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Assessing the Correlation Between Perception of Gender Equality in *Grey's Anatomy* and Motivations for Viewers Identifying as Women to Enter Healthcare-Related Fields

ABSTRACT

Although gender inequality within science, technology, engineering, and mathematics (STEM) is diminishing, this advancement is skewed within differing fields; women dominate the healthcare spectrum, whereas men dominate in fields such as computer science and engineering. The vast dispersal of women within STEM creates a query as to what may be creating this gender gap. This research paper seeks to identify the involvement of popular television within this development, specifically by analyzing *Grey's Anatomy* and the correlation between its viewers' perception of gender equality within the show and their motivations to enter healthcare. By doing so, this paper addresses whether the Social Role Theory applies to television and if women choose their careers based off what they view on television. By sending out a survey to measure participants' perceived level of gender equality within *Grey's Anatomy* and their motivations to enter healthcare, this study can draw a correlation between the two and form an implication from the results. According to the collected data, there is a moderate, positive, correlation between the perception of gender equality in *Grey's Anatomy* and motivations for participants to enter healthcare, making this study successful in forming initial conclusions that television correlates to a women's career choice.

Introduction

In 2018, women earned 53% of science, technology, engineering, and mathematics (STEM) degrees within the United States (Fry et al., 2021). Although this statistic indicates that gender inequality within STEM is diminishing, this level of equality is skewed across varying STEM fields. For example, in the same year, women obtained 85% of bachelor's degrees in health-related fields, but only 22% in engineering fields and 19% in computer science fields (Fry et al., 2021). Though many factors may account for this advancement in healthcare fields, including interventions and pre-existing stereotypes, equal representation of female healthcare professionals in comparison to men in the media, specifically television, could potentially play a large role. Little to no television shows feature women in technology-based positions, whereas healthcare-based television shows such as *Grey's Anatomy* not only feature women, but also present them as equally capable at their jobs in comparison to men. This viewing can subconsciously shift a woman's perception that they can be successful in healthcare, whereas they may not develop this perception of other STEM-related fields. In order to explore how the portrayal of women in a career on television can influence a woman's career choice, this paper aims to look at the extent to which there is a correlation between perceived gender equality in *Grey's Anatomy* and the motivations for women to enter healthcare based on this perception.

Literature Review

The Influence of Television

Currently, nearly 122 million households in the United States own a television (Stoll, 2022), and approximately 20 million viewers tune in weekly to watch *Grey's Anatomy* (IMDb). According to past research, people's behaviors

(Comstock, 1978; Fearing, 1947; Pearl et al., 1982) and perceptions about what is acceptable (Ertl et al., 2017; Koenig & Eagly, 2014; Steinke, 2003) can be influenced from watching television. Essentially, what is being viewed on television becomes the accepted norm, and becomes incorporated into everyday life (Lauzen et al., 2008). When people's perceptions about what is acceptable shift, they tend to behave accordingly. For example, viewers of television may see people smoking on television and perceive smoking as normal, causing them to also smoke (Gidwani et al., 2002; Heatherton & Sargent, 2009). Television has also been shown to shift motivations as to which career viewers choose to enter (Terry & Peck, 2019), but it has not been proven whether it is pure exposure to a career on television that causes this correlation, or if it is the perceptions that viewers develop of the typical demographic of an occupation.

The Social Role Theory

The ideology that television influences what viewers perceive as societally acceptable can be applied to the Social Role Theory, which stipulates that people believe their role in society is what has been previously displayed. The social perception about groups typically arises from members of said group being underrepresented within the general population (Isaac et al., 2012; Koenig & Eagly, 2014). Based on this finding, if a group sees themselves less in occurrence and less in ability within a job in society, they will believe they are not capable in that job and thus will be less likely to enter that career. The Social Role Theory is most often applied to women, as past research has focused mainly on how societal gender roles can influence women's career choices. When applied to gender, the Social Role Theory assumes that gender inequality in the workplace comes from women believing they do not belong in certain positions based on being shown less in these positions and stereotypes that they are inferior to men. Inversely, women are more likely to enter roles that they have been shown equal to men in both numbers and capability (Isaac et al., 2012). Past research has not examined whether the Social Role Theory can be applied to television, but it has been analyzed that gender stereotypes on television, or rather, depicting women as inequal to men in STEM-related fields, can alter a women's self-concept (Ertl et al., 2017). Based on television's ability to alter what is socially acceptable as well as change a women's self-concept, it is possible that gender roles shown in television can influence a woman's career choice in accordance with the Social Role Theory.

