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Gender-Stereotype Messaging Impacts Perceptions of the Field of Speech-Language Pathology

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ABSTRACT

Purpose: The field of speech-language pathology has been and remains predominantly female, despite efforts aimed at increasing gender diversity. This study sought to determine if gender-based stereotype messaging influences students' perceptions of the field of speech-language pathology and if exposure to messaging with a short video would change student impressions of the speech-language pathology profession.
Method: A total of 472 undergraduate students were recruited to participate in this study and were randomly assigned to three exposure conditions: (a) male-stereotype video, (b) female-stereotype video, and (c) no video. Student perceptions were evaluated with a survey, and participants' demographic data were collected including age, race/ethnicity, academic standing, and self-reported gender identity.
Results: Overall, female participants expressed higher interest in the speech-language pathology profession, felt they would be more successful in an speech-language pathology career, perceived the field of speech-language pathology to have a higher social status, and were more likely to express interest in an speech-language pathology career than male participants. However, participants who viewed the male-stereotype video, regardless of gender, perceived the field of speech-language pathology as more scientific and reported that speech-language pathologists had greater autonomy in the field and had achieved a higher social status. Additionally, participants perceived the field of speech-language pathology as more masculine if they viewed the male-stereotype video and as more feminine if they viewed the female-stereotype video.
Conclusion: The results of this work demonstrate that gender-stereotype career messaging is highly influential in student perceptions of the field and should be considered when motivating students to pursue speech-language pathology as a profession.

Gender disparities in speech-language pathology have existed over the past 40 years, and efforts to promote gender diversity in the field have been largely unsuccessful (Lof Gregory et al., 1999). The percentage of female members and affiliates in the American Speech-Language-Hearing Association (ASHA) has increased since 2006 and reached 95.7% at the end of 2021 (Rogus-Pulia et al., 2018). Historically, men outnumber women in science, technology, engineering, mathematics, or medicine careers and women outnumber men in behavioral science (e.g., psychology, sociology) careers (Diekman et al., 2010; Stout et al., 2016).

The *social role theory* is a likely explanation for the gender gap in these occupations and has been described

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by Alice Eagly as the idea that gender stereotypes stem from social roles and gendered occupations (Eagly, 1987). The speech-language pathology profession is most known for provision of services to children and adults with speech and language deficits, but its role in the medical setting may be less understood (Greenwood et al., 2006; Sullivan & Cleave, 2003). Therefore, the social role theory may explain the scarcity of men in speech-language pathology, given these perceptions and the fact that women are more often observed in communal roles, such as caring for children, and then perceived to be warm and nurturing (Koenig & Eagly, 2014). Men, on the other hand, are often seen in agentic roles, with a focus on leadership or assertion, and are subsequently viewed as effective leaders, which may appear role incongruent with speech-language pathology based on perceptions of the field.

In line with this, the few men who choose to pursue a career in speech-language pathology are more likely to ascend into leadership positions (Rogus-Pulia et al., 2018). According to a recent Council of Academic Programs in Communication Sciences and Disorders survey, men are overrepresented relative to their proportion of ASHA members at all faculty ranks, in academic leadership and in recipients of ASHA Honors awards (Council of Academic Programs in Communication Sciences and Disorders & ASHA, 2023). In addition, women are underrepresented in communication sciences and disorders (CSD) PhD degrees; in 2021, only 3.6% of ASHA's members were male, despite 21.2% of men enrolling in PhD programs (Council of Academic Programs in Communication Sciences and Disorders & ASHA, 2022, 2023). Gender bias informed by stereotypes may intentionally or unintentionally cause women to be subtly socialized away from pursuing PhD degrees and subtly encourage men to pursue PhD degrees (Rogus-Pulia et al., 2018). This stereotype-based bias occurs not only in the speech-language pathology profession but also in a variety of other occupations (Biernat & Fuegen, 2001; Castilla, 2008; Isaac et al., 2009).

Recent evidence shows that the gender gap in CSD may be increasing across all degrees, employment, and certification categories (Rowden-Racette, 2013). A mixed-methods study by Greenwood and colleagues of students ages 16 years and older revealed that over one third of students knew nothing about the field of speech-language pathology and very few knew that the field required a degree or that it is based in science. Male participants were significantly less familiar with the speech-language pathology profession, and significantly more male participants than female participants agreed with the statement "People like me don't become speech and language therapists" (Greenwood et al., 2006). Several reasons for why men are not attracted to speech-language pathology as a career choice include lack of awareness of the profession, expensive training, low salaries, and assumptions that it is a female career (Lindsay & Kolne, 2023; McKinson, 2007). In addition, men who choose female-dominated professions, such as the field of speech-language pathology, are sometimes perceived as having degraded themselves in status (Lassen, 2012); male speech-language pathologists (SLPs) also report feeling socially isolated and a level of stigma in having chosen a female-dominated profession (Azios & Bellon-Harn, 2021). Therefore, in order to increase gender diversity in the field of speech-language pathology and elevate the status of the profession overall, it is important to recognize the potential influence gender stereotypes have in depicting the speech-language pathology profession.

