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Traditional Masculinity, Help Avoidance, and Intrinsic Interest in Relation to High School Students' English and Math Performance

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The study tested if endorsement of traditional masculinity was related to gender-related variations in motivation and achievement in English (reading and writing) and math among American high school students. The sample comprised 291 U.S. students from Grades 9 to 12 (55% girls; M = 16 years; 46% White, 23% Asian/Pacific Islander, and 12% Latinx), who completed surveys in their school classrooms measuring intrinsic interest, help avoidance, and grades in English and math, as well as endorsement of traditional masculinity norms (social teasing and emotional restriction). On average, traditional masculinity was endorsed more by boys than girls (d = 0.96). However, a structural equation model confirmed that traditional masculinity was negatively related to English intrinsic interest and positively related to English help avoidance in both boys and girls; and intrinsic interest and help avoidance predicted boys' and girls' English grades. A second model tested traditional masculinity in relation to math motivation and achievement. Traditional masculinity was unrelated to boys' math grades. However, it was indirectly related to girls' math grades via its positive pathways to both intrinsic interest and to help avoidance. The results suggest that rigid endorsement of traditional masculinity norms may undermine some boys' and girls' academic success in a traditionally feminine-stereotyped subject such as English. Conversely, endorsement of traditional masculinity may be related to girls' achievement in a traditionally masculinestereotyped subject such as math. Research is recommended to explore if and how measures of traditional masculinity ideology have similar meanings for girls and boys.

Keywords: masculinity, help seeking, reading achievement, mathematics achievement, academic motivation

Ample research shows that socialization practices stemming from traditional masculinity ideology can have negative implications for boys' and men's development in a variety of life domains (Wong & Wester, 2016). The present study investigated how traditional gender socialization may partly explain the relatively lower achievement of boys compared to girls in language arts (i.e., reading and writing) during high school. Average gender differences in academic performance during high school are seen in

many industrialized nations. In one recent meta-analysis (Voyer & Voyer, 2014), boys attained lower average course grades in high school than did girls. The trend was seen across course subjects (d = .33), although the magnitude of difference was much greater in language arts (d = .47) than in math (d = .11) or science (d = .11).16). In a similar manner, on the standardized Programme for International Student Assessment (PISA) tests taken at age 15 in 65 Organisation for Economic Co-operation and Development nations, girls outperformed boys on reading (d = .44; Reilly, 2012). Researchers have pointed to various factors to explain the development of these average gender differences in literacy achievement (Logan & Johnston, 2010). Among them, academic engagement and motivational processes appear especially influential. Thus, the present study tested if endorsement of traditional masculinity ideology was related to gender-related variations in academic engagement (specifically, willingness to seek help), motivation, and achievement in English and math among U.S. high school students.

As documented in several studies, many average gender differences in achievement are partly mediated through underlying differences in motivation (Eccles, 2014; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Watt, 2004). Students are more likely to excel in subjects that they find intrinsically interesting (Eccles & Wigfield, 2002; Froiland & Oros, 2014; Guo, Marsh, Morin, Parker, & Kaur, 2015; Watt, 2004). However, researchers have observed lower average intrinsic interest in reading and writing among boys than girls; conversely, they have found higher average intrinsic interest in math among boys than girls (Durik, Vida, &

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Eccles, 2006; Jacobs et al., 2002). As explicated in the expectancyvalue model of achievement (Eccles & Wigfield, 2002), students' achievement-related motivation is partly shaped by their genderrole stereotypes and beliefs. That is, children's perceptions of cultural messages about desirable or undesirable behaviors for their gender in-group may influence their goals and self-schemas. In turn, these goals and self-schemas affect children's attitudes toward particular subjects or tasks (also see Tobin et al., 2010 for a related theoretical model linking gender in-group identities, self-concepts, and gender-typed attitudes). The possible relation of traditional masculinity norms to students' attitudes regarding seeking help with language arts (English) or math is reviewed next.

