

# Women and Men Professors as Role Models and Their Effect on Academics' Career Decisions

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This study investigated the perception of role model attributes of women and men sport professors, how these attributes influence the choice of academic role models, and how such role models affect career objectives. The study draws on social cognitive (career) theory. Data were collected with a quantitative online survey ( $N = 792$ ) targeted at major students (under- and postgraduate [ $n = 515$ ], doctoral [ $n = 122$ ]), and faculty members (postdoc researchers [ $n = 43$ ] and professors [ $n = 112$ ]), in sport management/economics/sociology or a general sports-science program in different countries. Data were analyzed by mean comparisons and regression analyses. The results suggest that women perceive women professors as more competent and as better teachers. Women perceive more similarity with women professors, and the intention to imitate the role model seems to influence both women and men in their role model choice. Women's interest in an academic career is positively impacted by women and men role models, while men's career objectives are only influenced by men professors. Implications of the study are that the applied theoretical framework is appropriate for investigating both women's and men's role models and career objectives. Furthermore, the study helps academic policymakers and sport faculty members to understand the importance of professors as role models.

**Keywords:** role model attributes, intention to imitate, social cognitive theory, sport management/economics/sociology, higher education,

Women are more often enrolled in European under- and postgraduate programs than men (Eurostat, 2020), and nearly half of all Ph.D. students in Australia, Canada, the United Kingdom, and the United States are women (UNESCO Institute for Statistics, 2023). Although higher education institutions seem to be equally accessible for women and men in several countries across the globe, the proportion of women decreases when examining moves to higher positions. For example, only 22% of full professors in Germany (Frevert et al., 2022) and 32% of full professors in the United States (American Association of University Women, 2016) are women. In addition, the proportion of women at all levels in academia depends on the discipline and research field. Women are particularly underrepresented in disciplines which are men-dominated, afflicted with masculine stereotypes (Diekman et al., 2010), and associated with quantitative research methods (Bettinger & Long, 2005). Sport science is one of these men-dominated and masculine-characterized fields (Messner, 2002). In this study, three disciplines of sport science are included: sport management, economics, and sociology (SMES).

Each of these three disciplines has a different focus: While sport management focuses on business aspects of sports (Pitts et al.,

2014), sport economics investigates the economic value and impact of the professional sport system (Downward et al., 2019). Meanwhile, sport sociology examines the social and cultural aspects of sport (Wicker et al., 2022). Specifically, among sport management faculties in the United States, 37.7% of full professors are women (Sailofsky et al., 2022). No figures are available for women in the other two disciplines, but women are less often employed as full professors than men in the mother disciplines of economics and sociology (Casad et al., 2022; Lundberg & Stearns, 2019).


To increase the share of women in top positions in men-dominated fields like sport science, previous literature suggests two approaches. First, the perceived lack of fit between women gender stereotypes and men-dominated leadership stereotypes must be reduced (Heilman, 2012). Second, women students and young women faculty members need women role models in science (Cheryan et al., 2012). The latter is important since "people need to know that someone like themselves has been able to achieve success, to encourage them to strive for similar accomplishments" (Lockwood, 2006, p. 36). The relevance of role models and their inspirational effect can be explained with social cognitive theory (Bandura, 1977; Schunk & Usher, 2019). According to this theory, people learn which behavior results in certain associated outcomes by observing and interacting with others (Bandura, 1977; Schunk & Usher, 2019). Thus, women in men-dominated academic disciplines might need women role models, meaning "someone like themselves" (Lockwood & Kunda, 1997, p. 36) of the same gender.

Several studies focused on gender-matching role models and the role of perceived similarity for the choice of a role model. For example, women role models had a positive effect (e.g., higher identification with the discipline, more self-efficacy, changing science-gender stereotypes, and career aspirations) on women in gender-stereotyped disciplines, such as science, technology, engineering, and mathematics (STEM; e.g., Stout et al., 2011; Young

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et al., 2013). Likewise, same-gender role models were more important for women than for men (Lockwood, 2006). On the other hand, there is also evidence that women were more likely to choose other-gender role models than men (Wohlford et al., 2004)—maybe because they interacted with more (potential) men role models during their studies (Lockwood, 2006). In addition, the importance of role models and mentors has also been highlighted in other sporting contexts (Wells & Hancock, 2017), for example, related to women sport coaches (Banwell et al., 2021) and women board members of sport governing bodies (Mikkonen et al., 2021).

The choice of same- or other-gender role models might be influenced by role model attributes. However, it is not clear whether the relevance and perception of these attributes differ between women and men role models. Furthermore, it is not known how women and men choose role models in SMES.

Therefore, this study aims to investigate students' (under- and postgraduate, and doctoral) and faculty members' (postdoc researchers and professors) perceptions of role model attributes of SMES professors in more detail, and how these attributes affect the choice of a woman or man SMES professor as a role model in the men-dominated disciplines of SMES. The first two research questions are as follows: (a) Are there gender differences in the perceptions of role model attributes of women and men SMES professors? (b) How do role model attributes influence women's and men's choice of women and men SMES professors as role models?

Considering the low share of women in leadership positions in academia, it also seems important to understand how students or faculty members in early- and midcareer stages make career decisions. The process of developing academic career interests is theoretically grounded in social cognitive career theory (Lent & Brown, 1996; Lent et al., 1994). The theory states that the presence of role models might be related to career expectations and objectives by shaping people's interests and motivation (Lent et al., 1994). In empirical research, role models had an inspirational effect on behavioral imitation (Nauta & Kokaly, 2001) and positively affected students' attitude toward science and their career objectives (Young et al., 2013). Women role models were especially important for women's career objectives, since they showcased that it is possible to overcome stereotypes and achieve success in a men-dominated discipline (Lockwood, 2006). However, not much is known about this aspect in SMES.

This study seeks to understand the influence of SMES professor role models on career objectives of women and men in SMES by advancing a third research question: (c) How do women and men SMES professors as role models influence career objectives of women and men in SMES? The research questions are answered by analyzing data from a quantitative online survey targeted at people in SMES at different career stages, while previous studies mostly focused on under- and postgraduate students (e.g., Marx et al., 2009; Young et al., 2013). The study contributes to the body of knowledge on academic role models in a gender-stereotyped field like SMES. Furthermore, it enhances our understanding of role model attributes and how professors as role models influence career decisions.

## Literature Review and Theoretical Framework

### Social Cognitive Theory: Role Model Attributes and Role Model Choice

According to social cognitive theory (Bandura, 1977; Schunk & Usher, 2019), the social environment influences learning processes

of individuals. By observing others and interacting with them, individuals not only acquire new skills and knowledge but also learn about certain behaviors and the associated outcomes or consequences (Schunk & Usher, 2019). Individuals are more motivated to learn from persons in their social environment who have status and power (Bandura, 1977), like professors in academia. Those professors can be seen as potential role models for people in earlier (e.g., under- and postgraduate students, and Ph.D. students) and in late-career stages (e.g., postdoc researchers), since they represent how certain behaviors result in "desirable consequences" (Schunk & Usher, 2019, p. 13), such as career success and reputation.

The relevance of academic role models is underlined by research on women's experiences at sport management faculties, highlighting that women search for support systems and networks with other women as a coping strategy for their minority status (Morris et al., 2019). These women were aware that academic sport disciplines and sports in general are highly gendered (Morris et al., 2019). Therefore, education about the importance of gender-diverse faculties is needed (DeLuca et al., 2022), for example, by offering students women role models. In addition, increasing the share of women role models at SMES faculties might help younger women academics to resist the "chilly climate" (Murphy et al., 2023, p. 1) in men-dominated sport disciplines.

Role models are persons to whom individuals "look up to and desire to be like" (Hurd & Zimmerman, 2011, p. 2399) and who "inspire them to set ambitious goals" (Morgenroth et al., 2015, p. 465). In previous studies, role models had a wide range of effects on observers like students, such as improved performances on tasks (Marx et al., 2009), stronger identification with a discipline (O'Brien et al., 2017; Shin et al., 2016), and assistance in setting career objectives (Young et al., 2013). The motivational effect of role models is especially important for individuals who study or work in disciplines in which their group (e.g., gender and race) is underrepresented (Schunk & Usher, 2019). Previous literature suggests that individuals select role models based on their perceived achievements or competencies (Lockwood, 2006), the perceived similarity between the role model and the individual (Marx & Ko, 2012), and the related intention to imitate the behavior of the role model (Nauta & Kokaly, 2001). Someone who embodies a combination of desired attributes is most likely to be chosen as a role model (Morgenroth et al., 2015).