The purpose of this study was to assess if stereotypically gendered messaging can influence undergraduate students' perception of speech-language pathology as stereotypically masculine or feminine careers presented through images, keywords, and phrases. We also examined whether use of masculine or feminine stereotypes in career messaging would alter undergraduate students' perception of speech-language pathology in regard to status, scientific nature, and interest in the profession. We hypothesized that altering the stereotypical messaging used to promote the speech-language pathology career would be influential in changing respondents' perceptions of the profession.

Method

Participants

Study participants were recruited from the University of Wisconsin–Madison across five introductory or second-level biology undergraduate courses in 53 class sections between September 30 and November 22, 2019. To obtain a variety of student perspectives, this course was selected as it includes students from a broad range of undergraduate majors. Voluntary consent was obtained for all participants, and withdrawal from study procedures was allowed at any point. There were no incentives or consequences as a result of study participation or refusal. All participants were over the age of 18 years. A total of 472 students participated in this study. An additional 482 students participated in similar experimental procedures during the same data collection period, focusing on gender messaging for perceptions of veterinary medicine careers, and these findings were published separately (Morello et al., 2022). Students were randomly assigned to three exposure conditions: (a) male-stereotype video, (b) female-stereotype video, and (c) no video. Student perceptions were evaluated with a survey, and participants'

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demographic data were collected including age, race/ethnicity, academic standing, and self-reported gender identity. All study procedures were reviewed by the University of Wisconsin–Madison Institutional Review Board and determined that this study met criteria for exempt human subjects research in accordance with Category 2 as defined under 45 CFR 46.

Materials and Procedure

We developed two 2-min videos to provide a brief introduction of the speech-language pathology profession with guidance from prior work in this field and feedback from practicing speech-language pathology clinicians (Carnes et al., 2012, 2015; Morello et al., 2022; Pelley & Carnes, 2020). We collected photographs from speech-language pathology clinicians that they felt exemplified the field and used these various images with a voice-over narrative that depicted imagery, language, and content that either represented a masculine/agentic stereotype or a feminine/communal stereotype (full narratives provided in Appendix). For example, the male-stereotype video included pictures and narrations of words commonly associated with more masculine stereotypes including references to scientific activities, leadership roles, medical technologies, and decision making, and the images used included more male professionals (see Tables 1 and 2). In contrast, the female-stereotype video referenced more feminine/communal stereotypes and included references related to teaching, education of students, family-friendly work environments, and community support and outreach as well as more female professionals in the videos (see Tables 1 and 2). The aim of these videos was to accurately describe the speech-language pathology profession while simultaneously highlighting gender-based stereotypes in our messaging. We piloted these videos with speech-language pathology clinicians who were unaware of the purpose of the study to determine if they believed the videos accurately represented the field. After implementing feedback from our pilot responders, we used these videos with our study participants who either viewed the female-stereotype video, the male-stereotype video, or no video. The no video group of participants completed the survey without viewing either video.

Upon completion of viewing either the male or female-stereotype video or not viewing a video (in the case of the control condition), participants were asked to complete a 5-min survey. The survey included demographic information and questions related to perceptions of the field of speech-language pathology. Questions were organized to gather information on the following areas: likelihood of pursuing a career in speech-language pathology, level of interest in the profession, self-efficacy, self-profession overlap, scientific nature of the field, autonomy of speech-language pathology professionals, social status of the profession, perception of the field of speech-language pathology as masculine or feminine, and the value of gender in the profession. The likelihood of pursing a speech-language pathology career was measured on a 0%–100% scale, whereas all other questions used a 7-point Likert scale. All survey questions are listed in Table 3. Survey questions were initially piloted with speech-language pathology clinicians and members of our

Table 1. Language utilized in the female-stereotype and male-stereotype videos.

Female stereotype	Male stereotype
Nurturing, caring, helpful	Challenging, rewarding
Teamwork, collaborative	Leadership, independence
Interacting with children and families	Patient diagnostics
Developing relationships	Supervising a team
Teaching, education	Science, technology
Supporting research	Leading research
Flexibility and family-oriented work environment	Fast-paced work environment
Appreciated community member	Opportunities for business ownership
Sample quotes	
"I remember the first time I was able to help a child overcome their stutter. I work in an elementary school, and knowing that I can **help** those kids live happier, better lives, is exactly the type of **rewarding** feeling that led me into speech-language pathology in the first place."	"I was inspired to go into speech-language pathology after a physiology class as an undergrad. On a daily basis, I integrate what I know about **neurology, anatomy, and cognition** to treat patients. It's a **challenging** field, but I have a great **team working for me**, and I really love what I do."
"A career in speech-language pathology has given me the opportunity to combine a love of **science**, with a passion for **working with people**. I get to use my education to **take care** of individuals who are struggling with some **very personal problems**, and to work with some **wonderful teams of people**."	"As a speech-language pathologist, I run **my own lab** investigating the mechanisms that produce swallowing disorders and I work with neurologists and radiologists all the time. I run a small business on the side, marketing my own **intellectual property** so other people can benefit from it, too."

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Table 2. Imagery utilized in the female-stereotype and male-stereotype videos.