Representation of Women in STEM on Television

The Social Role Theory, and the possibility that it could be applied to television, holds significance as women are underrepresented in STEM fields on television, in comparison to their total population. Although women make up approximately 51% of the general population, they only consist of 37% of STEM-based characters (Long et al., 2010; Steinke, 2003; Steinke et al., 2008). In addition, when women are shown within these fields, they are often side characters, and shown as inferior to men (Aladé et al., 2021; Davis 2018; Iyer & Nishime, 2020). The Social Role Theory asserts that this occurrence can be highly detrimental, as women may perceive themselves as not belonging in STEM-related fields, and thus not enter these fields. However, it has not yet been proven that gender equality, or lack thereof, in television can influence a women's perception about what career they belong in, as a women may not see these portrayals in television as a valid representation of society.

Grey's Anatomy

In contrast to the majority of television shows featuring characters in STEM, *Grey's Anatomy* depicts a near equal portrayal of men and women when examined via content analysis (Wilks, 2012). *Grey's Anatomy* is a running medical drama, currently with 18 seasons, which follows Meredith Grey, an aspiring surgeon, through the beginning of her residency to becoming an attending and head of surgery (IMDb). One of the main themes that *Grey's Anatomy* depicts

is gender equality, through multiple women holding leadership positions, a nearly even distribution of male and female characters, as well as featuring a female protagonist, something which is not often seen across STEM-based television shows (Steinke et al., 2008). Based on the Social Role Theory, this would influence viewers to believe that women are often successful in healthcare, and in turn influence women to enter healthcare. *Grey's Anatomy* has been shown to significantly impact audiences' personal decisions, in which viewers behave in ways based on their viewings of *Grey's Anatomy* (Eyal & Finnerty, 2009). Additionally, *Grey's Anatomy* is available on multiple streaming services such as Netflix, Hulu, and ABC, and the show is one of the top 5 most watched television shows live, averaging 19.44 million total viewers per episode (IMDb). This means that it is important to evaluate the impacts watching *Grey's Anatomy* may have, as these influences will reach a wide population. Past research in conjunction with the wide availability of *Grey's Anatomy* indicates that the show is a potential source for women to perceive that they are equal in numbers and capability to men in healthcare. However, past research has not examined the perception of gender equality for viewers, and how this may correlate to women being motivated to enter healthcare positions.

Gap in Research

Though research has examined gender equality on television, there has been no analysis of the correlation between viewing these portrayals and career motivations. Due to confounding variables, there is no direct way to identify television as a cause for women to enter or refrain from STEM-related fields. Even so, a correlation can be identified between the two. Based on the Social Role Theory, negative gender stereotypes in STEM-related fields would correlate to less women entering said fields, while the opposite would occur if a television show lacked these negative gender stereotypes. From this principle, it can be inferred that the viewing of gender equality in *Grey's Anatomy* will lead to a greater motivation for women to enter healthcare related professions. By examining this inference, it can be determined whether the Social Role Theory can be applied to television. If so, television could provide a basis for promoting gender equality within occupations it is not yet present. Therefore, the question must be examined: To what extent is there a correlation between the perceived level of gender equality in healthcare within *Grey's Anatomy* and motivations for women to enter healthcare related fields? It is hypothesized that there will be a strong, positive correlation between these two variables based on the principles of the Social Role Theory. In order to analyze this question, *Grey's Anatomy* will be utilized because it has been shown to portray men and women equally. This means that participants' perceptions about gender equality within the show will be skewed across whether they perceived men and women as equal, women as inferior to men, or women as superior to men. Because not all participants will perceive women inferior to men as would be found in most STEM-based television shows, *Grey's Anatomy* can be utilized to examine whether the perception a female viewer has about gender equality within the show can alter motivations for them to enter healthcare.