Starting with role models' achievements and competence, Lockwood and Kunda (1997) found that role models who had outstanding success in a discipline or domain were perceived as inspiring to individuals who were also interested in the same discipline or domain. The achievements of a role model within a stereotyped discipline seem to be even more important for women. For example, an indicator for a role model's achievements was the number of publications in scientific journals (Wright et al., 1997). The presence of a successful woman role model in a men-dominated discipline is seen as an indicator for being able to overcome gender stereotypes (Lockwood, 2006). However, McIntyre et al. (2011) found that women role models only have a positive effect on women students' performance on a math test when the students perceived the role models' success as deserved and achieved by own efforts. Furthermore, competence is a key attribute in social cognitive theory to explain learning processes (Schunk & Usher, 2019), and it is also central for the selection of an academic role model (Marx & Ko, 2012). Professors can be perceived as academic role models by demonstrating professionalism, research skills, and teaching skills to potential observers like students (Beres & Dixon, 2014). For example, teaching skills

include communicativeness, as well as the ability to promote interest in research and to explain difficult topics (Wright et al., 1997). Outstanding achievements and competencies might also be relevant for students and faculty members in SMES. Previous research focused on competencies while lacking the relevance and the concrete components of outstanding achievements of role models. Such studies do not exist in SMES but are needed to understand how individuals choose SMES professors as role models. This understanding might help to create SMES role models and point out not only competencies but also achievements which might be important to observers in SMES. Finally, Porter and Serra (2020) highlighted the need to investigate attributes (e.g., success and impressive career) of women role models in men-dominated academic disciplines.

Next to role models' achievements and competencies, research suggests that "individuals and role models need to share an identity in order for them to benefit from role model exposure" (Marx & Ko, 2012, p. 808). This perceived similarity means that role models must be seen as "successful members of one's own group" (McIntyre et al., 2011, p. 301). While some studies investigated similarity based on a shared race (e.g., Marx & Goff, 2005; Marx et al., 2009), most studies focused on similarity based on shared gender (e.g., Bettinger & Long, 2005; Drury et al., 2011). According to social cognitive theory, the observation of a same-gender role model conveys the feeling that the observed behavior is appropriate for that gender (Schunk & Usher, 2019).

Women indicated that gender is important for their role model choice (Lockwood, 2006). Furthermore, Drury et al. (2011) found that perceived similarity is central for the retention of women in STEM disciplines. Women students' identity with science was positively influenced by the identification with a woman professor role model (Young et al., 2013). Likewise, perceived dissimilarity due to stereotypical men role models had a negative effect on women's interest and sense of belonging to the discipline (Asgari et al., 2012). Thus, same-gender role models seem to be more important for women than for men. This assumption is supported by numerous studies. For example, women students perceived women professors as more positive role models than men professors (Young et al., 2013), and women performed better on a math test when they were exposed to a woman role model before the test (Marx & Roman, 2002). In addition, women who perceived greater similarity to women faculty members than to men faculty members felt more self-efficacy in math (Stout et al., 2011).

The intention to imitate a role model is the third attribute (Nauta & Kokaly, 2001). Social cognitive theory states that individuals in social environments select the behaviors they want to observe and learn what they believe will help them achieve their personal goals (Schunk & Usher, 2019). Thus, the choice of a role model depends on the individual's interests, as well as the relevance and benefit of the role model depending on the outcome expectations (Schunk & Usher, 2019). Previous studies only examined the intention to imitate a role model in the context of students' academic decisions (Nauta & Kokaly, 2001).

### Social Cognitive Career Theory: Career Objectives and Role Models

Based on social cognitive theory (Bandura, 1977), social cognitive career theory explains the process of academic career interest development and academic career choices (Lent & Brown, 1996). In social cognitive career theory, individuals' beliefs, outcome expectations, and personal goals are considered important

to career development (Lent et al., 1994). Furthermore, contextual factors, such as the presence or lack of a role model, have an indirect influence on career objectives and outcomes by influencing an individual's interests, self-efficacy, and outcome expectations (Lent et al., 1994). Thus, individuals make career choices by observing others and learn from them, meaning that role models play an important role in career development (Hackett & Betz, 1981).

Social cognitive career theory has been applied to the context of athletes' career planning (e.g., Wendling & Sagas, 2020) as well as to women's career objectives in sport. For example, studies suggest that women are underrepresented in sports science undergraduate programs in Spain (Serra et al., 2019), elite sports coaching (Cunningham et al., 2007), and in management positions in athletic departments (Wells & Kerwin, 2017) due to negative expectations about their potential career success (Clopton, 2015). Through the lens of social cognitive career theory, Wasend and LaVoi (2019) addressed how women were more likely to remain in coaching when they had a woman head coach during their active playing careers.

Previous studies in the academic context focused mostly on women's academic career development (Zacher et al., 2019) and their role models in this process. These studies resulted in mixed evidence about the effects and relevance of same-gender and other-gender role models. First, there is evidence that the simple presence of a role model, regardless of gender, was already positively related to students' sense of belonging to their major (Shin et al., 2016) and career objectives (Young et al., 2013). Erkut and Mokros (1984) concluded that women college students "neither gravitate toward nor avoid female role models" (p. 399). Second, women and men faculty role models were equally effective in developing women's interest in computer science (Cheryan et al., 2012). Third, the majority of studies indicated the advantage of same-gender role models.

Studies suggest that women role models are already important for adolescents, since girls had higher STEM career success expectations after they participated in an intervention with a woman role model (González-Pérez et al., 2020). Same-gender role models were also considered important for women in tertiary education. For example, women faculty role models had a positive effect on women students' major choice (Ashworth & Evans, 2001). Women students' anticipated career success in computer science was lower after they interacted with a stereotypical man role model compared to a nonstereotypical woman role model (Cheryan et al., 2011). Furthermore, the presence of an academic woman role model increased women's interest in a discipline (Bettinger & Long, 2005) and their preference for a career in STEM (González-Pérez et al., 2020). Same-gender role models increased women's role model identification, ultimately resulting in a higher intention to pursue an academic career in a men-dominated discipline like STEM (Van Camp et al., 2019). In the men-dominated discipline of economics, the likelihood that women students majored in economics increased by 8% after they were exposed to successful women faculty members (Porter & Serra, 2020). Likewise, same-gender role models seem to be important for men in academia. Men faculty members had a positive influence on men students' major choice (Rask & Bailey, 2002), and men students with a man professor role model were also more likely to major in a typically women-dominated discipline. Erkut and Mokros (1984) studied women and men college students and reported that men avoid women professor role models and prefer men professors. These results indicate that same-gender role

models seem to be important for nonstereotypical career objectives for both women and men (Bettinger & Long, 2005).

The present study further investigates the relevance of women and men SMES professor role models for career objectives of women and men students and faculty members within SMES. This is necessary since previous studies were mostly case studies or had small sample sizes (Bettinger & Long, 2005). Additionally, no study has yet investigated the effects of women or men SMES professor role models on career objectives in SMES. Finally, only a few studies considered men within a discipline in their study samples (e.g., Erkut & Mokros, 1984; Nauta & Kokaly, 2001).

## Methods

### Data Collection

Data were collected using a quantitative online survey of under- and postgraduate students in SMES or a sports science major, Ph.D. students, postdoc researchers, and professors in SMES. The sample included individuals at different career stages, since role models are considered important to individuals throughout their careers (Gibson & Barron, 2003) and given the evidence that middle- and late-stage people choose their role models based on other attributes than people in early career stages (Gibson, 2003). The ethics committee of the university at which this study was conducted approved the questionnaire (registration number EUB-2022-048-S). It was programmed on the platform [www.soscisurvey.de](http://www.soscisurvey.de), and data collection lasted from June 2022 to January 2023. The distribution of the survey link happened after seven conferences in these disciplines via Twitter and emails were sent to conference attendees asking for their participation. Furthermore, approximately 300 emails were sent to academics in SMES at universities in Australia, Austria, Canada, Germany, Switzerland, the United Kingdom, and the United States. They were asked to participate themselves but also to share the survey link with their students.

In total, 809 participants finished the survey. However, some cases had to be deleted during the data cleaning process due to missing plausibility or validity. For example, some respondents

provided the same answer to consecutive questions, indicating that they rushed through the survey. Additionally, respondents who indicated their gender as diverse or other ( $n = 2$ ) were removed from the data set since the subsample was too small to be included in the analysis. The removal of these cases resulted in a final sample size of  $N = 792$  observations, including 468 men and 324 women, and people at different career stages: under- and postgraduate students ( $n = 515$ ), Ph.D. students ( $n = 122$ ), postdoc researchers ( $n = 43$ ), and professors ( $n = 122$ ). Table 1 displays the sample characteristics of the full sample, while further analysis is conducted with the subsamples of women and men students and faculty members in SMES.