Female-stereotype	Male-stereotype
More women represented (both genders present)	More men represented (both genders present)
SLPs shown reading to, playing with, and sitting with individual children	SLPs shown reading to, playing with, and sitting with individual children and leading a group of children
Settings: in the classroom, at a table	Settings: in the classroom, hospitals, medical clinics, research laboratory
SLPs wearing casual/business casual attire	SLPs wearing casual/business casual attire and white coats and scrubs
SLPs providing feeding assistance to adult patients	SLP completing instrumental assessments in hospital setting; illustrating radiology images
Group of men and women working in a group therapy session at a table with patients	SLP reviewing results with patient on the computer
Group of men and women collaborating in a team-building activity	Group of men and women sitting together at a conference table

Note. SLP(s) = speech-language pathologist(s).

research team, and feedback was implemented prior to data collection for this study. All data were manually entered and managed through Research Electronic Data Capture through the University of Wisconsin–Madison, School of Medicine and Public Health (Harris et al., 2009).

Statistical Analyses

Scores for individual questions were combined to generate an average score for the topics described above. To determine the influence of gender-stereotype messaging on the perceptions of the speech-language pathology profession, we conducted a series of two-way analyses of variances with factors of stereotype exposure (male-stereotype video, no video, female-stereotype video) and participant gender (male, female). The two respondents who identified as gender-nonbinary were excluded from the analyses due to a small sample size. Post hoc analyses were performed with Fisher's least significant difference method using a Tukey correction for multiple comparisons. All data analyses were performed using GraphPad Prism (Version 9.5.1 for Windows, GraphPad Software); significance levels were set a priori at .05.

Results

Demographic Information

A total of 472 study participants completed the study (142 males, 328 females, two nonbinary); 164 subjects viewed the male-stereotype video (51 males, 112 females, one nonbinary), 172 viewed the female-stereotype video (49 males, 122 females, one nonbinary), and 136 did not view a video (42 males, 94 females, zero nonbinary). Due to the small sample size, we were unable to include nonbinary participant data in our statistical analyses. Therefore, data from 470 study participants were included. Demographic information regarding race/ethnicity, age, and reported gender is described in Table 4.

Likelihood of Pursuing a Career in Speech-Language Pathology

Female participants reported a higher likelihood to pursue a speech-language pathology career, regardless of video stereotype condition (male-stereotype video, no video, female-stereotype video). There were no significant interaction effects between participant gender and video stereotype, $F(2, 458) = 0.65$, $p = .52$. There was a main effect of participant gender, $F(1, 458) = 13.41$, $p < .001$, such that female participants reported a higher likelihood of pursuing a career in the field of speech-language pathology compared to male participants (see Figure 1A).

Interest in the Speech-Language Pathology Profession

Female participants reported a higher interest in the speech-language pathology profession, regardless of video stereotype condition. There were no significant interaction effects between participant gender and video stereotype, $F(2, 464) = 0.13$, $p = .88$. There was a main effect of participant gender, $F(1, 464) = 19.71$, $p < .001$, such that female participants reported a greater interest in the field of speech-language pathology compared to male respondents (see Figure 1B).

Self-Efficacy

Female participants reported higher self-efficacy scores for their ability to succeed in the field of speech-language pathology compared to male participants, regardless of video stereotype condition. There were no significant interaction effects between participant gender and video

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Table 3. Survey prompts categorized by perception of the field of speech-language pathology.

Interest in the speech-language pathology profession
What is the likelihood that you are going to pursue a career in speech-language pathology? Answer as a percentage from 0% to 100%.
How interested are you in acquiring more knowledge about career opportunities in speech-language pathology?
How interested are you in learning more about the requirements for pursuing a career in speech-language pathology?
Self-efficacy
I would expect to do well in speech-language pathology classes.
Having a career in speech-language pathology would be too challenging for me.
If I wanted to, I could be a really good speech-language pathologist.
Self-profession overlap
How much do you think you would belong in speech-language pathology?
How much would you fit into the speech-language pathology profession?
How similar are you to individuals who work in speech-language pathology?
Perception of scientific rigor of the field of speech-language pathology
A person who pursues a career in speech-language pathology will likely get a job in a science-related area.
When speech-language pathologists tell others about their career, they are respected for doing scientific work.
For me, speech-language pathology is a scientific field.
Autonomy of SLPs
SLPs often have a lot of autonomy in their work.
SLPs often help others.
SLPs often work as a member of a team.
SLPs often think analytically.
Social status of SLPs
SLPs enjoy high social status.
SLPs are highly respected professionals.
Speech-language pathology is one of the most demanding and difficult careers.
Perception of the speech-language pathology profession as feminine or masculine
How masculine/feminine do you think the field of speech-language pathology is?
Value in the field based on gender
How much do you think someone with your gender will be valued in the field of speech-language pathology?
Most people expect a speech-language pathologist to be a woman.

Note. The likelihood of pursuing a speech-language pathology career was measured on a 0%–100% scale, while all other prompts used a 7-point Likert scale to determine level of agreement. SLPs = speech-language pathologists.

stereotype, $F(2, 464) = 0.34$, $p = .71$. There was a main effect of participant gender, $F(1, 464) = 5.61$, $p = .02$, such that female participants reported greater perceptions of self-efficacy in the field of speech-language pathology compared to male respondents (see Figure 2).

Self-Profession Overlap

Regarding respondents' perceptions of self-profession overlap (i.e., "how similar are you to individuals who work in the SLP field"), there were no significant interaction effects between stereotype video and participant gender, $F(2, 464) = 0.67$, $p = .51$. There were main effects of stereotype video, $F(2, 464) = 3.38$, $p = .03$, and participant gender, $F(1, 464) = 17.50$, $p < .001$. Participants who viewed the male-stereotype video reported more similarities to individuals who worked in the speech-language pathology profession compared to those who did not view a video ($p = .03$), regardless of respondents' gender. Female participants had higher self-profession overlap scores compared to male respondents regardless of stereotype video condition (see Figures 3A and 3B).