Method

A survey method was utilized in this study in order to determine the correlation between perceived gender equality in healthcare within *Grey's Anatomy* and motivations for women to become healthcare professionals. Within this survey, a Likert Scale was adopted, meaning participants ranked answers for each category on a scale from 1 (completely disagree) to 5 (completely agree). By using a survey, demographic information was able to easily be collected to guarantee that individuals within the study reflected the desired population of interest (Ponto, 2015). Furthermore, surveys provide a means in which a large group of participants can be sampled within a short time frame (Ponto, 2015). A quantitative Likert Scale was employed rather than a qualitative method because qualitative analysis do not allow for generalizable data nor account for differences in the population, while a quantitative analysis does (Steckler et al., 1992). Before the survey used within this study was distributed, it was examined for ethical concerns and

received approval through my institution's Institutional Review Board (IRB), as well as through the IRB of a local university.

Participants

Participants were recruited through social media as well as through professors at local universities in order to ensure that the survey had enough responses to result in statistically significant data. Prior to the completion of the survey, participants were required to fill out a consent form, which can be found within Appendix A of this paper, in order to meet the ethical considerations of the IRB. At the start of the survey, participants also needed to provide specific demographic information including their gender. Respondents who did not identify as women or had not watched *Grey's Anatomy* were removed from the study. The research question only applies to women, and those who did not watch *Grey's Anatomy* would not have been able to have a perceived level of gender equality in healthcare within the show.

Questionnaire

When addressing whether there is a correlation present between perception of gender equality in healthcare within *Grey's Anatomy* and motivations for women to enter healthcare, it is imperative to measure how participants perceive women in comparison to men in *Grey's Anatomy*, along with their level of motivation to enter healthcare. In order to accurately determine these variables, the questionnaire included within this study was modeled off previous questionnaires that had been evaluated for both validity and reliability (Czarney et al., 2008; Fung & Ma., 2000; Tucciarone, 2014). The outlines of previous questions were adapted to fit the research question this paper aims to address. The complete survey can be found in Appendix B of this paper.

The perception participants had of gender roles within *Grey's Anatomy* was monumental to this study. The adapted survey assesses whether participants felt *Grey's Anatomy* portrayed men and women as equal, women as superior, or men as superior. This data will provide the answer to the research question being asked within this paper, with the hypothesis that if participants perceive women to be equal to or superior to men within healthcare in *Grey's Anatomy*, then they will be more motivated to enter the healthcare field. Because there are no reliable surveys that assess perception of gender equality within the media, questions from a survey which addressed common gender stereotypes towards women in the media were modified to fit *Grey's Anatomy*. To look at gender equality rather than simply stereotypes towards women, all questions were asked twice, once pertaining to women and once pertaining to men. The answers would then be compared between genders. (Fung and Ma., 2000). This 5-point Likert Scale was used in past research and proven to be internally reliable, with a Cronbach's Alpha score of 0.7 (Fung and Ma., 2000). The adapted survey was found to be equally reliable, receiving the same Cronbach's Alpha score.

Additionally, it was necessary to address whether women were increasingly motivated to enter healthcare based on their perception of gender equality within healthcare in *Grey's Anatomy*. In order to assess this variable, a question was included at the end of the survey which was replicated from a past paper which looked at how popular television affected one's career choice (Tucciarone, 2014). The question was modified to pertain to healthcare rather than programming, the profession being looked at within the original survey. The 5-point Likert Scale was used again in order to ensure internal consistency and that variables could be accurately correlated.

Analysis

The data analysis within this study aimed both to determine if there was an existing correlation between perception of gender equality within healthcare in *Grey's Anatomy* and motivations for women to enter healthcare, as well as the extent to which that relationship, if present, exists. All data was collected on a secure SurveyMonkey server and then

transferred to google sheets, and lastly a Statistical Package for Social Sciences (SPSS) software. On google sheets, responses that did not come from women who watched *Grey's Anatomy* were removed.