Traditional Masculinity and Academic Achievement

Some commentators have referred to a "boy crisis" when considering the relative underachievement of boys compared with girls in schools (Hoff Sommers, 2000; Sax, 2009). They attribute the problem to the so-called feminization of classrooms (Hoff Sommers, 2000; Sax, 2009). They additionally argue that boys and girls have different learning styles and that typical classrooms are better suited for the learning of girls than boys (Sax, 2009). Also, they have suggested that teachers are biased against boys (Hoff Sommers, 2000). To help address these presumed problems, these critics have advocated for single-gender classrooms (Sax, 2009). However, a recent meta-analysis indicated no meaningful differences in academic achievement between students in single-gender and coeducational classrooms (Pahlke, Hyde, & Allison, 2014). In fact, national trends have not shown a recent decline in boys' school-related outcomes (National Center for Education Statistics, 2015). Boys' standardized test achievement has not declined in the last four decades. Also, boys have graduated high school at lower rates than girls since the 19th century—but this gender gap is narrower today than it was in the past.

There is an alternative interpretation of the relative underachievement of boys that suggests that traditional masculinity (rather than "the feminization of schools") may interfere with some boys' school success (Anderson, 2015; Farkas & Leaper, 2016; Martino & Ingrey, 2016; Vantieghem & Van Houtte, 2015; Verniers, Martinot, & Dompnier, 2016). Traditional masculinity may lead some boys to avoid seeking help in the classroom. Seeking help in a subject is a form of academic engagement (Ryan & Pintrich, 1997). Researchers have found that students generally tend to increase their mastery in subjects when they seek help with difficult material (Butler, 1998; Kiefer & Shim, 2016); in turn, increased mastery can help foster greater interest in a subject (Eccles & Wigfield, 2002). However, as documented in several studies, help avoidance in school was more likely among boys than among girls in general (Kessels & Steinmayr, 2013; Ryan, Patrick, & Shim, 2005). Also, in one study, seeking help with reading in particular was less likely among boys than among girls (Denton et al., 2015).

Traditional masculinity norms may contribute to some boys' reluctance to seek help. Two facets that may be especially pertinent are emotional restriction and social teasing (Oransky & Fisher, 2009). Emotional restriction refers to the norm that boys and men are supposed to hide their feelings and avoid any signs of vulnerability (e.g., "It is hard to respect a guy who shows his feelings"). Social teasing is a related norm among many boys,

which involves the expectation that boys will regularly tease one another ("It is normal for guys to make fun of their friends"). Many boys internalize these prescriptive social norms into their selfconcepts and beliefs (Nosek, Banaji, & Greenwald, 2002). Thus, boys' endorsement of these two facets of traditional masculinity may affect how they cope with academic difficulty in classrooms. In particular, boys may be reluctant to seek help in the classroom when they are concerned about appearing weak and getting teased (Czopp, Lasane, Sweigard, Bradshaw, & Hammer, 1998; Renold, 2001).

Some researchers have found that the personal endorsement of traditional masculinity norms had similar correlates for girls and boys, although boys were much more likely than girls to endorse these norms. First, Ryan and Pintrich (1997) observed that perceived threats from peers (similar to the social teasing norm in traditional masculinity) predicted U.S. adolescent boys' and girls' help avoidance in a math classroom. Also, Kessels and Steinmayr (2013) found that German adolescents' self-ratings of negative masculine-stereotyped characteristics (e.g., aggressiveness) predicted negative attitudes toward help seeking, as well as declines in academic performance during the school year for boys and girls. Finally, Rogers, DeLay, and Martin (2017) reported in a sample of U.S. middle-school children that self-ratings of traditional masculinity (emotional stoicism and toughness) predicted lower academic engagement in boys and girls.

Each of the three prior studies evaluated students' *self-concepts* regarding domains related to masculinity norms (e.g., "I don't show my feelings"). In contrast, the present study considered students' endorsement of traditional masculinity *ideology* ("Guys should not show their feelings"). Whereas the measures of self-concepts in the prior studies are theoretically related to gender attitudes, it is unclear for any particular individuals or groups whether their self-concepts match their gender attitudes. For example, a boy may rate himself high on emotional restriction because he believes that boys should be emotionally restricted; alternatively, he may do so because he is shy. Thus, in the present study, we sought to consider attitudes that were more explicitly tied to students' masculinity beliefs.

Boys' concerns about seeking help may be more salient for some academic subjects than others. Studies of children and adolescents have found that many students stereotype reading and writing as feminine subjects and math as a masculine subject (Cvencek, Meltzoff, & Greenwald, 2011; Guimond & Roussel, 2001; Hadjar & Aeschlimann, 2015; Mendick, 2005; Pansu et al., 2016; Plante, de la Sablonnière, Aronson, & Théorêt, 2013; Sokal, Thiem, Crampton, & Katz, 2009). Therefore, boys who endorse traditional masculinity may be less motivated to seek help in school, and this tendency may be stronger in English compared with that in math. Prior studies generally have not examined whether the academic subject might moderate average gender differences in help avoidance or the associations between particular factors (such as traditional masculinity) and help avoidance.