### Questionnaire and Variables

The questionnaire started with information about the purpose of the study, anonymity, and confidentiality of data collection and treatment, scientific usage, and publication of data, ethical conduct, and voluntary participation. Participants had to indicate consent to participate before they could begin the questionnaire. Table 2 shows all variables used in the analysis. Starting with role model variables, respondents indicated the number of women and men SMES professors they considered role models. This question resulted in four variables: Two dummy variables captured whether respondents had at least one woman (W\_RM), or one man (M\_RM) SMES professor as role model, while two continuous variables measured the corresponding number of role models (No. W\_RM; No. M\_RM).

The perception of role model attributes was assessed with the same item battery for women and men SMES professors (Table 3). Respondents indicated their agreement to professors' outstanding achievements and competencies, perceived similarity between themselves and SMES professors, and intention to imitate SMES professors on a 5-point Likert-type scale. The scale for outstanding achievements and competencies consisted of 11 items and reflected aspects like success, competence, teaching skills, and leadership qualities. These items were based on previous research and were found to be important for the selection of a role model (Lockwood,

**Table 1 Full-Sample Characteristics (N = 792)**

Variable	Description and codes	<i>n</i>	Share of respondents (%)	<i>M</i>	<i>SD</i>
Student	Respondent is an under- or postgraduate student (1 = yes)	515	65.0	0.650	—
Ph.D. student	Respondent is a Ph.D. student (1 = yes)	122	15.4	0.154	—
Postdoc	Respondent is a postdoc researcher (1 = yes)	43	5.4	0.054	—
Professor	Respondent is a professor (1 = yes)	112	14.1	0.141	—
Management	Sport management is part of respondent's study/research (1 = yes)	525	66.3	0.663	—
Economics	Sport economics is part of respondent's study/research (1 = yes)	307	38.8	0.388	—
Sociology	Sport sociology is part of respondent's study/research (1 = yes)	398	50.3	0.503	—
Science attitude	Science attitude index (1–5)	—	—	3.23	0.96
Age	Age (years)	—	—	27.70	10.35
Germany	Respondent studies/works at a university in Germany (1 = yes)	480	60.6	0.606	—
United States	Respondent studies/works at a university in the United States (1 = yes)	141	17.8	0.178	—
Canada	Respondent studies/works at a university in Canada (1 = yes)	62	7.8	0.078	—
Australia	Respondent studies/works at a university in Australia (1 = yes)	26	3.3	0.033	—
Austria	Respondent studies/works at a university in Austria (1 = yes)	24	3.0	0.030	—
United Kingdom	Respondent studies/works at a university in the United Kingdom (1 = yes)	23	2.9	0.029	—
Other country	Respondent studies/works at a university in another country (1 = yes)	36	4.5	0.045	—

**Table 2 Overview of Variables and Summary Statistics of Subsamples**

Variable	Description and codes	Women (n = 324)		Men (n = 468)	
		M	SD	M	SD
Role model variables					
Woman role model	Respondent has a woman professor as role model (1 = <i>yes</i> )	0.361	—	0.299	—
Man role model	Respondent has a man professor as role model (1 = <i>yes</i> )	0.354	—	0.361	—
No. of women role models	Number of women professors as role models	1.18	2.03	0.86	1.66
No. of men role models	Number of men professors as role models	0.96	1.57	1.09	1.78
Women_Achievements	Woman professor role model achievements index (1 = <i>strongly disagree</i> ; 5 = <i>strongly agree</i> [1–5])	3.81	0.61	3.73	0.63
Men_Achievements	Man professor role model achievements index (1–5)	3.70	0.61	3.71	0.58
Women_Similarity	Woman professor role model similarity index (1–5)	3.42	0.87	3.11	0.76
Men_Similarity	Man professor role model similarity index (1–5)	2.78	0.75	3.21	0.76
Women_Imitation	Woman professor role model intention to imitate index (1–5)	2.92	1.16	2.75	1.10
Men_Imitation	Man professor role model intention to imitate index (1–5)	2.76	1.09	3.06	1.13
Career objectives					
Academic_Career	Respondent wants to pursue/continue an academic career (1–5)	2.98	1.44	3.00	1.49
Uni_Longterm	Respondent wants to work at a university in the long term (1–5)	2.72	1.46	2.84	1.54
Become_Prof	Respondent wants to become a professor (1–5)	2.21	1.40	2.39	1.43
Individual characteristics					
Student	Respondent is an under- or postgraduate student (1 = <i>yes</i> )	0.645	—	0.654	—
Ph.D. student	Respondent is a Ph.D. student (1 = <i>yes</i> )	0.151	—	0.156	—
Postdoc	Respondent is a postdoc researcher (1 = <i>yes</i> )	0.056	—	0.053	—
Professor	Respondent is a professor (1 = <i>yes</i> )	0.148	—	0.137	—
Management	Sport management is part of respondent's study/research (1 = <i>yes</i> )	0.685	—	0.647	—
Economics	Sport economics is part of respondent's study/research (1 = <i>yes</i> )	0.290	—	0.455	—
Sociology	Sport sociology is part of respondent's study/research (1 = <i>yes</i> )	0.543	—	0.474	—
Science attitude	Science attitude index (1–5)	3.22	0.98	3.25	0.95
Age	Age (years)	27.30	9.90	27.98	10.66
Germany	Respondent studies/works at a university in Germany (1 = <i>yes</i> )	0.596	—	0.613	—
United States	Respondent studies/works at a university in the United States (1 = <i>yes</i> )	0.179	—	0.177	—
Canada	Respondent studies/works at a university in Canada (1 = <i>yes</i> )	0.111	—	0.056	—
Australia	Respondent studies/works at a university in Australia (1 = <i>yes</i> )	0.022	—	0.041	—
Austria	Respondent studies/works at a university in Austria (1 = <i>yes</i> )	0.040	—	0.024	—
United Kingdom	Respondent studies/works at a university in the United Kingdom (1 = <i>yes</i> )	0.019	—	0.036	—
Other country	Respondent studies/works at a university in another country (1 = <i>yes</i> )	0.034	—	0.053	—

2006; Marx & Ko, 2012; Wright et al., 1997). The construct reliability was measured with Cronbach's alpha, which is .890 for women SMES professors and .879 for men SMES professors. Both values were above the threshold of 0.7, suggesting strong construct reliability (Andrew et al., 2011). For the analysis, a mean index was calculated for both women and men SMES professors (W\_RM\_Achievements; M\_RM\_Achievements).

Perceived similarity was measured with four items, which had already been used in previous studies (Lockwood, 2006; Young et al., 2013). For the purpose of this study, the items were adapted to the context of SMES professors. The scale included a reverse-coded item (Table 1) which was recoded before the analysis. With a Cronbach's alpha of .792 (women professors) and .778 (men professors), respectively, the scale can be considered reliable.

A mean index variable was calculated for both genders (W\_RM\_Similarity; M\_RM\_Similarity).

Respondents' intention to imitate the role models was measured with three items from the Influence of Others on Academic and Career Decisions Scale which was developed and validated by Nauta and Kokaly (2001). Since one item ("There is no woman/man professor particularly inspirational to me in my academic or career path I am pursuing") was removed due to the Cronbach's alpha being higher without this item, the final scale consists of two items. Cronbach's alpha of .700 for women SMES professors met the desired threshold, while the value of .685 for men SMES professors was slightly below this threshold, but still considered acceptable for scales with <10 items (Hair et al., 2018). Again, two mean indices were calculated (W\_RM\_Imitation; M\_RM\_Imitation).

**Table 3** Role Model Attributes Scales for Women and Men SMES Professors (1 = *Strongly Disagree*; 5 = *Strongly Agree*; N = 792)

Item	Women professors		Men professors	
	M	SD	M	SD
Achievements/competencies: <i>Women/men professors in sport economics/management/sociology</i>				
Are competent	4.19	0.88	4.01	0.84
Have success in their research field	3.97	0.86	3.97	0.79
Are good teachers and supervisors	4.10	0.89	3.72	0.90
Are good presenters	3.99	0.91	3.69	0.91
Publish many articles in academic journals	3.56	0.92	3.75	0.88
Generate high income from research grants	3.14	0.90	3.32	0.92
Are well known for their research	3.32	0.95	3.57	0.91
Have power in their faculty	3.32	0.93	3.72	0.88
Have leadership abilities	3.87	0.91	3.66	0.87
Have the ability to promote interest in their research	3.82	0.91	3.70	0.90
Act morally and ethically correct	4.12	0.90	3.72	0.92
Women_Achievements/Men_Achievements (index)	3.76	0.62	3.71	0.59
Cronbach's alpha	.890		.879	
Similarity				
I am similar to <i>women/men</i> professors in sport economics/management/sociology	3.09	1.07	2.94	1.05
I am dissimilar to <i>women/ men</i> professors in sport economics/management/sociology (reverse) <sup>a</sup>	3.03	1.04	3.20	1.01
I admire and identify with <i>women/men</i> professors in sport economics/management/sociology	3.32	1.09	3.11	1.02
I view <i>women/men</i> professors in sport economics/management/sociology as experts I can identify with	3.59	1.01	3.31	0.97
Women_Similarity/Men_Similarity (index)	3.24	0.82	3.04	0.78
Cronbach's alpha	.792		.778	
Intention to imitate				
There is a <i>woman/man</i> professor I am trying to be like in my academic or career pursuits	2.92	1.24	2.89	1.20
I have a <i>woman/man</i> professor as a mentor in my academic or career field	2.73	1.34	2.99	1.36
Women_Imitation/Men_Imitation (index)	2.82	1.13	2.94	1.12
Cronbach's alpha	.700		.685	

Note. SMES = sport management, economics, and sociology.