After responses were removed, the remaining data was recoded to measure perceived equality. All questions within the questionnaire were paired, meaning that each question was asked twice so that each gender would be assessed for each variable. In order to measure equality, the difference in numerical answers were added together to calculate a participants' perceived equality score, rather than just averaging all the participants' answers as most Likert scales do. If the scores were averages, it would not provide an accurate value for perceived gender equality, but instead what participants answered across all questions. To ensure that scores would represent not only gender equality, but also if a participant viewed women as inferior or superior to men, the questions that agreed with negative stereotypes towards women were negatively scored whereas questions that went against negative stereotypes towards women were scored as their true value. The corresponding question pertaining to men was coded inversely. Table 1 shows an example of how a participant's response may have been recorded for the first two questions, and what their subsequent equality score would be. By using this process, participants who perceived women superior to men in the show would receive an equality score greater than zero, participants who perceived women equal to men in the show would receive an equality score of zero, and participants who perceived women inferior to men in the show would receive an equality score less than zero. This would guarantee that how equally a participant viewed men and women in *Grey's Anatomy* was standardized for correlation, and that a higher number would mean a greater perception of women in comparison to men, just as a higher number for motivation would mean that participants were more motivated.

Question	+/-	Answer	Recoded
$Q1_{women}$: family is the place for women	-	2	-2
$Q1_{men}$: family is the place for men		2	2
$Q2_{women}$: women are dependent on men	-	1	-1
$Q2_{men}$: men are dependent on women		3	3
Equality Score			2

Table 1. Recoded Response

Responses

Overall, the questionnaire employed in this study generated 142 responses. However, this number was limited due to many responses from participants outside the required demographics for consideration. Of the 142 respondents, 21.98% (n=31) of participants did not identify as women and 43.66% (n=62) of participants did not watch *Grey's Anatomy*. After removing these responses from consideration, 49.30% (n=70) of participants remained as fitting the desired demographic for analysis. However, 4 of these responses were incomplete, leaving 66 (n=66) responses for analysis.

Perceived Equality

Table 2 shows the calculated equality scores for all eligible participants. As shown in Table 2, participants scored above, below, and equal to zero. This means that there was a dispersion of participants who perceived men and women as equal, women as inferior to men, and women as superior to men within *Grey's Anatomy*. As shown in the table, 34.3% (n=24) of participants perceived men and women as exactly equal within *Grey's Anatomy*, in accordance with past research which identified men and women as being portrayed equally in the show (Wilks, 2012). The skew of the data will be accounted for in the correlation to participants' motivation to enter healthcare. If all participants viewed women the same way in *Grey's Anatomy*, it would not have been possible to correlate their perception to motivations. The fact that participants' perception of gender equality within *Grey's Anatomy* is skewed is necessary to the basis of this study.

Value	Frequency	Percent
-7	2	2.9
-6	1	1.4
-5	4	5.7
-4	2	2.9
-3	4	5.7
-2	8	11.4
-1	8	11.4
0	24	34.3
1	5	7.1
2	2	2.9
3	4	5.7
4	1	1.4
5	1	1.4

Table 2. *Equality Scores*

Motivations

Table 3 shows participants' responses to the question about how their perception of women in comparison to men influenced their motivation to enter healthcare. The mean score for motivation was 3.83, indicating that more participants agreed or strongly agreed that their perception of women in comparison to men in *Grey's Anatomy* was a motivational factor for them to enter healthcare than the number of participants who disagreed or strongly disagreed with this statement. Again, participants answered differently for how strongly they were motivated to enter healthcare based on the portrayal of women in comparison to men in *Grey's Anatomy*, which means that a correlation can be identified.

Value	Frequency	Percent
1	2	3.0
2	4	6.1
3	16	24.2
4	25	37.9
5	19	28.8

Table 3. Motivations

Results

In order to obtain results from the generated responses, data was entered into the SPSS software. To analyze whether there was a correlation between portrayals of women in *Grey's Anatomy* and motivations for women to enter healthcare, a Chi-Square test (also known as the Pearson Chi-Square test) was employed. Because a Likert scale was used which collects ordinal data, data that operates off the ranking of categories, the appropriate statistical test was a Chi-Square test (Wilson-Doenges, 2015). A Chi-Square test is a form of statistical analysis which can assess whether potential correlations within a study occurred by chance for non-parametric variables, such as data collected through use of a Likert Scale (McHugh, 2013). The Chi-Square ($\chi 2$) was also the most appropriate test for this study because each participant constituted for one independent response, each providing 2 categorical variables - perceived gender equality and motivation. In addition, the Chi-Square test can provide the significance of observed differences, (McHugh, 2013) which is necessary in concluding whether the results of this paper could be considered as true.

