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An Investigation into the Portrayal of Organ Donation on *Grey's Anatomy* Seasons 1 Through 15

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ABSTRACT

The current project sought to extend prior research examining organ donation portrayals on *Grey's Anatomy* by examining the first fifteen seasons. Guided by the health belief model, content analysis revealed more attention was given to benefits of donation than barriers. Contrary to previous research, more attention was given to refuting rather than promoting commonly cited myths. The results also address attention to the health threat as well as *Grey's Anatomy*'s representation of self-efficacy in registering to be an organ donor. Finally, proportion tests revealed significant differences between the types of organs transplanted on *Grey's Anatomy* compared to organs transplanted in the United States. The results are discussed with an emphasis on portrayal trends throughout Season 1 through 15 as well as the theoretical and practical implications of our findings.

Presently, 169 million Americans have registered as organ donors and approximately 95 transplants occur daily in the U.S. (United Network for Organ Sharing [UNOS], 2022). As encouraging as these numbers appear, they conceal a disconcerting attitude-behavior relationship: 95% of U.S. adults support organ donation yet only 58% of U.S. adults are registered (Health Resources Services Administration [HRSA], 2020). Mass media coverage of donation and transplantation offers one explanation for the current attitude-behavior gap. Conesa et al. (2004) revealed the mass media represent a primary source for transplantation information. Within the context of entertainment programming, the organ donation system and process have frequently been misrepresented as easy for malevolent doctors and profiteers to exploit (Morgan et al., 2007, 2010; Quick et al., 2014; Tian, 2010). Unfortunately, these portrayals often provide grounds for individuals deciding not to register (Morgan et al., 2005; Williamson et al., 2017).

Considering media influence on potential donors' beliefs and subsequent registration behavior (Morgan et al., 2005, 2010; Quick et al., 2014), the current project stands to move the literature forward by examining 15 seasons of *Grey's Anatomy's* representation of transplantation. *Grey's Anatomy* is an icon of American television as it currently is the longest running medical drama (France, 2019). In 2020, Grey's Anatomy was streamed for 657 million hours on Netflix, making it the second most streamed TV show behind only *The Office* (Koblin, 2021). Additionally, the 15th season, which was the last season examined by this study had among the highest ratings in the 18–49 demographic while also receiving the third most social media interactions of any entertainment broadcast program (Nielsen Ratings, 2020). Given *Grey's Anatomy*'s reach, researchers interested in promoting organ donation have become increasingly interested in the show's portrayal of organ donation (Berger, 2010; Quick et al., 2014). Although a handful of studies have analyzed a few seasons (Morgan et al., 2007) or a storyline spanning a few episodes (Quick, 2009), the current study moves this literature forward by expanding its coverage to all 15 seasons of *Grey's Anatomy*.

Specifically, the current study sought to systematically examine a population sample of all organ donation content portrayed on the show across its 15 seasons using a systematic content analysis guided by the health belief model (HBM) (Rosenstock, 1974). Television portrayals of organ donation are a leading source of information about transplantation (Conesa et al., 2004). Moreover, we compared organ transplant trends depicted on *Grey's Anatomy* with organ transplants occurring during the same timeframe in the U.S. using UNOS data. Together, these results inform organ donation practitioners regarding what prospective donors might know and perceive about organ donation and thus, enhances audience insight in order to create more informed message strategies moving forward.

Health belief model

The health belief model (HBM) explains why individuals choose to take preventive health measures by identifying six key constructs – threat severity and susceptibility, barriers, benefits, self-efficacy, and cues to action (Glanz & Bishop, 2010; Rosenstock, 1966). Glanz and Bishop (2010) refer to a cue to action as a stimulus, either external or internal, needed to trigger the decision-making process to accept a recommended behavior (e.g., register as an organ donor). *Grey's Anatomy* serves as an external cue to act as it likely influences its viewers beliefs regarding their decision to register

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an organ donor. Severity and susceptibility speak to the threat posed by a health condition. Whereas severity involves the magnitude of the threat (i.e., medical and social consequences), susceptibility refers to the subjective perception of the likelihood of acquiring the health threat (Janz & Becker, 1984). In the context of organ donation, threat is reflected in the availability of organs for donation and the related consequences of needing a donation and one not being available. Studies by Morgan and associates (e.g., Harrison et al., 2008; Morgan et al., 2007) discovered infrequent portrayal of the donor shortage on medical dramas. Building on these studies, the current investigation examines the coverage of threat by focusing on portrayals of transplantation shortages across 15 seasons of *Grey's Anatomy*.