<sup>a</sup>Item recoded into 1 = *strongly agree*; 5 = *strongly disagree*.

Concerning career objectives, respondents indicated their agreement to three items on a 5-point Likert-type scale. The first question asked if they want to pursue (all students and postdoc researchers) or continue (professor) an academic career (Academic\_career). Second, all respondents answered if they want to work at a university in the long term (Uni\_Longterm). Third, all respondents except professors indicated if they want to become a professor (Become\_Prof). These items were adapted from Young et al. (2013). The decision to exclude professors but not postdoc researchers was based on previous studies indicating that the postdoc career stage is a critical time, especially for women with family responsibilities (Preston, 2004). Women professor role models might showcase that women can have a future in academia (Schick Case & Richley, 2013), even though they were generally less likely to occupy leadership positions such as a full professorship (Casad et al., 2022).

Several individual characteristics were included in this study. Respondents classified themselves into the groups of (under- or postgraduate) *Students*, *Ph.D. students*, *Postdoc researchers*, and *Professors*, resulting in four dummy variables. Furthermore, respondents were asked if SMES is part of their study or research,

leading to three additional dummy variables. Three items captured respondents' attitude toward science following Young et al. (2013). With a Cronbach's alpha of .786 (women respondents) and .736 (men respondents), the scale was considered reliable, and a mean index was obtained (Table 4). Furthermore, respondents indicated their *Age* and the country in which they were studying or working at a university, resulting in seven dummy variables.

## Empirical Analysis

The empirical analysis consisted of three steps. First, descriptive statistics provided an overview of the two subsamples of women and men respondents. Second, mean values for women's and men's perception of role model attributes for women and men SMES professors were compared and tested for differences with the Mann-Whitney *U* test. This test is nonparametric, meaning that a normal distribution is not necessary, and appropriate for the present ordinal data (MacFarland & Yates, 2016). Third, four logistic and four log-linear regression models were estimated to investigate the impact of role model attributes and individual characteristics on the choice and number of women and men

**Table 4 Science Attitude Scale for Women and Men in Sport Management, Economics, and Sociology (1 = Strongly Disagree; 5 = Strongly Agree)**

	Women ( <i>n</i> = 324)		Men ( <i>n</i> = 468)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I very much like doing science	3.37	1.19	3.41	1.20
In general, I find science work very interesting	3.55	1.14	3.64	1.13
I spend time on science work because I have to (reverse) <sup>a</sup>	2.75	1.17	2.70	1.18
Science attitude (index)	3.22	0.98	3.25	0.95
Cronbach's alpha	.786		.736	

<sup>a</sup>Item recoded into 1 = *strongly agree*; 5 = *strongly disagree*.

SMES professors as role models by women and men. The log-linear models were estimated with the logged number of women and men role models as dependent variable. The logarithmic transformation of these variables was necessary to normalize the left-skewed distribution (Nirval Ravi Kumar, 2020). Fourth, a set of linear regression models were estimated to investigate the impact of women and men SMES professor role models on women's and men's career objectives.

Before estimating the regression analyses, all potential independent variables were tested for multicollinearity using correlation analyses and variance inflation factors. Even though all variance inflation factors were below the critical threshold of 10 (Hair et al., 2018), several correlations required adjustments to the regression models. First, the indices for women and men achievements were highly correlated. Therefore, the attributes of women and men role models were included in separate models. Second, age was highly correlated with being a student and therefore removed. Third, since having a woman role model was highly correlated with having a man role model as well as with the number of women and men role models, separate models were estimated in Step 4. All regression models were calculated with heteroscedasticity robust standard errors.

## Results

Table 1 shows the descriptive statistics for the full sample and Table 2 for the women and men subsamples. The average age in the total sample was 27 years, and 59.6% of respondents studied or worked at a university in Germany. Two-thirds (65.0%) of respondents were students, 15.4% Ph.D. students, 5.5% postdoc researchers, and 14.1% professors. Sport economics was more often part of men's study or research (45.5%) compared with women respondents (29.0%). Contrary, sport sociology and sport management were more often studied or researched by women (54.3% and 68.5%) than by men (47.4% and 64.7%). Turning to role models, 36.1% of women had a woman SMES professor as a role model and 35.4% of women had a man SMES professor as a role model. One-third of men respondents (29.9%) had a woman SMES role model, while 36.1% of men mentioned a man SMES professor role model. For career objectives, women and men indicated almost equal mean values for pursuing or continuing an academic career (2.98 vs. 3.00 on a scale from 1 to 5). On average, men indicated their wish to work at a university in the long term with 3.00, compared with women with a mean of 2.72. Men rated their wish to become a professor with 2.39 on a scale from 1 to 5, while the mean value for women was 2.21.

Table 5 shows the results of the Mann-Whitney *U* test for women's and men's perception of role model attributes for women and men SMES professors. Starting with outstanding achievements, women SMES professors' competencies, teaching/supervision, presentation skills, and moral/ethical behavior were rated significantly higher by women than by men. Contrary, men rated women SMES professors' skills to generate income from grants significantly higher than women. Furthermore, men found women SMES professors significantly more well known than women. Women ascribed leadership qualities and moral/ethical behavior significantly more to women SMES professors than men did. For the achievements of men professors, the *U* test only revealed one significant difference in the perception of women and men students and faculty members: Men rated the moral/ethical behavior of men SMES professors higher than women.

For perceived similarity, the mean values of women respondents were higher for women SMES professors, while those of men respondents were higher for men SMES professors. These differences were significant, meaning that women perceived more similarity with women SMES professors and men perceived more similarity with men SMES professors. Men felt similar to women SMES professors (2.92) than women did to men SMES professors (2.54). Women wanted to be more like a woman SMES professor than men, while men wanted to be more like men SMES professors than women. Men indicated stronger agreement to having a man SMES professor as mentor than women. Women were more likely to have a man SMES professor as a mentor than a woman SMES professor (2.85 and 2.78, respectively).

Table 6 shows the regression results for the choice and number of women and men SMES professors as role models by women and men. Higher perceived similarity with the man SMES professor increased men's likelihood of choosing a man SMES professor role model. A higher intention to imitate a woman SMES professor significantly increased women's and men's likelihood of having a woman SMES professor role model. Furthermore, the higher intention to imitate a woman SMES professor had a significant positive effect on the number of women SMES professor role models, for both women and men. Likewise, women and men with a higher intention to imitate a man SMES professor were more likely to have a man SMES professor role model. While a higher intention to imitate a man SMES professor was related to a higher number of men SMES professors as role models for women respondents, the effect was not significant for men respondents.

Men Ph.D. students were more likely to have a woman SMES professor role model than men under- and postgraduate students. The same effect for men Ph.D. students was evident for a higher

**Table 5 Differences Between Average Women's (n = 324) and Men's (n = 468) Perception of Role Model Attributes for Women and Men Sport Management, Economics, and Sociology Professors**

Items	Women professors			Men professors		
	Women	Men	$z^a$	Women	Men	$z^a$
Achievements/competencies						
Competence	4.34	4.08	-4.128***	4.03	4.00	-0.387
Success	4.04	3.93	-1.728	4.02	3.94	-1.528
Good teachers/supervisors	4.24	4.01	-3.775***	3.65	3.77	-1.654
Good presenters	4.10	3.91	-3.088**	3.63	3.73	-1.235
Many publications	3.51	3.60	-1.361	3.76	3.74	-0.783
Income from grants	3.06	3.19	-2.359*	3.38	3.28	-1.649
Well known	3.25	3.37	-2.213*	3.60	3.54	-1.403
Power	3.27	3.36	-1.497	3.75	3.70	-1.164
Leadership qualities	4.03	3.77	-4.072***	3.64	3.67	-0.589
Promote interest in research	3.84	3.80	-0.902	3.70	3.70	-0.028
Moral/ethical behavior	4.24	4.04	-3.023**	3.63	3.78	-2.167*
Perceived similarity						
Similar to professor	3.34	2.92	-5.603***	2.54	3.22	-9.052***
Dissimilar to professor ( <i>r</i> )	3.20	2.80	-5.069***	2.62	2.92	-4.279***
Admire/identify with professor	3.49	3.19	-3.753***	2.92	3.24	-4.142***
See professors as experts	3.66	3.54	-2.208*	3.07	3.48	-5.759***
Intention to imitate						
Trying to be like professor	3.07	2.82	-2.772**	2.68	3.04	-4.112***
Professor as mentor	2.78	2.69	-0.835	2.85	3.10	-2.454*

<sup>a</sup>Results of the Mann-Whitney *U* test.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

number of women SMES professors as role models. Furthermore, women professors were more likely to have a woman SMES professor role model and a higher number of women SMES professor role model than women students. Men respondents who studied or worked in sport management had significantly more women SMES professor role models. Furthermore, a higher science attitude had a positive effect on the likelihood that men had a woman SMES professor role model.