Hypotheses

In a sample of U.S. high school students from Grades 9 to 12, we investigated possible relations among students' gender, attitudes toward traditional masculinity norms (emotional restriction and social teasing), help avoidance, intrinsic motivation, and school grades separately for English and math. Prior studies have established strong subject-specific links between motivation and achievement (Eccles & Wigfield, 2002).

First, we examined the interrelationships among student traditional masculinity ideology, English help avoidance, English intrinsic value, and English grades—with student gender tested as a moderator. Traditional masculinity ideology was hypothesized to predict lower intrinsic interest and higher help avoidance in English among boys. Also, it was expected that (a) intrinsic interest would be negatively related to help avoidance, and (b) these two variables would predict English grades among all students—but possibly stronger for boys, given English is a relatively femininestereotyped subject, and thereby intrinsic interest and help attitudes may have more impact on their achievement.

Second, we considered an analogous model with traditional masculinity, math intrinsic interest, math help avoidance, and math grades. Because math is a relatively masculine-stereotyped subject, we expected that endorsement of traditional masculinity and math intrinsic interest would be associated positively among boys and negatively among girls. However, traditional masculinity ideology and help avoidance would still be positively related among boys. Furthermore, we expected intrinsic interest and help avoidance would predict English grades in boys and girls.

Method

Sample

Students were recruited from three California public high schools. Among the 291 students who participated, 28 were dropped due to missing values for measures used in the analyses. Thus, the sample used in the analyses comprised 263 students from Grades 9 to 12. These included 161 girls (M = 16.11 years, SD = 1.28) and 102 boys (M = 16.02 years, SD = 1.35). There were no average gender differences in age or grade level. The self-reported ethnic backgrounds of the girls were 45.5% White/European American, 23.0% Asian/Pacific Islander, 12.1% Latinx/Hispanic, 4.2% Middle Eastern, 2.4% South Asian, 1.8% Black/African American, and 11.0% other or mixed. The ethnic backgrounds of the boys were 40.6% White/European American, 23.6% Latino, 19.8% Asian/Pacific Islander, 2.8% Black/African American, and

Table 1						
Descriptive	Statistics	and	Gender	Comparisons	of	Variables

13.2% other or mixed. Based on students' reports, approximately half of the parents had graduated from college (girls: 55% of the mothers and 52% of the fathers; boys: 55% of the mothers and 45% of the fathers).

Procedure

After obtaining institutional review board approval, students were recruited from three public high schools (Grades 9 to 12) in central California. Informed-consent forms were obtained from parents. Also, students were assured that their participation was voluntary and could be discontinued at any time and that their responses would be confidential. Surveys were conducted in school classrooms. The surveys included various questions about their academic-related self-concepts, attitudes, and experiences, as well as their gender role attitudes. Questions about math appeared first, followed by questions about English (i.e., language arts), and then questions about gender attitudes.

Measures

The measures used in the present analyses are described below. Mean scores and Cronbach's α coefficients of internal consistency are presented in Table 1.

English and math help avoidance. The Avoidance of Help Seeking Scale (Ryan & Pintrich, 1997) was used. It comprises six items rated on a 5-point scale (1 = not at all true to 5 = very true). A sample item was "I don't ask for help with my English [math] work, even if the work is too hard to do on my own." Scales for English and math help avoidance had good reliability ($\alpha = .83$ and .84, respectively).

English and math intrinsic interest. Two items from Eccles and Wigfield's (1995) Expectancy-Value Scale were used to measure intrinsic interest separately in English and math. The items were as follows: "In general, I find working on English [math] assignments: [1 = very boring to 5 = very interesting]" and "How much do you like doing English [math]? [1 = not very much to 5 = very much]." Scales for English and math intrinsic interest had good reliability ($\alpha = .89$ and .85, respectively).