***RQ1**: How much coverage is given to the health threat of the organ donation shortage on Grey's Anatomy?*

Concerns about misleading or distorted portrayals of health issues animates much of the research in media effects, particularly regarding organ donation (Morgan et al., 2007, 2010; Quick et al., 2014; Tian, 2010). Along with driving the more apparent concerns of unrealistic expectations and fearmongering, inaccuracies or distortions in media may cause neglect of important issues. At present, the current organ shortage is mainly driven by increasing need for kidneys. Of the 106,866 eligible candidates on the waiting list, 90,372 (84.57%) of them are waiting for kidneys (UNOS, 2022). Further, some organs, such as kidneys, can be transplanted using living donors while other organs can only be transplanted by the deceased. Therefore, it is of interest which types of transplantations and waiting list stories appear on *Grey's Anatomy*.

***RQ2**: Are organ donation trends depicted on Grey's Anatomy similar to national trends in the United States?*

Once a threat is comprehended by an audience, then the perceived benefits and barriers of performing a recommended action are considered (Janz & Becker, 1984). Benefits refer to the positive impacts of performing the recommended behavior (Glanz & Bishop, 2010). More specifically, benefits represent a perception of the effectiveness of performing the recommended behavior. For example, individuals perceiving that their decision to register as an organ donor would save lives are perceiving a benefit of performing the recommended behavior. Research highlights the opportunity to save or improve another's quality of life as the greatest benefits of registering as an organ donor (Quick et al., 2014; Siegel et al., 2010; Williamson et al., 2017). Positive portrayals of donation can increase the number of registered donors. For instance, Morgan et al. (2009) found exposure to pro-organ donation narratives resulted in increased intentions to register in the future. Conversely, barriers refer to obstacles to performing the advocated behavior (Glanz & Bishop, 2010). Barriers identified in the literature include concerns regarding donor age, bodily integrity of the donor, medical mistrust, religiosity, financial corruption favoring wealthy individuals, and superstition regarding an impending death for donors (e.g., Downing & Jones, 2008; Quick et al., 2014; Reinhart & Lilly, 2020; Siegel et al., 2010; Williamson et al., 2017), as well as experiencing negative (i.e., disgust and fear) emotions (Morgan et al., 2008; Reinhart & Lilly, 2020). Quick et al. (2014) discovered a negative association between donation barriers and favorable attitudes toward registering as a donor. The HBM assumes individuals will perform a behavior if the benefits outweigh the barriers (Rosenstock, 1966). In this spirit,

***RQ3**: How frequently does Grey's Anatomy portray the benefits associated with registering as an organ donor?*

***RQ4**: How often does Grey's Anatomy portray the barriers associated with registering as an organ donor?*

Self-efficacy is another construct within the HBM and it refers to an individual's confidence toward successfully performing a behavior (Bandura, 1977). Prior research suggests a positive association between self-efficacy and registration intentions (Anker et al., 2010). Prior entertainment programming has not bolstered perceptions of self-efficacy toward registering (e.g., Morgan et al., 2007). Morgan et al. (2007) demonstrated that no attention was given to how to register as an organ donor on entertainment programming. Without knowledge of how to perform the recommended behavior, one cannot be confident in their ability to perform the behavior. Thus, the final research question.

***RQ5**: Does Grey's Anatomy model the various ways an individual can register as an organ donor?*

Method

Procedures and sample

The research team conducted an analysis of organ donation portrayals on *Grey's Anatomy* in the Fall

Each episode was the unit of analysis and was analyzed in chronological order to be able to follow storylines unfolding across multiple episodes, which is consistent with recent approaches to content analysis (Klos et al., 2015). Although many content analyses use scenes or clips, the authors chose episodes as the unit of analysis because the basic structure of every *Grey's Anatomy* episode is to have a main story and several smaller stories which connect to a larger theme alluded to in the beginning and explicated at the end of the episode. Further, as a drama, there is usually some conflict that is resolved or overcome and thus a clip approach may distort the valence and theme of the overall message.