The Chi-Square test provides a null hypothesis and alternative hypothesis, with the calculated significance, or *p* value, designating whether the null hypothesis should be rejected or accepted. The null hypothesis within a Chi-Square test states that there is no significant difference in dependent variables based on independent variables, whereas an alternative hypothesis states that there is a significant difference in dependent variables based on independent variables. For this study, the independent variable is how participants perceived women in comparison to men within healthcare in *Grey's Anatomy*, and the dependent variable is motivations for women to enter healthcare. Therefore, the following null and alternative hypotheses can be generated:

Null hypothesis: there is no difference in motivations for women to enter healthcare related fields between those who perceived women as inferior to men in *Grey's Anatomy* and women who perceived women as equal to or superior to men in *Grey's Anatomy*

Alternative hypothesis: there is a difference in motivations for women to enter healthcare related fields between those who perceived women as inferior to men in *Grey's Anatomy* and women who perceived women as equal to or superior to men in *Grey's Anatomy*

For a Chi-Square test to be considered significant, data must produce a *p* value less than 5% ($p < .05$). If the *p* value is less than .05, then the null hypothesis can be rejected, and the alternative hypothesis can be accepted. If the *p* value is greater than .05, then the null hypothesis will be accepted. As shown in Table 4, the calculated *p* value, or asymptotic significance score, for the Chi-Square test is .048 ($p = .048$; $p < .05$), indicating that the data found in this study is significant meaning that the null hypothesis can be rejected, and the alternative hypothesis can be accepted. Although the acceptance of the alternative hypothesis determines that there is in fact a dependent correlation between perception of gender equality within healthcare in *Grey's Anatomy* and motivations for women to enter healthcare, it does not fully answer the research question within this paper. To do so, the direction and strength of the relationship between these variables must be examined in order to address the extent to which this correlation exists.

A Cramér's V test was conducted to analyze the strength of relationship between variables within this study because the data set contains two variables, each with greater than two values (participants could have scored a large

variety of combinations between their perceived equality and motivation scores). Cramér's V (Vc) is a number between 0 and +1 that indicates how strongly two categorical variables are correlated, with a higher Vc indicating a stronger association. Again, the Cramér's V test requires a *p* less than .05 for results to be considered as true (Kearney, 2017). If the value is greater than .05, then another statistical test would be needed in order to evaluate the strength of the present relationship. As shown in Table 4, the calculated Cramér's V value for this study was .498 (Vc=.498). Additionally, the *p*, or approximate significance, value for this test was .048 ($p=.048$; $p<.05$), indicating that these results were significant and could be considered true. These values assert that there is a moderate relationship between the perception of gender equality within healthcare in *Grey's Anatomy* and motivations for women to enter healthcare-related fields, answering the research question previously asked in this paper.

	Value	Asymptotic Significance (2-sided)	Approximate Significance
Pearson Chi-Square	65.372	.048	N/A
Cramér's V	.498	N/A	.048
N of Valid Cases	66	N/A	N/A

Table 4. Statistical Analysis Results

Discussion

The purpose of this research study was to develop an understanding of the relationship between perception of gender equality within healthcare in *Grey's Anatomy* and motivations for women to enter healthcare fields. The results generated through the analysis of the data collected suggest that perception of gender equality in *Grey's Anatomy* and motivations for women to enter healthcare fields are dependent on each other with a moderate, positive correlation. This supports the study's hypothesis that the better participants viewed women in comparison to men in *Grey's Anatomy*, the more motivated they would be to enter the healthcare field. This conclusion can be drawn from the Chi-Square test, which signified that perception of gender equality within healthcare in *Grey's Anatomy* and motivations for women to enter healthcare were dependent on one another. However, this study also hypothesized that there would be a large correlation between the variables being assessed. This part of the hypothesis was refuted by the Cramér's V value which showed that there is only a moderate correlation between perception of gender equality in *Grey's Anatomy* and motivations for women to enter healthcare related fields. Consequently, the results of this study are consistent with the Social Role Theory, in which the way women are portrayed in society will contribute to their ultimate career goal (Isaac et al., 2012; Koenig & Eagly, 2014), but present a nuance to past research in showing how the Social Role Theory can be applied to television. However, the findings of this study are limited to *Grey's Anatomy* and healthcare, so future research should be conducted to further aid the conclusion that the way women are depicted on television in comparison to men has an impact on their ultimate career goal. Nonetheless, the findings of this study present a new outlook to enhancing gender equality in the workforce, and a potential solution of using television to do so.