Men respondents who studied or worked in the United States or Australia were more likely to have a woman SMES professor role model than men respondents from Germany. Furthermore, the dummy variables for the United States and Australia turned significant in Models 3b and 4b, indicating that men from these two countries were more likely to have a man SMES professor as a role model and also a higher number of men SMES professors as role models than those studying or working in Germany. Women who studied or worked at a university in Canada had a higher likelihood to have a man SMES professor role model compared with women from German universities.

Table 7 displays the regression results for the impact of SMES professor role models on women's and men's academic career objectives. Starting with the wish to pursue or continue an academic career, having a woman SMES professor role model had a significant positive effect for the women subsample, while a man SMES professor role model had a positive effect for men. Furthermore, higher numbers of women and men SMES professor role models had a significant positive effect on women's interest in an academic career. Women's interest to work at a university in the long term was higher when they had a SMES professor as a role

model, regardless of gender. Both women and men SMES professors had a significant positive impact. Furthermore, a higher number of women or men SMES role models resulted in a stronger intent to work at a university. Finally, while having a man or woman SMES role model as well as a higher number of SMES role models was positively related to the wish to become a professor for women respondents, significant effects for men SMES professors were only evident in Models 14b and 16b in the men subsample.

## Discussion

The aim of this study was to investigate students' and faculty members' perception of role model attributes of women and men SMES professors and how these attributes are related to the choice of a woman or a man SMES professor role model. Furthermore, the study examined the impact of women and men SMES professor role models on academic career objectives of women and men in SMES.

### Perception of Role Model Attributes

Starting with outstanding achievements and competencies, women SMES professors were perceived by both genders as being more competent, better teachers/supervisors, presenters, and leaders, better in promoting interest in research, and moral/ethical than men professors. In contrast, men SMES professors scored higher on having many publications, generating income from research grants, being well known, and having power in the faculty. These



**Table 6 Regression Results for the Choice and Number of Women and Men Sport Management, Economics, and Sociology Professors as Role Models by Women and Men**

	Women (n = 324)				Men (n = 468)			
	1a: Woman role model	2a: No. of women role models (log)	3a: Man role model	4a: No. of men role models (log)	1b: Woman role model	2b: No. of women role models (log)	3b: Man role model	4b: No. of men role models (log)
Women_Achievements	.058	.114	—	—	.018	.029	—	—
Men_Achievements	—	—	.003	-.001	—	—	.014	.059
Women_Similarity	.021	.023	—	—	.031	.043	—	—
Men_Similarity	—	—	.016	.039	—	—	.065*	.041
Women_Imitation	.143***	.213***	—	—	.125***	.187***	—	—
Men_Imitation	—	—	.166***	.183***	—	—	.121***	.177
Student	REF	REF	REF	REF	REF	REF	REF	REF
Ph.D. student	.142	.195	.077	.089	.209***	.293**	.094	.143
Postdoc	.123	.284	.057	.123	.136	.262	.035	.077
Professor	.280***	.448**	.174	.266	.023	.182	-.033	-.024
Management	.057	.132	.094	.128	.057	.123*	.015	.001
Economics	.032	-.001	.038	.095	.056	.035	.029	.071
Sociology	.032	.059	-.065	-.028	.015	.083	.002	-.001
Science attitude	-.048	-.060	-.022	-.028	.054*	.053	.041	.083*
Germany	REF	REF	REF	REF	REF	REF	REF	REF
United States	.023	-.054	-.042	-.068	.169**	.097	.271***	.429***
Canada	-.002	-.086	.155*	.115	-.025	-.167	.075	.026
Australia	.001	-.308	-.089	-.134	.192**	.232	.294***	.335*
Austria	.202	.436	.103	.369	.088	.161	.149	.319
United Kingdom	.189	.067	.163	-.047	-.069	-.087	.050	-.083
Other_country	.118	.047	.128	.085	.005	-.077	.026	.037
R <sup>2</sup>	.260	.242	.234	.173	.312	.262	.338	.306
χ <sup>2</sup> /F	70.56***	6.93***	63.93***	5.37***	111.34***	13.58***	125.14***	15.88***

Note. REF = reference category. Displayed are the average marginal effects; all models estimated with heteroscedasticity robust standard errors. \*p < .05. \*\*p < .01. \*\*\*p < .001.

**Table 7 Regression Results for Career Objectives of Women and Men in Sport Management, Economics, and Sociology**

Academic_Career	Women (n = 324)				Men (n = 468)			
	5a	6a	7a	8a	5b	6b	7b	8b
Woman role model	.636***	—	—	—	.091	—	—	—
Man role model	—	.675***	—	—	—	.238*	—	—
No. of women role models (log)	—	—	.323**	—	—	—	.085	—
No. of men role models (log)	—	—	—	.424***	—	—	—	.094
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	.415	.421	.410	.410	.572	.576	.573	.573
F	24.57***	25.06***	21.91***	23.65***	74.67***	74.53***	74.53***	74.35***

Uni_Longterm	Women (n = 324)				Men (n = 468)			
	9a	10a	11a	12a	9b	10b	11b	12b
Woman role model	.795***	—	—	—	.100	—	—	—
Man role model	—	.844***	—	—	—	.171	—	—
No. of women role models (log)	—	—	.395***	—	—	—	.058	—
No. of men role models (log)	—	—	—	.507***	—	—	—	.083
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	.546	.556	.522	.535	.593	.594	.592	.593
F	40.96***	41.91***	36.09***	39.00***	77.62***	77.22***	77.78***	77.89***

Become_Prof	Women (n = 276)				Men (n = 404)			
	13a	14a	15a	16a	13b	14b	15b	16b
Woman role model	.971***	—	—	—	.248	—	—	—
Man role model	—	.885***	—	—	—	.334*	—	—
No. of women role models (log)	—	—	.557***	—	—	—	—	—
No. of men role models (log)	—	—	—	.514***	—	—	.150	.187*
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	.493	.480	.470	.455	.512	.516	.511	.513
F	21.71***	23.62***	19.87***	20.36***	50.65***	51.34***	50.43***	50.12***

Note. Displayed are the average marginal effects; all models estimated with heteroscedasticity robust standard errors.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

findings are surprising since SMES are men-dominated disciplines and attributes like competence and leadership are stereotypically associated with men (Heilman, 2012). However, research activities (e.g., publish articles and generate income) are rated higher for men, while teaching activities are rated higher for women. Thus, “countable” research output tends to be attributed to men and teaching to women, indicating that people see women SMES professors as teachers and perceive the research achievements of women SMES professors to a lower extent than the achievements of men SMES professors (Mitchell & Martin, 2018). The gender differences in perceived power might be explained by the higher number of men in powerful, academic positions (Sailofsky et al., 2022). The results for competence and leadership qualities need further investigation.

Interestingly, women’s and men’s perception of women SMES professors’ outstanding achievements and competencies significantly differed for seven out of 11 attributes, while the perception of men SMES professors only differed regarding one attribute. Based on these findings, it seems like women SMES professors are perceived differently than men SMES professors. The different perception might exist because it is still more unusual to interact with women professors in a stereotyped field like SMES. Even though men rated women SMES professors’ outstanding

achievements and competencies higher than those of men SMES professors, they differed from the ratings of women for women SMES professors. According to social cognitive theory (Bandura, 1977; Schunk & Usher, 2019), it might be possible that SMES women students or faculty members pay more attention to the behaviors and attributes of women SMES professors, since these women were able to overcome gender stereotypes and barriers in a men-dominated discipline (Lockwood, 2006). Thus, learning from these women role models might help to deal with women’s minority status.

Women ranked the perceived similarity to women SMES professors higher, and men perceived themselves as more like men SMES professors. Thus, respondents of both genders value a shared identity (Marx & Ko, 2012) with their same-gender professor, supporting the importance of “ingroup members” (Marx et al., 2009, p. 953). Perceived similarity is not only important for women in men-dominated disciplines (Lockwood, 2006) but also for men.