Once the initial code sheet was devised by authors 1 and 2, it was pilot tested while training coders on randomly selected episodes. Coders were female undergraduates (authors 4 and 5). After extensive training, coders met with the researchers to clarify their initial coding discrepancies. Then, they finished coding the reliability sub-sample and the reliability

coefficients were calculated. Once intercoder reliability was sufficient, the two coders were each given half of the remaining episodes to code independently. Training and resolving early discrepancies occurred over a period of several weeks and all coding was completed within the same academic semester (Fall 2019).

To evaluate intercoder reliability, 20% of the episodes ($n = 19$) were coded by both coders. Krippendorff's (2004) α was utilized to determine if there was sufficient agreement between the two coders using the KALPHA macro for SPSS (Hayes & Krippendorff, 2007). In accordance with guidelines from Krippendorff's (2004), $\alpha \geq .80$ is considered acceptable and an $\alpha < .667$ were interpreted as unreliable and excluded in analyses of research questions. Most reliably coefficien correct for chance agreements, as opposed to simply reporting the cases of agreement (i.e., simple agreement). However, the advantages of using Krippendorff's α, which focuses on calculating disagreements, over other reliability coefficients and interclass coefficients is that it a) can handle any number of coders, b) adjusts to sample size, c) works at any level of measurement and d) can handle missing data (Krippendorff, 2016). Further simple agreement (SA) is disfavored because the interpretation of anything less than 100% is unclear, whereas α is tied to the statistical significance of relationships between categories (Hayes & Krippendorff, 2007; Krippendorff, 2016). Both simple agreement and α were reported for clarity. See Table 1 for α values and simple agreement (SA).

The narrative elements in each organ donation storyline were organized using the HBM. The code sheet was devised to focus on the main HBM constructs with narrative occurrences clustered underneath as representations of that construct. Because the content analysis was organized around episodes as the unit of analysis, categories focused on presence of narrative elements in an episode (e.g., was the myth of undeserving recipients promoted?) which were frequently evaluated as yes or no dichotomies. Frequencies of events within an episode were not counted.

Prior to giving attention to the measurement properties of the HBM constructs, a key variable of interest in the study pertained to the actual organs (e.g., lungs, kidneys) featured in *Grey's Anatomy*. We were interested in the relationship between organ coverage on *Grey's Anatomy* with organ transplant trends in the U.S. Each type of organ transplant was coded as being present or not, and acceptable reliabilities were obtained for each organ along with eyes and tissue). There was also an open-ended response for "other" transplants (e.g., one episode showcased a face transplant technique) as well as the frequency of deceased and living donors in organ donation narratives

HBM components

In the context of *Grey's Anatomy*, *threat* was operationalized as narrative and statistical elements communicating the health consequences of the organ shortage. Narrative tools for explaining the health threat were reliably identified using three sub-categories communicating: (a) the number of patients on the waiting list, (b) the number of patients who die each day on the waiting list, and (c) the number of patients who die each year on the waiting list.

The *benefits* of organ donation were operationalized as narratives where transplantation was successful for the donor and/or recipient. *Barriers* were operationalized as common beliefs identified in the literature which discourage donation, including a doctor behaving unethically by prioritizing transplant patients with whom they have a relationship (e.g., family or friend) over a stranger. Following prior research on the reasons why individuals do not register as donors (e.g., Williamson et al., 2017), the following myths represented barriers: (a) financial cost barriers, (b) religious barriers due to a desire to keep body whole at death, (c) inability to have an open-casket funeral, (d) "black market" for organs, (e) doctor stealing organs, (f) doctor will not save donor life, (g) priority given to rich and famous people, (h) undeserving recipient, (i) disgust over body mutilation, and (k) superstition of an impending death following registering as a donor. Each myth was coded as being present/not present as well as being promoted/refuted.

Instead of analyzing *self-efficacy*, we analyzed the presence of *Grey's Anatomy* communicating or showing the audience how to register as an organ donor. Specifically, we analyzed whether information about how to register for donation was included or not and sub-categories assessing different ways to become an organ donor. Each of the constructs were coded as present when one or more of the subcategories appeared in an episode.