Perception of Scientific Rigor of the Field of Speech-Language Pathology

Participants who viewed the male-stereotype video perceived the field of speech-language pathology as more scientific than those who viewed the female-stereotype video or no video, regardless of participant gender. There were no interaction effects between stereotype video and participant gender, $F(2, 464) = 1.3$, $p = .28$, but there was a main effect of stereotype video, $F(2, 464) = 50.74$, $p < .001$. Regardless of respondent gender, those who viewed the male-stereotype video reported perceiving the field of speech-language pathology as more scientific than those who viewed the female-stereotype video ($p < .001$) or no video ($p < .001$; see Figure 4A).

Autonomy of SLPs

Regarding the perception of autonomy that SLPs have in the field, participants reported that SLPs have more autonomy after viewing the male-stereotype video compared to the female-stereotype video. There were no interaction effects between stereotype video and participant gender, $F(2, 464) = 0.04$, $p = .96$, but there was a main effect of stereotype video, $F(2, 464) = 4.04$, $p = .02$. Regardless of participant gender, the group that viewed the male-stereotype video perceived that SLPs had more autonomy in their field compared to the group who viewed the female-stereotype video (see Figure 4B).

Social Status of SLPs

Participants who viewed the male-stereotype video reported higher social status perceptions of SLPs compared to those who viewed the female-stereotype video and those who did not view a video. Additionally, female

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Table 4. Demographic information for participants described for each video condition and for all subjects.

Demographic data				
	Male stereotype video ***n*** **(%)**	**No video** ***n*** **(%)**	**Female-stereotype video** ***n*** **(%)**	**Total** ***N*** **(%)**
Gender				
Male	51 (31.1)	42 (30.9)	49 (28.5)	142 (30.1)
Female	112 (68.3)	94 (69.1)	122 (70.9)	328 (69.5)
Nonbinary	1 (0.6)	0 (0)	1 (0.6)	2 (0.4)
Race/ethnicity				
White/Caucasian	133 (81.1)	103 (75.7)	137 (80.1)	373 (79.2)
Hispanic/Latino(a)	1 (0.6)	2 (1.5)	5 (2.9)	8 (1.7)
Black	3 (1.8)	1 (0.7)	1 (0.5)	5 (0.2)
Asian/Asian American	24 (14.6)	23 (16.9)	15 (8.8)	62 (13.2)
Native American/American Indian	0 (0)	0 (0)	0 (0)	0 (0)
Pacific Islander/Native Hawaiian	0 (0)	0 (0)	0 (0)	0 (0)
Self-describe	1 (0.6)	0 (0)	3 (1.8)	4 (0.8)
Multiple	2 (1.2)	7 (5.1)	10 (5.8)	19 (4.0)
Age *M* (*SD*)	19.5 (1.5)	19.5 (1.2)	19.5 (1.2)	19.5 (1.3)

participants reported higher social status perceptions of SLPs compared to male respondents. There were no interaction effects, $F(2, 464) = 0.48$, $p = .62$, but there were main effects of stereotype video, $F(2, 464) = 12.96$, $p < .001$, and participant gender, $F(1, 464) = 8.85$, $p = .003$. Perceptions of social status of SLPs were highest following the male-stereotype video compared to the female-stereotype video ($p < .001$) and to no video ($p = .005$; see Figure 5A). Regardless of stereotype video condition, female participants had higher social status perceptions of SLPs compared to male respondents ($p = .003$; see Figure 5B).

Figure 1. Summary of likelihood of pursuing a speech-language pathology career and interest in the profession. (A) Female participants reported a higher likelihood of pursuing a speech-language pathology career, regardless of video stereotype condition compared to male participants. (B) Female participants reported greater interest in the speech-language pathology profession compared to male participants regardless of video stereotype. Sample sizes are as follows: $N = 470$ (328 female participants, 142 male participants). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: *** $p < .001$.

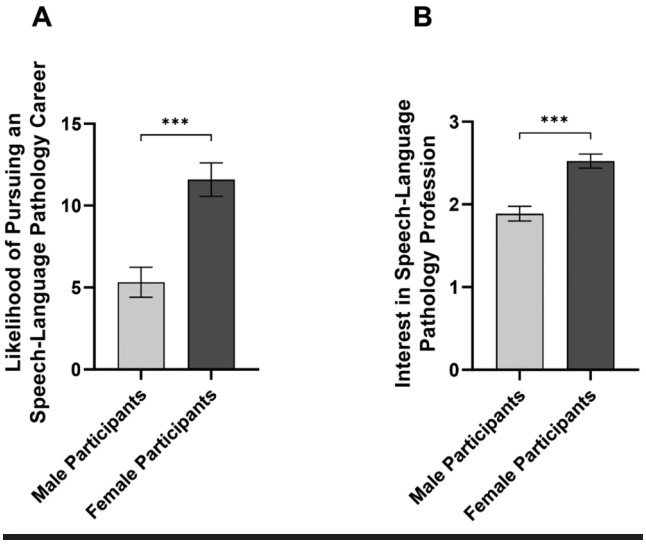

Figure 2. Summary of self-efficacy for their ability to succeed in a speech-language pathology career. Female participants reported higher perceptions of their ability to do well in the field of speech-language pathology, regardless of video stereotype condition compared to male participants. Sample sizes are as follows: $N = 470$ (328 female participants, 142 male participants). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: *$p < .05$.