The results for imitation intention indicate that women try to be like women SMES professors, while men tend to emulate men SMES professors. Despite evident gender differences, men tried to be more like women SMES professors than women indicated for men SMES professors. This finding stresses that women SMES professors do not only serve as important role models for women

but also for men in academia, presumably because they outperform their male counterparts in several attributes. The finding that both women and men have more often a man SMES professor as a mentor might be explained by the lower share of women professors in academia (European Commission, 2021; UNESCO Institute for Statistics, 2023), meaning that in some programs both genders lack the opportunity to have a woman mentor.

### Choice of Role Models

While men SMES professors are equally selected as role models by women and men, women SMES professors were more likely to be chosen by women than men. Thus, women choose both same- and other-gender role models, while men prefer same-gender role models. These findings are in line with Wohlford et al. (2004), suggesting that stereotypical men attributes are still more valued (or at least accepted) by both women and men in a men-dominated field like SMES. Since only 24.5% of sport science professors in Germany are women (Federal Statistical Office, 2022) and more than half of respondents study or work in Germany, it might be possible that women respondents chose men SMES professors as role models because they have a lack of opportunities to interact with women professors (Lockwood, 2006).

Both women and men have more same-gender than other-gender role models. According to social cognitive theory (Bandura, 1977), individuals can observe and adopt the behavior of several people within their social environment. Having more than one role model offers the opportunity to observe different behaviors, learn a larger range of skills, and adapt specific aspects from different role models (Bandura, 1977; Schunk & Usher, 2019). People in late-career stages, such as postdoc researchers or professors, are especially able to bring all these observed aspects into a “global role model” (Gibson, 2003, p. 599).

The regression results show that men who perceived themselves as similar to men SMES professors were more likely to have a man SMES role model, in line with social cognitive theory (Bandura, 1977; Schunk & Usher, 2019). In some way, the findings of this study underline the importance of same gender for choosing a role model (Lockwood, 2006) but do not support the reported importance of same-gender role models especially for women (e.g., Drury et al., 2011; Young et al., 2013). Furthermore, the results for men’s role model choice are in line with Erkut and Mokros (1984), who concluded that men prefer men professors as role models.

The intention to imitate a woman SMES professor increased the likelihood of having a woman professor role model and a higher number of women SMES professor role models for both women and men. The same was mostly evident for the intention to imitate a man SMES professor. In contrast to perceived similarity, the intention to imitate a SMES professor seems to be unrelated to observers’ gender. Thus, women seem to select their role models based on what they think they can learn from these role models (Schunk & Usher, 2019), not based on shared gender attributes. Contrary, men include both aspects in their role model selection process, underlining the importance to investigate both genders. Thus, men search for “successful members of their own group” (McIntyre et al., 2011, p. 301), while women seem to focus more on the role models’ success and competencies.

Compared with under- and postgraduate students, men Ph.D. students were more likely to have a woman SMES role model and a higher number of women SMES role models. Ph.D. students are more involved in research and tend to participate in academic conferences. Therefore, they might know more successful women

professors than students who only know the professors of their program. Furthermore, Ph.D. students have a concrete supervisor with whom they regularly interact and from whom they agreed to learn. If the supervisor is a woman professor, men may refer to that woman as a mentor and role model, since supportiveness of mentors was found to be more important to Ph.D. students than gender (Kurtz-Costes et al., 2006). Women professors were more likely to have a woman SMES professor as a role model compared with women students. Due to the late-career stage, women professors might search for role models from whom they could learn specific skills (Gibson, 2003). The selected role models might have overcome specific barriers or excelled in specific areas, and observing skills and behaviors of these women role models might help women professors to flourish in a men-dominated discipline.

Men had a higher number of women SMES role models when they worked or studied sport management and had a higher science attitude. This finding might be explained by the comparably high number of women professors in sport management. For example, the share of women faculty members at sport management departments in the United States is 42% and the share of full professors is 37.7% (Sailofsky et al., 2022). Furthermore, men who have a higher science attitude might be more interested in learning discipline-related skills, since they are more interested in scientific work. This work also includes aspects of teaching and supervision, attributes which men rated higher for women professors than for men professors in this study. Therefore, men with a higher science attitude tend to (also) choose women SMES professors as role models.

Compared with people who studied or worked in Germany, men from the United States and Australia were more likely to have women and men SMES professor role models, while women from Canada were more likely to have a man SMES role model. These results suggest that the choice of role models differs between countries, highlighting the need to further investigate reasons for these differences.

### Role Models and Career Objectives

Women’s interest in pursuing an academic career, working at a university in the long term, and becoming a professor was influenced by the presence and the number of women and men SMES role models. This finding is in line with Young et al. (2013) and Cheryan et al. (2012), suggesting that the simple presence of role models is important, regardless of gender. Moreover, the result indicates that academic role models have not only a positive effect on students’ feelings of belonging to a major (Shin et al., 2016) but also to students’ and faculty members’ interest in remaining in the academic system. It also extends our knowledge of effective academic role models, since previous studies reported positive effects of women role models on women’s intention to stay in academia (Porter & Serra, 2020; Van Camp et al., 2019), but did not include men role models in their studies.

The results can be explained by social cognitive career theory (Bandura, 1977; Schunk & Usher, 2019), since the presence of role models has an influence on career objectives of individuals who observe the behavior of their role models (Hackett & Betz, 1981). These role models can inspire them to set and follow their career goals (Morgenroth et al., 2015). Furthermore, the presence of SMES professors as role models might buffer women’s negative expectations about pursuing a career in a men-dominated discipline like SMES. In line with social cognitive career theory (Bandura, 1977; Schunk & Usher, 2019), role models might have a positive

impact on women students' and faculty members' self-efficacy (Wasend & LaVoi, 2019). Additionally, the results suggest that not only the presence of one woman or man SMES role model has a positive effect on career objectives of women but also a higher number of both types of role models.

On the other hand, the results indicate that men's interest in an academic career is only influenced by the presence of men SMES professor role models. Thus, it seems like sharing the same gender with the role model is more important for men's career development process. This finding extends the study by Rask and Bailey (2002), who concluded that men professors had a positive impact on men students' major choice. Furthermore, Bettinger and Long (2005) reported that same-gender role models are especially important for men in women-dominated disciplines. However, the results of this study indicate that men professor role models are also important in men-dominated disciplines like SMES. This finding is in line with men's stronger intention to imitate men SMES professor role models. Thus, men professors seem to be more important for men's choice of role models and their intentions to pursue an academic career in a men-dominated discipline. Therefore, it would be interesting to further investigate men's gendered perception of women and men in SMES.

## Conclusions

The purpose of this study was to investigate students' and faculty members' perception of role model attributes of women and men sport management, economics, and sociology (SMES) professors and how these attributes influence the choice of SMES professor role models of women and men in SMES. Furthermore, this study examined the impact of women and men SMES professor role models on academic career objectives of both women and men. The results reveal that stereotypically male attributes like competence or leadership qualities are also associated with women professors in SMES. Furthermore, the presence of women SMES professors is important to retain women in academia. These findings underline the importance of increasing the representation of women professors at SMES faculties, as they will function as important role models.

The present study makes several contributions to the literature. Most previous research about the choice of academic role models focused on perceived similarity based on gender (e.g., Drury et al., 2011), neglecting outstanding achievements and the intention to imitate the role model. Furthermore, studies about the impact of role models focused on women's career objectives (e.g., Nauta & Kokaly, 2001), while this study also examined men's role model choices and their career development process. The majority of these studies were conducted in STEM disciplines with small sample sizes or case studies at universities (Bettinger & Long, 2005). This study relies on a large, multicountry sample including several universities. Another contribution is the employed theoretical underpinning which allowed explaining role model choices and career decisions of both women and men respondents. While previous case studies focused on students (e.g., Bettinger & Long, 2005; Young et al., 2013), individuals at different academic career stages (i.e., under- and postgraduate students, Ph.D. students, postdoc researchers, and professors) were included in the present research.

The study has several implications for academic policymakers and academics in sport sciences. First, the present findings provide another argument for gender equality policies and measures to achieve equal representation of both genders in academia because only when a sufficient number of women professors are present,

they can function as role models. This function is important since women SMES professors were found to outperform men SMES role models in a number of attributes, including teaching and presentation skills, promoting interest in research, and moral/ethical behavior. An increased representation of women SMES professors is especially important for women students and academics and their interest in an academic career and in becoming a professor themselves. Second, the study demonstrates that perceived similarity and the intention to imitate a SMES professor are important for the selection of role models for both women and men. This finding implies that women professors are not only relevant to women but also to men, suggesting that both genders would benefit from an increased representation of women professors in SMES. Furthermore, it seems like both genders value women SMES professors' competencies and achievements, even though some of these are stereotypically associated with men (Heilman, 2012). Increasing the representation of women professors in SMES could help to further break down stereotypes and the perception of men-dominated disciplines as not appropriate for women (Diekmann et al., 2010).