Limitations

The number and recruitment of participants within this study served as a limitation making the findings less generalizable to a larger population. Although 66 participants was enough to obtain significant results, a smaller sample is less representative of the entire population being studied. This means that the results of the study could be independent to the participants within this study, and different result would be found within another sample. Additionally, participants were recruited through social media and email, meaning that participants were not randomly selected. Non-parametric tests, such as the Chi-Square test assume that data is obtained through random selection (McHugh 2013), indicating the results of this study could hold more validity had it been conducted through a random selection process. Because participants had to consent to taking part in this study, all were volunteers, meaning that there may have been participants who were eligible for the study but opted not to complete it. This could skew the findings of the study towards the volunteers who may have answered to aid the query of interest. Overall, these limitations restrict the findings within this study from being generalized to a larger population.

In addition, survey methods only provide a means to measure correlation. Because of this, using a survey method meant that this research project was only able to evaluate a correlation between perception of gender equality within healthcare in *Grey's Anatomy* and motivations for women to enter healthcare based on this perception, not a causation. This means that factors outside of perception of gender equality in *Grey's Anatomy* could have motivated the participant to want to enter healthcare. Although the question asked within the survey was framed to answer the research question, it is possible that participants overlooked the wording and answered accordingly. For example, it is possible that participants' motivations were dependent on the amount of *Grey's Anatomy* watched, which was not accounted for within this study. This would result in participants' responses, as well as the findings of this study, being skewed by a variable which was not considered.

Implications and Future Research

Based on the finding that perceiving women inferior to men within healthcare in *Grey's Anatomy* can decrease motivations for women to enter healthcare-related fields, it is possible that viewing women inferior to men in other STEM-related fields on television could be a factor deterring women from technology-based careers such as engineering or computer science. This implies that if the media were to stream television programs promoting equality in these fields, more women would be motivated to enter these occupations, furthering gender diversity in the overall workplace. The findings of this study present a new outlook on diversifying the workplace by depicting the impact popular media has on motivations for women to enter the healthcare field. Thus, efforts to portray women as equal to men should be utilized in popular media to motivate women to enter jobs that they are currently the minority in. This method would theoretically reach a larger population than past trials to increase gender diversity and thus would potentially have a greater impact. However, this study did not prove that there is a positive correlation present in other depicted fields on television, so future research should aim to look at how gender equality, or lack thereof, on television in other fields correlates to motivations for women to enter said occupations. Future research should also look to generate a larger sample size in order to generalize the findings within this study to a sizeable population. If the findings of this study are consistent across differing fields and samples, then television streaming can truly be identified as a means for promoting gender equality within the workforce.

It may also be beneficial to conduct an experiment to rid this method of confounding variables and thus find perception of gender equality within healthcare in *Grey's Anatomy*, or another television show, as a cause for women entering healthcare or other depicted fields. As explained in the limitations section, it is possible that participants answered about their motivations not according to their perception of gender equality within the show, even though that is what the question asked. Additionally, the amount of *Grey's Anatomy* viewed by the participants could have been a confounding variable, as this study did not account for time spent watching the show, just whether a participant watched the show. This could either be combated by creating an experimental study where participants watch a show they have never seen before and their perception of gender equality and motivations to enter the depicted field would

be measured after their viewing or by considering confounding variables, such as the amount of television watched, within the analysis of future research. Ultimately, with the aid of future research, it is possible that a viable means to increase gender diversity within the workforce can be established.

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