Results

In the following analyses, chi-square goodness-of-fit tests were employed to determine if differences occurred between major categories. Additionally, because each of the subcategories represent non-independent dichotomous nominal data, it is possible that an episode contained multiple categories (i.e., doctor stealing organs, undeserving recipient). When there were two or more related variables, Cochran's Q tests were run to determine if certain categories emerged more than others. After achieving a significant Cochran's Q test, McNemar tests were performed to make pairwise comparisons among subcategories. To reduce the likelihood of committing a type I error, Bonferroni corrections were utilized by dividing the alpha level (.05) by the number of pairwise comparisons performed.

The Figure illustrates the proportion of episodes discussing organ donation during the 15 seasons of *Grey's Anatomy* as well as the proportion of organ donation episodes in which HBM constructs were examined. We conducted a descriptive time series analysis following the procedure outlined by Jebb et al. (2015) in order to describe the trends for the HBM variables appearing in the Figure. For each HBM variable, we tested generalized least squares regression models reflecting linear, quadratic, and cubic trends. Of those tests, linear trends were statistically significant for severity (time b = −.04, $p = .01$) and susceptibility (time b = −.02, $p = .03$), suggesting decreasing levels as seasons increased. No other trends were statistically significant.

Table 1. Descriptive Statistics and Intercoder Reliability.

			Episodes depicted	
Descriptive statistics and intercoder reliability ($N = 95$)	SA	α	*n*	%
Health threat (Severity and/or susceptibility)	**1.0**	**1.0**	**78**	**82.1**
Number of patients on waiting list	.95	.88	24	25.3
*Number of waiting list patients who die each day**	1.0	1.0	0	0.0
*Number of waiting list patients who die each year**	1.0	1.0	0	0.0
*Statistical evidence of organ shortage**	1.0	1.0	2	2.1
Narrative evidence of organ shortage	1.0	1.0	76	80.0
story of organ donor	1.0	1.0	27	28.4
story of organ recipient	.84	.66	46	48.4
story of waiting list patient	.95	.89	58	61.1
story of families impacted by donation	.95	.78	24	25.3
Benefits	**.95**	**.91**	**52**	**54.7**
Transplant donor success story	.89	.69	34	35.8
Transplant recipient success story	.95	.90	48	50.5
Life-saving | life-enhancing	.95	.91	28 | 20	29.47–21.05
Barriers	**.95**	**.86**	**30**	**31.6**
*Donating organs costs money**	1.0	1.0	0	0.0
*Rich and famous get organs first**	1.0	1.0	0	0.0
*Conflicts with religious beliefs**	1.0	1.0	0	0.0
*Supersitious beliefs about transplantation**	1.0	1.0	0	0.0
*Prevents open-casket funeral**	1.0	1.0	0	0.0
*Organs will be sold on the "black market"**	1.0	1.0	0	0.0
*Doctor will steal donor organs**	1.0	1.0	0	0.0
*Doctor will not save donor's life**	1.0	1.0	7	7.37
*Promoted | refuted**	1.0	1.0	4 | 3	4.2–3.2
Underserving recipient	1.0	1.0	16	16.84
Promoted | refuted[a]	1.0	1.0	7 | 7	7.4–7.4
*Body will be mutilated after donating**	1.0	1.0	1	1.1
*Promoted | refuted**	1.0	1.0	0 | 1	0.0–1.1
Emotional distress of donor and family	.95	.65	14	14.74
Promoted | refuted[a]	.95	.65	4 | 9	4.21–9.47
Organ Donation Registration	**.95**	**.78**	**11**	**11.6**
*Driver's license**	1.0	1.0	1	1.1
*Donor card**	1.0	1.0	0	0.0
*Online**	1.0	1.0	0	0.0
Communicate wish to donate with family	1.0	1.0	6	6.3
*Communicate wish to donate with friends**	1.0	1.0	0	0.0
Transplants	**NA**	**NA**		
Heart	1.0	1.0	49	51.2
*Intenstine**	1.0	1.0	6	6.3
Kidney	1.0	1.0	22	23.2
Liver	1.0	1.0	23	24.2
Lung	1.0	1.0	9	9.5
*Pancreas**	1.0	1.0	2	2.1
*Cornea**	1.0	1.0	0	0.0
*Tissue**	1.0	1.0	1	1.1
Donor Type (living | deceased)	.95	.90	12 | 33	12.6–34.74

Note. Variables with Krippendorff's α < .70 were excluded in analyses of research questions.
SA = Simple agreement.
*Variables that only appeared as "not present" in intercoder reliability sample ($n = 19$).
[a]Some instances could not be categorized as promoting or refuting.