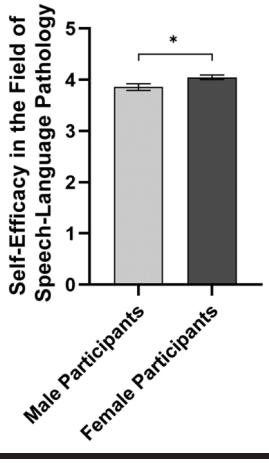

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Figure 3. Summary of self-profession overlap perception. (A) Participants who viewed the male-stereotype video reported more similarities to individuals who worked in the speech-language pathology profession compared to those who did not view a video, regardless of respondents' gender. (B) Female participants had higher self-profession overlap scores compared to male respondents regardless of stereotype video condition. Sample sizes are as follows: $N = 470$ (male-stereotype video = 163, no video = 136, female-stereotype video = 171; 328 female participants, 142 male participants). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: $^{*}p < .05$, $^{***}p < .001$.

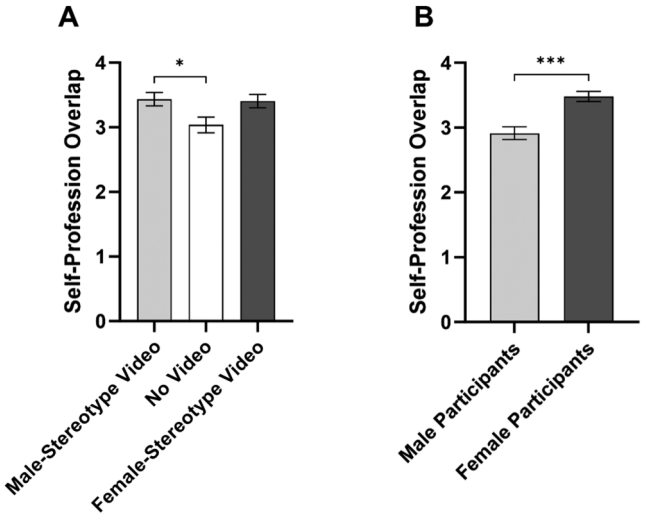
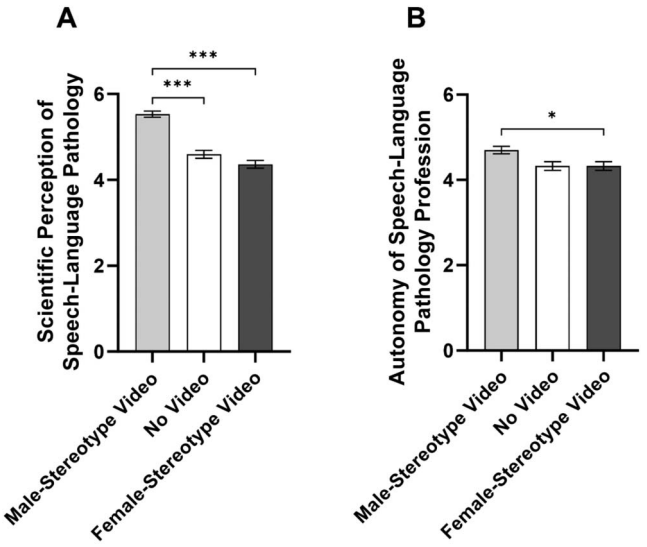


Figure 4. Summary of perception of scientific rigor of the field of speech-language pathology and amount of autonomy those in the profession have. (A) Participants who viewed the male-stereotype video perceived the field of speech-language pathology as more scientific than those who viewed the female-stereotype video or no video, regardless of respondents' gender. (B) Regardless of participant gender, the group that viewed the male-stereotype video perceived that SLPs had more autonomy in their field compared to the group that viewed the female-stereotype video. Sample sizes are as follows: $N = 470$ (male-stereotype video = 163, no video = 136, female-stereotype video = 171; 328 female participants, 142 male participants). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: $^{*}p < .05$, $^{***}p < .001$. SLPs = speech-language pathologists.



Perception of the Speech-Language Pathology Profession as Feminine or Masculine

Regarding the perception of the field of speech-language pathology as being feminine or masculine, there was a significant influence of the video stereotype condition, such that the participants perceived the field of speech-language pathology as more masculine if they viewed the male-stereotype video, and more feminine if they viewed the female-stereotype video. There was not an interaction effect between stereotype video and participant gender, $F(2, 461) = 0.55$, $p = .58$, but there was a main effect of stereotype video condition, $F(2, 461) = 23.59$, $p < .001$. Regardless of respondents' gender, participants who viewed the male-stereotype video perceived the field of speech-language pathology as more masculine compared to the female-stereotype video group ($p < .001$) and to the group that did not view a video ($p < .001$). Additionally, the group that viewed the female-stereotype video perceived the field of speech-language pathology as more feminine than the group that did not view a video ($p = .01$; see Figure 6).