Self-reported English and math grades. Self-reported grades are generally considered a close index of students' actual

Descriptive statistics and Geneer Comparisons of variables								
Variable	α	Overall N = 263 M (SD)	Girls n = 161 M (SD)	Boys n = 102 M (SD)	F	р	d	
Traditional masculinity	n/a	2.04 (0.74)	1.75 (0.52)	2.42 (0.84)	91.12	.000	96***	
Emotional restriction	.86	1.71 (0.79)	1.42 (0.53)	2.16 (0.92)	68.41	.000	-1.02^{***}	
Social teasing	.74	2.37 (0.85)	2.07 (0.67)	2.86 (0.91)	69.62	.000	-1.00^{***}	
English help avoidance	.83	1.99 (0.91)	1.86 (0.80)	2.20 (1.04)	9.02	.003	37**	
English intrinsic interest	.89	3.20 (1.25)	3.37 (1.17)	2.92 (1.33)	8.48	.004	.36**	
English grade	.86	3.38 (0.77)	3.47 (0.66)	3.24 (0.91)	5.67	.018	.29*	
Math help avoidance	.84	2.32 (0.92)	2.38 (0.99)	2.25 (0.83)	1.06	.305	.14	
Math intrinsic interest	.85	2.87 (1.23)	2.74 (1.24)	3.09 (1.17)	4.96	.027	29^{*}	
Math grade	.83	3.04 (0.81)	2.98 (0.87)	3.14 (0.68)	2.45	.119	21	

Note. Traditional masculinity is a composite of emotional restriction and social teasing. Cronbach's α levels reflect the internal consistency of scale items. Cohen's *d* indices reflect the magnitude of group difference between girls and boys in standard deviations. Possible English and math grades ranged from 0 to 4.3. All other scales ranged from 1 to 5.

grades (see Kuncel, Credé, & Thomas, 2005 for a pertinent metaanalysis). In the present study, students were asked to report their letter grades in math and language arts (i.e., English) in two questions: "What was your grade in English [math] last semester?" and "On average, how would you describe yourself in English [math]. For example, are you more of an 'A student,' a 'B+ student,' a 'C- student' and so on." For each question, students selected from the letter grades A to F with plus or minus options for letter grades A to D. The responses were converted to grade point averages (A+ = 4.3, A = 4.0, A- = 3.7, etc.). The reported grades for the two questions were strongly correlated in each subject (English, r = .76; math, r = .72); therefore, the average of the grades across the two questions was used for each subject.

Traditional masculinity. Emotional Restriction and Social Teasing are two facets of traditional masculinity assessed using Oransky and Fisher's (2009) Meanings of Adolescent Masculinity Scale. Emotional Restriction was measured with seven items (e.g., "Guys should not talk about their worries with each other"), whereas Social Teasing was measured with five items (e.g., "A guy should be able to take teasing from his friends"). Each item was rated on a 5-point scale (1 = not at all true to 5 = very true). The Emotional Restriction and the Social Teasing scales were strongly correlated, r = .616, p < .001. Therefore, to help reduce the number of statistical analyses, the two subscales were averaged to create a composite traditional masculinity measure (e.g., see Levant, McDermott, Hewitt, Alto, & Harris, 2016; Rogers, DeLay, et al., 2017 for similar approaches).

Results

Bivariate Correlations and Gender Comparisons

Bivariate Pearson correlations among the variables by gender appear in Table 1. Descriptive statistics and gender comparisons based on t tests are presented in Table 2.

Bivariate correlations. As seen in Table 1, several correlations were indicated among the English variables for boys and girls. English grades were negatively related to English help avoidance and positively associated with English intrinsic interest. Also, English help avoidance and English intrinsic value were negatively related. Finally, traditional masculinity (emotional restriction and social teasing) was positively associated with English help avoidance and negatively correlated with English intrinsic interest.

Table 2Bivariate Correlations Among Variables by Gender

In addition, some significant correlations were found among the math variables for boys and girls. Math grades were negatively associated with math help avoidance and positively correlated with math intrinsic interest. Also, math help avoidance and math intrinsic interest were negatively correlated. Traditional masculinity was not significantly related to math grades or math intrinsic interest. Finally, there was a significant positive correlation between traditional masculinity and math help avoidance among girls; the two variables were not significantly correlated among boys.

Gender comparisons. Gender comparisons revealed significant differences as hypothesized with meaningful effect sizes on several measures (Table 2). Compared with girls, boys scored considerably higher on traditional masculinity, lower on English school grades, higher on English help avoidance, lower on English intrinsic interest, and higher math intrinsic interest. No average gender differences were indicated for math help avoidance or math grades.

