otero, Foltz, & Lorenzo, 2006; Frehill, 1997; Kimmelmeier, Danielson, & Basten, 2005).

These patterns have implications for the many men and women entering into the business world. Research suggests that business and technology fields tend to foster traditional masculinity ideology (Kendall, 2000). Thus, men's support of traditional masculinity ideology may contribute to the maintenance of a social climate that is hostile to women as well as to nontraditional men (Stockdale, Gandolfo, Schneider, & Cao, 2004; Wade & Brittan-Powell, 2001). Moreover, to the extent that certain fields are viewed as traditional or nontraditional for men, self-presentation concerns with appearing typical may additionally perpetuate gender-typed patterns of achievement among men.

In our last set of analyses, we considered men's academic motivations as possible mediators linking men's gender beliefs and academic choices. Tokar and Jome (1998) indicated that career-related interests mediated the association

between masculinity ideology and occupational choices. Consistent with their report, we found that men's interests in traditional fields fully mediated the association between masculinity and choice of nontraditional major. We additionally found that self-efficacy in nontraditional fields fully mediated the same association. Furthermore, we found that the association between gender typicality and traditional major choice was fully mediated by traditional interests. Thus, men who either endorse traditional masculinity ideology or view themselves as gender-conforming may find traditional fields (e.g., business, physical sciences, technology) more interesting and compatible with their self-concepts. At the same time, they may tend to view themselves as incompetent in nontraditional domains (e.g., literature, arts, behavioral sciences). As a consequence, the likelihood of pursuing a major (and a career) may decrease in nontraditional fields and increase in traditional fields. These possibilities need to be tested more fully in future research. In closing in the next section, we additionally highlight some other areas to explore.

Limitations and Future Directions

When evaluating and interpreting our findings, the reader should consider a few of our study's limitations. First, there were sampling biases that may have affected the results. The participants were comprised of men from predominantly White European American backgrounds. Prior research suggests that masculinity ideology, sexist or gender-egalitarian beliefs, and gender typicality may vary across different ethnic groups (Abreu, Goodyear, Campos, & Newcomb, 2000; Corby, Hodges, & Perry, 2007; Kane, 2000; Levant, Majors, & Kelley, 1998). In future research, we suggest examining whether ethnic identity possibly moderates the influence of masculinity ideology on career-related self-concepts.

Second, our sample was recruited through a psychology research participant pool. This led to a high proportion of psychology majors in the nontraditional major group. In future studies, it may be revealing to recruit larger numbers across different majors. For example, there may be meaningful differences in gender beliefs between psychology, theater arts, and literature majors. Also, some other nontraditional fields

not represented in the present study, such as nursing, deserve attention (e.g., see Evans & Frank, 2003; Lackland & De Lisi, 2001).

Finally, we focused on men's possible selection of major because of its obvious relevance to later career trajectories. This is a limited index given that many college students typically change their major. Also, academic major is only roughly related to later careers. Longitudinal research could clarify the possible relations between adopting particular gender ideologies and their relation to life choices later in life.

In summary, our investigation lends further support to the premise that men's internalization of traditional gender beliefs can constrain the range of desirable career options. This effect may help to explain the relatively small number of men entering feminine-stereotyped fields compared to the dramatic increase of women in historically male-dominated fields (National Science Foundation, 2004). A comparable openness to career options among men would facilitate the creation of a more gender-balanced workforce and a more gender-egalitarian society (Wood & Eagly, 2002). Moreover, it could benefit men's potential for self-actualization (Levant & Richmond, 2007; Pleck, 1995).

Ideally, our society will reach a point when men's and women's career choices reflect their freely developed preferences rather than their adherence to rigid gender norms. Toward this end, research suggests that career counselors and educational administrators can possibly increase some students' interests in nontraditional fields. Interventions aimed at boys and young men might include challenging traditional notions of masculinity (e.g., see Beatty, Syzdek, & Bakkum, 2006), increasing awareness of sexism (e.g., see Case, 2007), normalizing nontraditional fields as acceptable for men (e.g., see Hodgins & Kalin, 1985), and facilitating self-efficacy in nontraditional subjects (e.g., see Turner & Lapan, 2005). Furthermore, as long as certain occupations conflict with traditional gender beliefs, we also need to consider ways to reduce potential stress among men who select nontraditional majors and occupations (e.g., see Rochlen, Blazina, & Raghunathan, 2002; Simpson, 2005).

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