This study has some limitations which can guide future research. First, the results are limited to the time of data collection. Studies with longitudinal data could, for example, investigate how role model attributes and their influence on women's and men's academic role model choices change over time. Second, the study does not consider variation in role models. For example, students and academics might have different role models for different attributes, such as one role model for teaching, one for presentations, and another one for leadership. Third, this study only investigated the perception of role model attributes. At least for attributes where quantification is possible (e.g., publications, grant income, and teaching evaluations), it would be interesting to compare these perceptions with actual performance data about professors. Fourth, the data set is based on individuals in SMES in seven different countries. Study programs may vary within and between countries, limiting the comparability of the results. In addition, career stages also differ between countries. While some countries differ between assistant, associate, and full professor, others only differ between postdoc researchers and full professor. Therefore, professors had to be excluded in this study for the last research question even though role models might also be important for career objectives of assistant and associate professors. Fifth, it was not possible to control for age and career stage simultaneously due to multicollinearity. However, the results underline the importance to further develop research which considers academics at late-career stages, and not only undergraduate or graduate students.

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## References

- American Association of University Women. (2016). *Barriers and bias: The status of women in leadership*. <https://www.aauw.org/resources/research/barrier-bias/>
- Andrew, D.P.S., Pedersen, P.M., & McEvoy, C.D. (2011). *Research methods and design in sport management*. Human Kinetics.

- Asgari, S., Dasgupta, N., & Stout, J. (2012). When do counter-stereotypic ingroup members inspire versus deflate? The effect of successful professional women on young women's leadership self-concept. *Personality and Social Psychology Bulletin*, 38(3), 370–383. <https://doi.org/10.1177/0146167211431968>
- Ashworth, J., & Evans, L. (2001). Modeling student subject choice at secondary and tertiary level: A cross-section study. *The Journal of Economic Education*, 32(4), 311–320. <https://doi.org/10.1080/00220480109596111>
- Bandura, A. (1977). *Social learning theory*. Prentice-Hall.
- Banwell, J., Kerr, G., & Stirling, A. (2021). Benefits of a female coach mentorship programme on women coaches' development: An ecological perspective. *Sports Coaching Review*, 10(1), 61–83. <https://doi.org/10.1080/21640629.2020.1764266>
- Beres, J.L., & Dixon, J.C. (2014). Exploring mentoring functions within the sport management academy: Perspectives of mentors and protégés. *Sport Management Education Journal*, 8(1), 14–26. <https://doi.org/10.1123/smej.2012-0007>
- Bettinger, E.P., & Long, B.T. (2005). Do faculty serve as role models? The impact of instructor gender on female students. *The American Economic Review*, 95(2), 152–157. <https://doi.org/10.1257/000282805774670149>
- Casad, B.J., Garasky, C.E., Jancetic, T.R., Brown, A.K., Franks, J.E., & Bach, C.R. (2022). U.S. women faculty in the social sciences also face gender inequalities. *Frontiers in Psychology*, 13, Article 792756. doi:10.3389/fpsyg.2022.792756
- Cheryan, S., Drury, B.J., & Vichayapai, M. (2012). Enduring influence of stereotypical computer science role models on women's academic aspirations. *Psychology of Women Quarterly*, 37(1), 72–79. <https://doi.org/10.1177/0361684312459328>
- Cheryan, S., Siy, J.O., Vichayapai, B., Drury, K., & Kim, S. (2011). Do female and male role models who embody STEM stereotypes hinder women's anticipated success in STEM? *Social Psychological and Personality Science*, 2(6), 656–664. <https://doi.org/10.1177/1948550611405218>
- Clopton, A. (2015). Where does it begin? Exploring gender differences in student-athletes' perceptions of entering the coaching profession. *Women in Sport and Physical Activity Journal*, 23(1), 34–41. <https://doi.org/10.1123/wspaj.2014-0016>
- Cunningham, G.B., Doherty, A.J., & Gregg, M.J. (2007). Using social cognitive career theory to understand head coaching intensions among assistant coaches of women's teams. *Sex Roles*, 56(5–6), 365–372. <https://doi.org/10.1007/s11199-006-9175-z>
- DeLuca, J.R., Mudrick, M., Hayes Sauder, M., & Taylor, E.A. (2022). Understanding student perceptions of diversity and inclusion. *Sport Management Education Journal*, 16(1), 30–41. <https://doi.org/10.1123/smej.2020-0023>
- Diekman, A.B., Brown, E.R., Johnston, A.M., Clark, E.K. (2010). Seeking congruity between goals and roles: A new look at why women opt out of science, technology, engineering, and mathematics careers. *Psychological Science*, 21(8), 1051–1057. <https://doi.org/10.1177/0956797610377342>
- Downward, P., Frick, B., Humphreys, B.R., Pawlowski, T., Ruseski, J.E., & Soebbing B.P. (2019). *The SAGE handbook of sports economics*. SAGE.
- Drury, B.J., Siy, J.O., & Cheryan, S. (2011). When do female role models benefit women? The importance of differentiating recruitment from retention in STEM. *Psychological Inquiry*, 22(4), 265–269. <https://doi.org/10.1080/1047840X.2011.620935>
- Erkut, S., & Mokros, J.R. (1984). Professors as models and mentors for college students. *American Educational Research Journal*, 21(2), 399–417. <https://doi.org/10.3102/00028312021002399>
- European Commission. (2021). She figures 2021. Gender in research and innovation. *Statistics and Indicators*. <https://ec.europa.eu/research-and-innovation/en/knowledge-publications-tools-and-data/interactive-reports/she-figures-2021>
- Eurostat. (2020). *Tertiary education statistics*. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Tertiary\\_education\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Tertiary_education_statistics)
- Federal Statistical Office. (2022). *Bildung und Kultur. Personal an Hochschulen*. [Education and culture. Personnel at universities]. [https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Publikationen/Downloads-Hochschulen/personal-hochschulen-2110440217004.pdf?\\_\\_blob=publicationFile](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/Publikationen/Downloads-Hochschulen/personal-hochschulen-2110440217004.pdf?__blob=publicationFile)
- Frevort, U., Steinicke, H., & Witt, E. (2022). *Frauen in der Wissenschaft: Entwicklungen und Empfehlungen*. [Women in science: Developments and recommendations]. [www.leopoldina.org/fileadmin/redaktion/Publikationen/Nationale\\_Empfehlungen/2022\\_Leopoldina\\_Stellungnahme\\_Frauen-in-der-Wissenschaft\\_Web.pdf](http://www.leopoldina.org/fileadmin/redaktion/Publikationen/Nationale_Empfehlungen/2022_Leopoldina_Stellungnahme_Frauen-in-der-Wissenschaft_Web.pdf)
- Gibson, D.E. (2003). Developing the professional self-concept: Role model construals in early, middle, and late career stages. *Organization Science*, 14(5), 591–610. <https://doi.org/10.1287/orsc.14.5.591.16767>
- Gibson, D.E., & Barron, L.A. (2003). Exploring the impact of role models on older employees. *Career Development International*, 8(4), 198–209. <https://doi.org/10.1108/13620430310482571>
- González-Pérez, S., Mateos de Cabo, R., & Sáinz, M. (2020). Girls in STEM: Is it a female role-model thing? *Frontiers in Psychology*, 11, Article 2204. <https://doi.org/10.3389/fpsyg.2020.02204>
- Hackett, G., & Betz, N. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behavior*, 18(3), 326–339. [https://doi.org/10.1016/0001-8791\(81\)90019-1](https://doi.org/10.1016/0001-8791(81)90019-1)
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2018). *Multivariate data analysis* (8th ed.). Cengage Learning EMEA.
- Heilman, M.E. (2012). Gender stereotypes and workplace bias. *Research in Organizational Behavior*, 32, 113–135. <https://doi.org/10.1016/j.riob.2012.11.003>
- Hurd, N.M., & Zimmerman, M.A. (2011). Role models. In R.J.R. Levesque (Ed.), *Encyclopedia of adolescence* (pp. 2399–2404). Springer.
- Kurtz-Costes, B., Andrews Helmke, L., & Ülkü-Steiner, B. (2006). Gender and doctoral studies: The perceptions of Ph.D. students in an American university. *Gender and Education*, 18(2), 137–155.
- Lent, R.W., & Brown, S.D. (1996). Social cognitive approach to career development: An overview. *The Career Development Quarterly*, 44(4), 310–321. <https://doi.org/10.1002/j.2161-0045.1996.tb00448.x>
- Lent, R.W., Brown, S.D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice and performance. *Journal of Vocational Behavior*, 45(1), 79–122. <https://doi.org/10.1006/jvbe.1994.1027>
- Lockwood, P. (2006). “Someone like me can be successful”: Do college students need same-gender role models? *Psychology of Women Quarterly*, 30(1), 36–46. <https://doi.org/10.1111/j.1471-6402.2006.00260.x>
- Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, 73(1), 91–103. <https://doi.org/10.1037/0022-3514.73.1.91>
- Lundberg, S., & Stearns, J. (2019). Women in economics: Stalled progress. *Journal of Economic Perspectives*, 33(1), 3–22. <https://doi.org/10.1257/jep.33.1.3>
- MacFarland, T.W., & Yates, J.M. (2016). *Introduction to nonparametric statistics for the biological sciences using R*. Springer.
- Marx, D.M., & Goff, P.A. (2005). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology*, 44(4), 645–657. <https://doi.org/10.1348/014466604X17948>
- Marx, D.M., & Ko, S.J. (2012). Superstars “like” me: The effect of role model similarity on performance under threat. *European Journal of Social Psychology*, 42(7), 807–812. <https://doi.org/10.1002/ejsp.1907>
- Marx, D.M., Ko, S.J., & Friedman, R.A. (2009). The “Obama effect”: How a salient role model reduces race-based performance differences.