Testing Hypothesized Model

The R package lavaan for structural equation modeling (SEM) was used to test the hypothesized relationships among adolescents' endorsement of traditional masculinity, help avoidance, intrinsic interest, and grades regarding English and math. A two-step modeling process was followed (Tabachnick & Fidell, 2013). First, we tested the initial theoretical model. Then, we examined modification indices to identify significant paths absent from the model. In addition, a multigroup analysis was conducted to test for possible gender differences in the paths. If the paths significantly differed by gender (indicating a moderation effect), then the paths were kept separate by gender. When the two paths did not significantly differ by gender, the paths were merged.

Model fit was tested using multiple indicators. The χ^2 test of model fit was examined. In addition, the Tucker–Lewis index (TLI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA) were examined. For the χ^2 test, a nonsignificant χ^2 test indicates a good model fit (McDonald & Ho, 2002). For both the TLI and CFI, a value \geq .95 indicates a good model fit, and values \geq .90 indicate an acceptable fit (Hu & Bentler, 1999). For RMSEA, values \leq .06 indicate a good model fit, and values \leq .08 indicate acceptable fit (McDonald & Ho, 2002).

Variable	Traditional masculinity	English avoid help	English intrinsic interest	English grades	Math avoid help	Math intrinsic interest	Math grades
Traditional masculinity English avoid help English intrinsic interest English grades Math avoid help	.24** 18* .04 .16*	.21* 39*** 27*** .19*	$22^{*}61^{***}61^{***}21^{**}17^{*}$	10 45*** .36*** 15	.18 .51*** 25* 28**	14 .13 08 .02 30**	07 .07 16 .19 22*
Math intrinsic interest Math grades	.14 03	.13 01	32*** 20*	.17* .42***	31*** 42***	.48***	.40***

Note. Correlations for boys (N = 102) are above the diagonal, and those for girls (N = 161) are below the diagonal. * p < .05. ** p < .01.

Testing Model Predicting English Motivation and Achievement

First, the hypothesized SEM model with the English motivation and achievement variables was tested. According to indicators, the proposed model was a good model fit, $\chi^2(6, N = 263) = 5.68, p =$.46, TLI = 1.005, CFI = 1.000, RMSEA = 0.000, 95% confidence interval [0.000, 0.001]. Modification indices did not indicate that any paths should be added or removed. Standardized parameter estimates for the structural model are presented in Figure 1. Gender was a significant moderator of the model.

First, the pathways from traditional masculinity to English intrinsic value and avoiding help were similar for girls and boys. These associations were negative and positive, respectively, as predicted. However, the pathway between intrinsic interest and avoiding help significantly differed based on gender (z = 2.65, p = .008). English intrinsic interest was negatively related to avoiding English help in boys and girls, but the association was stronger among boys. Together, traditional masculinity and English intrinsic interest explained 39% of avoiding help in English for boys but only 16% of avoiding help for girls.

Finally, English intrinsic interest and avoiding help in English significantly predicted English grades similarly for girls and boys (positive and negative associations, respectively). Both intrinsic interest and help avoidance explained 14% of English grade for boys and 13% of English grade for girls.

Testing Model Predicting Math Motivation and Achievement

When testing the hypothesized SEM model with the math motivation and achievement variables, the indicators revealed the proposed model had a good fit according to indicators, $\chi^2(5, N =$ 266) = 3.99, p = .55, TLI = 1.003, CFI = 1.021, RMSEA = 0.000, 95% confidence interval [0.000, 0.107]. Standardized parameter estimates for the structural model are presented in Figure 2. According to modification indices, no paths needed to be added or removed. Once again, gender was a significant moderator of the model.

First, traditional masculinity was positively related to avoiding math help similarly for girls and boys. Second, the path between traditional masculinity and math intrinsic interest was significantly different between girls and boys (z = 2.75, p = .006). There was a significant positive relationship with girls and a nonsignificant negative relationship for boys. Traditional masculinity explained

English

Intrinsic

Girls

.25*** (.05)

Boys

(.06)

.08+ (.04)

-.24*** (.06)

English Grade

-.41*** (.12)

.17* (.08)

Traditional

Masculinity

Figure 1. Model with traditional masculinity, English motivation, and achievement.

Avoid Help in English



Figure 2. Model with traditional masculinity, math motivation, and achievement.

2% of math intrinsic interest for boys and 4% of math intrinsic interest for girls. Traditional masculinity and math interest together explained 16% of avoiding help in math for boys and 9% for girls.