Value in the Field Based on Gender

There was a significant interaction between stereotype video and participant gender regarding the perception of how someone of their gender would be valued in the field of speech-language pathology, $F(2, 464) = 9.56$, $p < .001$. Male participants reported that they felt more valued in the field of speech-language pathology after viewing the male-stereotype video compared to the female-stereotype video ($p = .04$), and the female participants reported feeling more valued in the field of speech-language pathology following the female-stereotype video compared to the male-stereotype video ($p = .005$). Additionally, female participants reported feeling more valued than the male participants did following the female-stereotype video ($p < .001$; see Table 5).

Discussion

The aim of this study was to determine if gender-based stereotype messaging can influence the perceptions of students regarding careers in the speech-language pathology profession. Our results demonstrate that perceptions of the field of speech-language pathology are highly influenced by gender messaging and these perceptions can be manipulated to an extent. Additionally, this study

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Figure 5. Summary of perception of social status of the speech-language pathology profession. (A) Participants who viewed the male-stereotype video reported higher social status perceptions of SLPs compared to those who viewed the female-stereotype video and those who did not view a video. (B) Female participants reported higher social status perceptions of SLPs compared to male respondents, regardless of which stereotype video condition. Sample sizes are as follows: N = 470 (male-stereotype video = 163, no video = 136, female-stereotype video = 171; 328 female participants, 142 male participants). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: $^{**}p < .01$, $^{***}p < .001$. SLPs = speech-language pathologists.

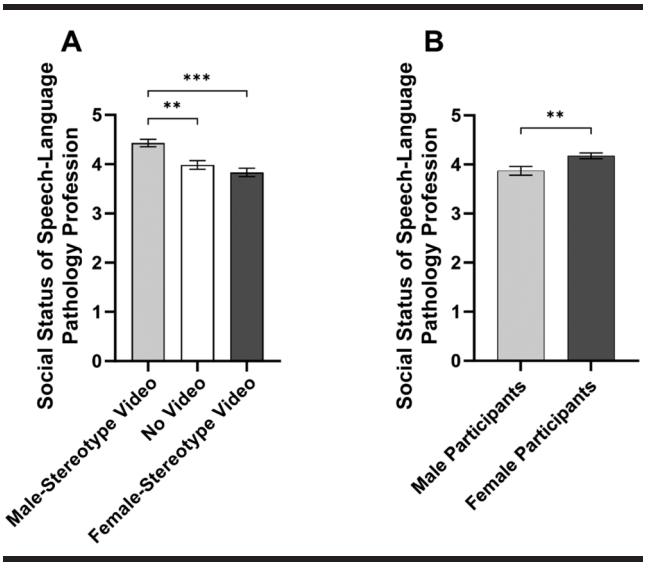
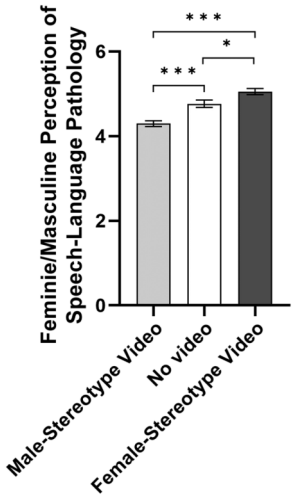


Figure 6. Summary of how feminine/masculine the speech-language pathology profession is perceived. Responses were based on a 7-point Likert scale where 1 corresponds to *very masculine*, 7 corresponds to *very feminine*, and 4 is *neutral*. Participants perceived the field of speech-language pathology as more masculine if they viewed the male-stereotype video and more feminine if they viewed the female-stereotype video. Sample sizes are as follows: N = 470 (male-stereotype video = 163, no video = 136, female-stereotype video = 171). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: $^{*}p < .05$, $^{***}p < .001$.



highlighted that certain perceptions of the speech-language pathology profession vary by participant gender regardless of gender-messaging. These, in particular, should be further explored to determine if there are more effective messaging efforts that could be employed to encourage greater gender diversity of individuals pursuing speech-language pathology careers.

For example, regardless of video stereotype, female respondents were more likely to indicate that they would pursue a career in the field of speech-language pathology, reported more interest in the profession, felt that they would be more successful as an SLP, had more similarities with speech-language pathology professionals, and described the field of speech-language pathology with higher social status compared to male participants. This is not a surprising finding given that the majority of speech-language pathology clinicians are female; however, this provides insight as to why more men are not pursuing a speech-language pathology career (Rogus-Pulia et al., 2018). This may also warrant the need to make earlier and more frequent attempts to alter perceptions of undergraduate students regarding the field of speech-language pathology in order to encourage more engagement and recruitment into the profession.

Despite these findings, there were several perceptions of the field of speech-language pathology that were greatly influenced by gender-stereotype messaging. For example, participants who viewed the male-stereotype video perceived the speech-language pathology profession as more scientific, reported that SLPs had greater autonomy in the field, and perceived that SLPs had achieved a higher social status, regardless of participant gender. Additionally, the participants perceived the field of speech-language pathology as more masculine if they viewed the male-stereotype video and as more feminine if they viewed the female-stereotype video. Finally, male participants felt more valued after viewing the male-stereotype video and female participants felt their gender would be more valued in the field of speech-language pathology after watching the female-stereotype video. Together, these findings confirm that the imagery, language, and content used to describe the speech-language pathology profession are highly influential in student perceptions.