- Journal of Experimental Social Psychology*, 45(4), 953–956. <https://doi.org/10.1016/j.jesp.2009.03.012>
- Marx, D.M., & Roman, J.S. (2002). Female role models: Protecting women's math test performance. *Personality and Social Psychology Bulletin*, 28(9), 1183–1193. <https://doi.org/10.1177/01461672022812004>
- McIntyre, R.B., Paulson, R.M., Taylor, C.A., Morin, A.L., & Lord, C.G. (2011). Effects of role model deservingness on overcoming performance deficits induced by stereotype threat. *European Journal of Social Psychology*, 41(3), 301–311. <https://doi.org/10.1002/ejsp.774>
- Messner, M.A. (2002). *Taking the field: Women, men, and sports*. University of Minnesota Press.
- Mikkonen, M., Stenvall, J., & Lehtonen, K. (2021). The paradox of gender diversity, organizational outcomes, and recruitment in the boards of national governing bodies of sport. *Administrative Sciences*, 11(4), Article 141. <https://doi.org/10.3390/admsci11040141>
- Mitchell, K.M.W., & Martin, J. (2018). Gender bias in student evaluations. *PS: Political Science & Politics*, 51(3), 648–652.
- Morgenroth, T., Ryan, M.K., & Peters, K. (2015). The motivational theory of role modeling: How role models influence role aspirants' goals. *Review of General Psychology*, 19(4), 465–483. <https://doi.org/10.1037/gpr0000059>
- Morris, E., Vooris, R., Mahoney, T.Q. (2019). You study like a girl: Experiences of female sport management students. *Sport Management Education Journal*, 13(2), 63–72. <https://doi.org/10.1123/smej.2018-0020>
- Murphy, S., Trussell, D.E., Petrie, M., Groves, B., & Kerwin, S. (2023). Women and members of socially diverse groups in a sport management program: Key lessons from creating and leading a student-led equity, diversity, and inclusion club. *Sport Management Education Journal*, 2023, Article 59. <https://doi.org/10.1123/smej.2022-0059>
- Nauta, M.M., & Kokaly, M.L. (2001). Assessing role model influences on students' academic and vocational decisions. *Journal of Career Assessment*, 9(1), 81–99. <https://doi.org/10.1177/106907270100900106>
- Nirval Ravi Kumar, K. (2020). *Econometrics*. CRC Press.
- O'Brien, L.T., Hitti, A., Shaffer, E., Van Camp, A.R., Henry, D., & Gilbert, P.N. (2017). Improving girls' sense of fit in science: Increasing the impact of role models. *Social Psychological and Personality Sciences*, 8(3), 301–309. <https://doi.org/10.1177/1948550616671997>
- Pitts, B.G., Danylchuk, K., & Quarterman, J. (2014). A content analysis of the European Sport Management Quarterly and its predecessor the European Journal for Sport Management: 1984-2012. *Choregia*, 10(2), 45–72.
- Porter, C., & Serra, S. (2020). Gender differences in the choice of major: The importance of female role models. *American Economic Journal: Applied Economics*, 12(3), 226–254.
- Preston, A.E. (2004). *Leaving science: Occupational exit from scientific careers*. SAGE.
- Rask, K.N., & Bailey, E.M. (2002). Are faculty role models? Evidence from major choice in an undergraduate institution. *Journal of Economic Education*, 33(2), 99–124. <https://doi.org/10.1080/00220480209596461>
- Sailofsky, D., Orr, M., & Davin, L. (2022). Gender differences in careers and publications within the sport management academy. *Sport Management Education Journal*, 17(1), 52–62. <https://doi.org/10.1123/smej.2022-0004>
- Schick Case, S., & Richley, B.A. (2013). Gendered institutional research cultures in science: The post-doc transition for women scientists. *Community, Work & Family*, 16(3), 327–349. <https://doi.org/10.1080/13668803.2013.820097>
- Schunk, D.H., & Usher, E.L. (2019). Social cognitive theory and motivation. In R.M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 11–26). Oxford University Press.
- Serra, P., Soler, S., Camacho-Miñano, M.J., Rey-Cao, A., & Vilanova, A. (2019). Gendered career choices: Paths toward studying a degree in physical activity and sport science. *Frontiers in Psychology*, 10, Article 1986. doi:10.3389/fpsyg.2019.01986
- Shin, J.E.L., Levy, S.R., & London, B. (2016). Effects of role model exposure on STEM and non-STEM student engagement. *Journal of Applied Social Psychology*, 46(7), 410–427. <https://doi.org/10.1111/jasp.12371>
- Stout, J.G., Dasgupta, N., Hunsinger, M., & McManus, M.A. (2011). STEMing the tide: Using ingroup experts to inoculate women's self-concept in science, technology, engineering, and mathematics (STEM). *Journal of Personality and Social Psychology*, 100(2), 255–270. <https://doi.org/10.1037/a0021385>
- UNESCO Institute for Statistics. (2023). *Other policy relevant indicators: Enrolment by level of education*. <http://data.uis.unesco.org/>
- Van Camp, A.R., Gilbert, P.N., & O'Brien, L.T. (2019). Testing the effects of a role model intervention on women's STEM outcomes. *Social Psychology of Education*, 22(3), 649–671. <https://doi.org/10.1007/s11218-019-09498-2>
- Wasend, M., & LaVoi, N. (2019). Are women coached by women more likely to become sport coaches? Head coach gender and female collegiate athletes' entry into the coaching profession. *Women in Sport and Physical Activity Journal*, 27(2), 85–93. <https://doi.org/10.1123/wspaj.2018-0043>
- Wells, J.E., & Hancock, M.G. (2017). Networking, mentoring, sponsoring: Strategies to support women in sport leadership. In L.J. Burton, & S. Leberman (Eds.), *Women in sport leadership* (pp. 130–147). Taylor & Francis.
- Wells, J.E., & Kerwin, S. (2017). Intentions to be an athletic director: Racial and gender perspectives. *Journal of Career Development*, 44(2), 127–143. <https://doi.org/10.1177/0894845316635821>
- Wendling, E., & Sagas, M. (2020). An application of the social cognitive career theory model of career self-management to college athletes' career planning for life after sport. *Frontiers in Psychology*, 11, Article 9. <https://doi.org/10.3389/fpsyg.2020.00009>
- Wicker, P., Scharfenkamp, K., & Lesch, L. (2022). Publication and citation analysis of articles published in the European Journal for Sport and Society, 2004-2020. *European Journal for Sport and Society*, 19(4), 295–304. <https://doi.org/10.1080/16138171.2022.2133412>
- Wohlford, K.E., Lochman, J.E., & Barry, T.D. (2004). The relation between chosen role models and the self-esteem of men and women. *Sex Roles*, 50(7), 575–582. <https://doi.org/10.1023/B:SERS.0000023076.54504.ca>
- Wright, S., Wong, A., & Newill, C. (1997). The impact of role models on medical students. *Journal of General Internal Medicine*, 12(1), 53–56. <https://doi.org/10.1007/s11606-006-0007-1>
- Young, D.M., Rudman, L.A., Buettner, H.M., & McLean, M.C. (2013). The influence of female role models on women's implicit science cognitions. *Psychology of Women Quarterly*, 37(3), 283–292. <https://doi.org/10.1177/0361684313482109>
- Zacher, H., Rudolph, C.W., Torodovic, T., & Ammann, D. (2019). Academic career development: A review and research agenda. *Journal of Vocational Behavior*, 110, 357–373. <https://doi.org/10.1016/j.jvb.2018.08.006>