Next, the pathway between intrinsic interest and math grade was similarly positive and significant for girls and boys. However, the path between avoiding math help and math grade significantly differed based on gender (z = -2.28, p = .02). The path was significant and negative for girls, whereas it was nonsignificant for boys. Finally, both math intrinsic interest and avoiding help in math explained 21% of math grade for boys and 30% of math grade for girls.

Summary

As expected, the first SEM confirmed the proposed model regarding relationships among endorsement of traditional masculinity, avoiding English help, intrinsic English interest, and English grade. Traditional masculinity was positively related to English interest and negatively related to avoiding English help. These relations were similar for girls and boys. Next, gender moderated the association between English intrinsic interest and avoiding help (stronger for boys than girls). Finally, intrinsic interest and boys.

In the second SEM analysis, traditional masculinity, math intrinsic interest, and help avoidance predicted math grades somewhat differently for girls and boys. Traditional masculinity positively predicted avoiding math help among boys and (unexpectedly) also among girls. However, traditional masculinity *positively* predicted math interest among girls (whereas these variables were not significantly related among boys). Math interest positively predicted math grades similarly in girls and boys. But the pathway between avoiding math help and math grades was significant only for girls (with a negative association). Thus, the model appeared to better predict math grades in girls than boys.

Discussion

The present study investigated traditional masculinity endorsement in relation to gender-related variations in high school students' intrinsic interest, help-avoidance, and achievement in English (language arts) and mathematics classes. Possible predictors of adolescent boys' motivation in English were of particular interest, given cross-national trends for boys to perform worse in this area relative to girls (Reilly, 2012; Voyer & Voyer, 2014). Conversely, the trends have been for smaller average gender differences favoring boys in high school math achievement (Reilly, 2012; Voyer & Voyer, 2014). In the present study, a possible model was tested whereby students' endorsement of traditional masculinity norms (emotional restriction and social teasing) may undermine their intrinsic motivation and willingness to seek help in classrooms, which subsequently may undermine their performance (course grade) in English or math.

In the preliminary analyses, average gender differences in many of the variables were indicated. As previously observed, boys were much more likely than girls to endorse traditional masculinity norms (Levant, Graef, Smalley, Williams, & McMillian, 2008). Other observed average gender differences were consistent with prior reports: Relative to girls, boys scored higher in English help avoidance (Denton et al., 2015), lower in English intrinsic interest (Eccles, 2014), and lower in English school grades (Voyer & Voyer, 2014). Also, similar to other studies, higher average math intrinsic interest was indicated among boys than girls (Eccles, 2014). Furthermore, the bivariate correlations revealed that endorsement of traditional masculinity norms was related to English help avoidance and intrinsic interest in boys and girls.

The study's primary goals were to test hypothesized interrelations among traditional masculinity endorsement, help avoidance, intrinsic interest, and grades in English and math in boys and girls. The impact of motivation on achievement (e.g., grades) is well documented in research guided by the expectancy-value model (Eccles & Wigfield, 2002). Moreover, according to this model, cultural gender stereotypes inform the goals and self-concepts that influence students' academic interests (Eccles & Wigfield, 2002). The analyses examined the extent to which traditional masculinity might predict boys' and girls' academic attitudes and motivations. Also, possible mediators were tested that might underlie average gender differences in academic achievement—especially boys' lower average performance in English and possibly girls' lower average achievement in math.

The general model was based on the premise that average gender differences in English achievement may partly be the result of boys' greater likelihood of endorsing traditional masculinity norms. Specifically, we examined concerns with hiding signs of vulnerability (emotional restriction) and expectations of social teasing (Levant et al., 2016; Oransky & Fisher, 2009). These social norms may lead some boys to avoid help in school due to worries that they may appear weak. Moreover, these concerns might be most salient regarding language arts, which is sometimes perceived as a feminine-stereotyped subject (Plante et al., 2013; Sokal et al., 2009).

SEM was used to evaluate the proposed model separately for English and math. Although boys were much more likely than girls to endorse traditional masculinity ideology, this factor predicted variations in help-avoidance (positive association) and intrinsic interest (negative association) similarly in boys and girls. Moreover, the association between traditional masculinity and English intrinsic interest partly mediated the link between masculinity and help avoidance in English (for both boys and girls, but more strongly for boys). Finally, intrinsic interest and help avoidance in English predicted English grades similarly for boys and girls.