These findings are consistent with a veterinary science study by Morello and colleagues, in which gender-stereotype messaging was effective at manipulating students' perceptions of that field (Morello et al., 2022). That study also revealed that feminine/masculine perceptions were altered based on the male- or female-stereotyped video and that male participants felt their gender would

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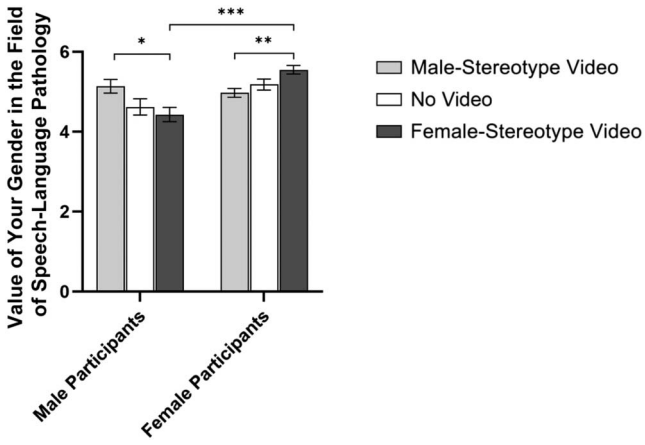
Table 5. Mean (*SEM*) for each area of perception.

Mean (*SEM*) for each variable			
	Male stereotype video	**No video**	**Female-stereotype video**
Likelihood of pursuing an speech-language pathology career			
Male	5.2 (1.0)	6.5 (2.7)	4.4 (0.7)
Female	13.4 (1.7)[c]	10.1 (2.2)[c]	11.1 (1.5)[c]
Interest in the speech-language pathology profession			
Male	2.1 (0.2)	1.8 (0.2)	1.8 (0.1)
Female	2.8 (0.1)[c]	2.3 (0.2)[c]	2.5 (0.1)[c]
Self-efficacy			
Male	3.9 (0.1)	3.8 (0.1)	3.9 (0.1)
Female	4.1 (0.1)[c]	3.9 (0.1)[c]	4.1 (0.1)[c]
Self-profession overlap			
Male	3.2 (0.1)[a]	2.7 (0.2)	2.9 (0.2)
Female	3.6 (0.1)[a,c]	3.2 (0.1)[c]	3.6 (0.1)[c]
Perception of scientific rigor			
Male	5.6 (0.1)[a,b]	4.6 (0.2)	4.1 (0.1)
Female	5.5 (0.1)[a,b]	4.6 (0.1)	4.5 (0.1)
Autonomy of SLPs			
Male	4.7 (0.1)[b]	4.4 (0.2)	4.3 (0.1)
Female	4.7 (0.1)[b]	4.3 (0.1)	4.3 (0.1)
Social Status of SLPs			
Male	4.2 (0.1)[a,b]	3.9 (0.2)	3.5 (0.2)
Female	4.5 (0.1)[a,b,c]	4.0 (0.1)[c]	3.9 (0.1)[c]
Perception as feminine or masculine			
Male	4.2 (0.1)[a,b]	4.5 (0.2)	5.0 (0.1)
Female	4.3 (0.1)[a,b]	4.9 (0.1)	5.1 (0.1)
Value in the field based on gender			
Male	5.2 (0.2)[b]	4.6 (0.2)	4.4 (0.2)
Female	5.0 (0.1)[b]	5.2 (0.1)	5.5 (0.1)

Note. The likelihood of pursuing an speech-language pathology career was measured on a 0%–100%, whereas all other questions used a 7-point Likert scale. SLPs = speech-language pathologists.
[a]Indicates significantly different from no video condition. [b]Indicates significantly different from female-stereotype video. [c]Indicates significantly different from male participants.

Figure 7. Summary of how valued respondents perceived their gender is in the field of speech-language pathology. Male participants felt more valued after viewing the male-stereotype video compared to the female-stereotype video, and the female participants reported feeling more valued following the female-stereotype video compared to the male-stereotype video. Additionally, female participants reported feeling more valued than the male participants did following the female-stereotype video. Sample sizes are as follows: $N = 470$ (male-stereotype video = 163, no video = 136, female-stereotype video = 171; 328 female participants, 142 male participants). Bar graphs with standard error bars (± *SE*) with asterisk indications showing the following level of significance: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.



be more valued following the viewing of a male-stereotype video (see Figure 7). The results of these two parallel studies are not particularly surprising given that gender bias has been demonstrated in wording and imagery in various contexts (Caliskan et al., 2022; Kaatz et al., 2015; Petreski & Hashim, 2023). When preparing for this study focused on the speech-language pathology profession, we performed a simple Google search with the terms "speech pathology" and "speech language pathology." The images that this search yielded were largely of women (mostly young women) working with children on speech-related tasks and tended to be consistent with the images in our female stereotypic video. As these professions remain female dominated, the influence of gender stereotypes in career messaging is likely important in addressing the gender gap and should be considered. The images and words included on websites for clinical settings and/or university training programs should be carefully curated and adjusted in order to provide more balanced messaging of the field of speech-language pathology as a high status, science-based career choice to prospective students. Additional implications from this study include carefully examining the wording used for job postings and recruitment materials to avoid implicit bias, and to actively avoid gender bias. This may include using specific, tailored descriptors when characterizing strengths in reference letters, or quantifiable measures to determine admissions, awards, or promotions (Rogus-Pulia et al., 2018). Using gender-neutral language may add more gender diversity to the field of speech-language pathology.