Extrapolating from the results, the endorsement of traditional masculinity ideology may partly explain some boys' lower achievement in English language arts. When boys endorse norms that stress hiding vulnerability and expectations of teasing, they may become reluctant to seek help in the language arts classroom. Also, concerns with appearing masculine may weaken their intrinsic interest and undermine their mastery of the subject. Over time, this may lead to poorer performance and lower grades in language arts (Marchand & Skinner, 2007). In future research, it would be interesting to evaluate whether boys' endorsement of traditional masculinity ideology is related to viewing language arts as a feminine-stereotyped domain.

The stronger association between English intrinsic interest and avoiding help among boys than girls may reflect the overall greater average differences in these variables. In English, boys were appreciably lower in intrinsic interest and higher in help avoidance than were girls. There was also more within-gender variability among boys than girls in these two variables (Table 1). Hence, perhaps willingness to seek help in English may have depended somewhat less on intrinsic interest for girls than for boys. For boys, high intrinsic interest may have helped them overcome any perceived barrier to seeking help in a possibly femininestereotyped domain.

Contrary to our predictions, the pathways from traditional masculinity to intrinsic interest and help avoidance in English were similar for boys and girls. Given English is a relatively femininestereotyped subject, we expected traditional masculinity would be more likely associated with these two variables in boys than girls. Our finding is compatible with prior reports that self-ratings on behaviors associated with traditional masculinity predicted academic engagement and motivation similarly for girls and boys (Kessels & Steinmayr, 2013; Rogers, DeLay, et al., 2017; Ryan & Pintrich, 1997). Because we were assessing prescriptive attitudes toward boys rather than self-concepts, however, we anticipated a stronger set of associations among boys than girls. As addressed later in our discussion, the measure of traditional masculinity may have unexpectedly tapped into girls' attitudes about their own gender in-group.

The hypothesized model was also tested in relation to students' motivation and achievement in math. The model worked better with girls than boys. Traditional masculinity was significantly and indirectly related to girls' math grades. First, traditional masculinity was positively related to girls' avoiding math help. Surprisingly, traditional masculinity ideology also was positively related to girls' math intrinsic interest. Given that math has traditionally been stereotyped as a masculine domain (Cvencek et al., 2011; Guimond & Roussel, 2001; Hadjar & Aeschlimann, 2015; Mendick, 2005; Nosek et al., 2002; Plante et al., 2013), we expected the opposite pattern. However, as suggested earlier, endorsing traditional masculinity norms regarding emotional stoicism and teasing possibly reflected some girls' own self-concepts and interests. That is, some girls may have viewed traditional masculinity norms and math achievement as desirable for themselves or their own gender in-group. This suggested explanation requires testing in future research.

Our model linking traditional masculinity to interest and help avoidance in math was not well-supported for boys. Although traditional masculinity predicted math help avoidance, the latter variable did not predict boys' math achievement. Also, traditional masculinity was not significantly associated with boys' math intrinsic interest. Perhaps math held a similar appeal to boys in our sample regardless of their traditional masculinity, given it is a subject that can appeal to boys who do not adopt traditional masculine norms (e.g., so-called "nerds" [Rentzsch, Schütz, & Schröder-Abé, 2011]).

Conclusions

The present research is possibly the first study to consider gender-related variations in high school students' motivation in both English (i.e., language arts) and mathematics in relation to traditional masculinity and help avoidance. Consistent with previous studies, lower intrinsic interest in English was observed among boys than among girls; yet, this difference was largely explained by boys' greater endorsement of traditional masculinity (emotional restriction and social teasing). Traditional masculinity predicted students' intrinsic interest and help avoidance in English; in turn, intrinsic interest and help avoidance predicted English grades. Unexpectedly, endorsing traditional masculinity was indirectly related to math achievement via associations with interest and help avoidance among girls (but not among boys).

The potential negative impact of traditional masculinity norms on boys' academic achievement has received increasing consideration during the last 15 years (see Farkas & Leaper, 2016 for a review). The present study's findings are compatible with results from two recent longitudinal studies of boys' overall academic achievement. In a study of German high school students (Kessels & Steinmayr, 2013), an association between boys' endorsement of negative masculine-stereotyped characteristics, such as aggressiveness, predicted declines over a 5-month period in academic performance; however, this association was mediated by negative attitudes toward help seeking. Also, in a 1-year longitudinal study of middle-school students in the United States, researchers observed greater endorsement of traditional masculinity norms among boys than girls; in turn, traditional masculinity negatively predicted decreases in boys' and girls' overall school engagement (Rogers, Updegraff, Santos, & Martin, 2017) and math achievement (Santos, Galligan, Pahlke, & Fabes, 2013). Although the present investigation was not a longitudinal study, it complements these other reports in its examination of boys' help-seeking attitudes and intrinsic motivation in both language arts and math.