There were several notable limitations of this study. First, there were more female participants compared to male participants and only a small number of participants self-described their gender identity as nonbinary. As such, we were unable to include nonbinary participant data in our analysis. It is highly likely that gender identity impacts the perceptions of gender stereotypes in speech-language pathology career messaging and, unfortunately, we were unable to determine this for participants outside of the binary genders (male/female). Additionally, the gender stereotypes used for this study solely reflects cisgender male and females, and this again limits the generalizability to

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other individuals. This study did not use gender-neutral language as our intention was to highlight gender stereotypes within the field of speech-language pathology. However, using gender-neutral language in career messaging could be explored in future studies. Our study used surveys that were initially piloted with speech-language pathology clinicians and members of our research team; however, expanding the pilot to a broader audience could have enhanced our ability to gather more diverse perspectives during data collection. Additionally, this study also did not take into consideration age, ethnicity, and other cultural considerations in our messaging, and these will also likely influence perceptions of the field. However, our successful ability to influence perceptions with gender-based stereotypes encourages future work to be completed to better understand these complex perceptions.

To summarize, the results of this work demonstrated that perceptions of the field of speech-language pathology and profession are able to be manipulated with the use of gender-based stereotype career messaging. We found that emphasizing male- or female-gendered aspects of the field of speech-language pathology were effective in changing student perceptions of the field including the scientific rigor, social status, and the autonomy SLPs have in the field. These findings should be considered when determining best ways to recruit and motivate students to pursue a career in the field and should also be noted when making attempts to increase gender diversity in the field.

Data Availability Statement

The data sets used for the purposes of this study were acquired at the University of Wisconsin–Madison and are available from the corresponding author on reasonable request.

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Appendix

Transcription of Video Narratives

Male-Stereotype Video Transcription

"As an undergraduate student here at the University of Wisconsin, you're receiving a world class education that will open doors to a variety of cutting-edge career choices in the sciences.

This short video will introduce you to the graduate program for Speech-Language Pathology, so you can see what a professional career as a Speech-Language Pathologist looks like. As a speech-language pathologist, you'll be able to use the science that you've learned in the classroom in a profession where you can continue to be challenged on a daily basis.

You'll get to discover and use new technologies to treat patients with complicated problems. You'll learn how to perform advanced imaging procedures on a variety of different patients. It's a fast-paced work environment, but you'll get to think on your feet and make decisions that matter in coming to the right diagnosis.

You'll have to solve a puzzle, when you're treating a very sick patient, by figuring out how all the problems fit together. With your strong, high-level skills, you'll be in charge of a team of people providing care on the forefront of scientific discovery. If you have an interest in research, there's also tremendous opportunity to pursue some very impactful careers, where you can lead your own studies in areas like neurophysiology.

On the other hand, if you've got an entrepreneurial interest, you might decide that becoming a business owner and building a practice is your path. It can be financially rewarding, and gives you some independence in how you work. There are also opportunities for educating future generations of speech-language pathologists. Here are a few examples from some graduates from the UW speech-language pathology program:

'I was inspired to go into speech-language pathology after a physiology class as an undergrad. On a daily basis, I integrate what I know about neurology, anatomy, and cognition to treat patients. It's a challenging field, but I have a great team working for me, and I really love what I do.'

'As a speech-language pathologist, I run my own lab investigating the mechanisms that produce swallowing disorders and I work with neurologists and radiologists all the time. I run a small business on the side, marketing my own intellectual property so other people can benefit from it, too.'

As you begin to think about your future, please consider pursuing a career in speech-language pathology."

Female-Stereotype Video Transcription

"As an undergraduate student here at the University of Wisconsin, you're receiving a world class education that will open doors to a variety of career choices for you.

This short video will help introduce you to the graduate program in Speech-Language Pathology, so you can see what a professional career as a Speech-Language Pathologist looks like. As a speech-language pathologist, you'll be able to use the information you've learned in the classroom in a profession that's fulfilling and allows you to care for others in a rewarding way.

You'll get to work with young children with speech disorders to help get them back on track. You'll also get to develop relationships with their families, which can be rewarding as well. For many kids, speech disorders can get in the way of normal social development, and giving support can be so gratifying. It's a collaborative space, and you'll work with a great team of people, providing compassionate care to all of your clients.

You'll also get the chance to provide support and outreach to the local community, through non-profit organizations like support groups. If you've got an interest in teaching, you can play a role in educating students, which is a great way to expand your professional community.

Your work environment in speech-language pathology will be flexible and family-friendly, giving you a balance between a happy personal and professional life. Here are a few examples from some graduates from the UW Speech-Language Pathology program:

'I remember the first time I was able to help a child overcome their stutter. I work in an elementary school, and knowing that I can help those kids live happier, better lives, is exactly the type of rewarding feeling that led me into speech-language pathology in the first place.'

'A career in speech-language pathology has given me the opportunity to combine a love of science, with a passion for working with people. I get to use my education to take care of individuals who are struggling with some very personal problems, and to work with some wonderful teams of people.'

As you begin to think about your future, please consider pursuing a career in speech-language pathology."

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