As revealed in the present study's analyses, boys' traditional masculinity had a more robust relation to their classroom engagement (help avoidance), motivation (intrinsic interest), and achievement (grade) in English than in math. Hence, some boys' concerns with traditional masculinity may affect their interest and willingness to seek help in classroom subjects, such as language arts, that are viewed as counterstereotypical to existing gender norms (Plante et al., 2013; Sokal et al., 2009). However, the path model (and bivariate correlations) additionally suggests that these patterns could also extend to girls who endorse traditional masculinity norms.

Overall, our research findings are consistent with the expectancy-value model of achievement (Eccles & Wigfield, 2002) and the balanced identity model of gender self-socialization (Nosek et al., 2002; Tobin et al., 2010). These models postulate that cultural gender stereotypes shape students' goals and self-concepts, which in turn influence their intrinsic interest in particular subjects or activities. Thus, cultural stereotypes may lead many boys to view language arts (reading and writing) as feminine-stereotyped domains. Boys who internalize traditional masculinity norms may tend to devalue language arts and to avoid

help in language arts classrooms. Over time, these attitudes may undermine their achievement.

Limitations and Future Directions

Although boys were much more likely than girls to endorse traditional masculinity, masculinity ideology was significantly correlated with English help avoidance and intrinsic interest in girls and boys. Perhaps endorsing norms that emphasize social teasing and emotional restriction have similar effects on girls and boys. In prior studies, self-ratings on masculine-stereotyped traits were negatively related to academic engagement and achievement in girls and boys (Kessels & Steinmayr, 2013; Vantieghem, Vermeersch, & Van Houtte, 2014). From the present study, however, it is unclear the extent to which girls were endorsing traditional masculinity (toughness and emotional restriction) in boys, in girls, or all children. The Meanings of Adolescent Masculinity Scale (Oransky & Fisher, 2009) asks respondents to rate their endorsement of various behaviors in "guys" (e.g., "A guy should be able to take teasing from his friends" [emphasis added]). Although one might assume the students would have interpreted "guy" and "his" to refer to men, masculine nouns and pronouns have commonly been used to refer generically to people (Leaper, 2014). In future studies, it would be more helpful to use terms that more explicitly refer to a particular gender or to use truly gender-neutral terms. (The latter approach would be more inclusive for children with nonbinary gender identities.) Moreover, it is advisable to separately measure traditional masculinity self-concepts and attitudes in the same study to consider how much these independently predict other measures.

Another limitation of the present study was its correlational design. Accordingly, it is not possible to infer whether traditional masculinity might lead to increases in English help avoidance and whether help avoidance leads to declines in language arts motivation and performance over time. However, as described earlier, some related longitudinal studies suggest these effects may occur. In one study (Kessels & Steinmayr, 2013), German middle-school students' self-ratings on negative masculinity predicted help avoidance in school and declines in academic performance over 1 year. Another set of reports in the United States (Rogers, Updegraff, et al., 2017; Santos et al., 2013) observed that traditional masculinity norms predicted later declines in classroom engagement and math achievement.

It would be additionally helpful for future studies to consider whether students' ethnic-racial identities and socioeconomic backgrounds affect the relations among traditional masculinity, help avoidance, and academic motivation in particular subjects. Just as gender moderated some of the patterns observed in the present study, so too may other background factors. Traditional masculinity norms may vary somewhat across differing cultural and socioeconomic groups (Ojeda, Rosales, & Good, 2008). Also, traditional norms about seeking help may vary across students from different sociocultural backgrounds (Ryan, Shim, LampkinsuThando, Kiefer, & Thompson, 2009).

Finally, researchers are encouraged to explore possible ways to mitigate boys' concerns with traditional masculinity. As highlighted in a recent meta-analysis, rigid adherence to traditional masculinity norms, such as emotional restriction, can have a negative impact on socioemotional adjustment (Wong, Ho, Wang, & Miller, 2017). The present research and other recent reports point to ways that traditional masculinity may limit the academic success of many boys. Thus, encouraging greater flexibility and gender equality will help all children and youth to explore and develop a broader range of abilities and talents.

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