RQ1: Organ shortage threat

Results revealed a majority of *Grey's Anatomy* episodes that included organ donation narratives referenced the threat of the organ shortage ($n = 62$), $\chi^2(1, N = 95) = 8.85$, $p = .003$, Cramér's V = .31.However, there was variation in the presentation of the health threat across episodes, $Q(2, N = 95) = 48.0$, $p < .001$, Cramér's V = .50.Of the evidence presented, attention to the waiting list ($n = 24$) was presented often whereas no attention was given to the number of individuals dying due to the organ shortage. Examples of how *Grey's Anatomy* conveyed the severity of organ donation are below, with the first from an episode entitled, *"Beat Your Heart Out,:"*

> Stacy Pollock, 9, is suffering from secondary pulmonary hypertension due to a ventricular septal defect (VSD). She needs a heart transplant. The doctors are forced to explain that Stacy will spend years in the hospital waiting. As a temporary solution, Dr. Bailey devises a medicine pump that Stacy can wear as a backpack, but the episode ends in a note of uncertainty about when, if ever, Stacy will receive a donor heart.

In another waiting list story from the episode "Perfect Little Accident" a survivor of lymphoma and leukemia develops pulmonary fibrosis:

> He needs a transplant, but because of his past medical history and risk of cancer returning, he is considered a high-risk candidate. The doctors at Seattle Grace tell the patient that because donor lungs are scarce, and there are more low-risk candidates on the list, he is unlikely to ever get a donation. The doctors are attached to this patient and are desperate to save his life. Dr. Cristina Yang ends up recovering lungs from medical waste and offers them to the patient. The patient accepts and undergoes successful transplantation.

RQ2: Organs, eyes, and tissue representation

Results revealed statistical variation in which transplantable organs, eyes, and tissue were mentioned on *Grey's Anatomy*, $Q(7, N = 95) = 154.79$, $p < .001$, Cramér's V = .48. Specifically, McNemar tests revealed the heart ($n = 49$) was mentioned more than other organs, eyes, and tissue ($p < .001$). The liver ($n = 23$) and kidneys ($n = 22$) were mentioned more than the lung ($n = 9$), intestine ($n = 6$), pancreas ($n = 2$), tissue ($n = 1$), and eyes ($n = 0$) ($p < .001$). Lungs were mentioned more than the intestine, pancreas, tissue, and eyes ($p = .039$). McNemar tests revealed no other differences. Proportion tests were performed comparing percentages from our content analysis with percentages available from UNOS. Three trends were observed. First, *Grey's Anatomy* overrepresented heart transplants (44.14%) compared to actual heart transplants performed in the U.S. (8.62%), $z = 11.84$, $p < .001$. Second, *Grey's Anatomy* (5.41%) overrepresented intestine transplants compared to actual transplants in the U.S. (4.6%), $z = 4.95$, $p < .001$. Third, *Grey's Anatomy* (19.82%) underrepresented kidney transplants compared to actual kidney transplants performed in the U.S. (61.01%), $z = 8.24$, $p < .001$. *Grey's Anatomy* has written many storylines about heart transplants and the emotion attached to them, but another example comes from a season four episode aired in 2007:

> **"Haunt You Everyday"** A young women suffers brain death at the hospital, and is being supported by a ventilator. When the doctors contact her family to discuss ending life support, they discover her father is in need of a heart transplant. The father initially feels disconcerted about being transplanted with his daughter's heart, but is eventually convinced to accept it for himself. The father comes to see his daughter's heart as more than an organ, but as part of her spirit within him.

RQ3 and RQ4: Benefits and barriers of organ transplantation

The benefits of transplantation were routinely presented across the episodes ($n = 52$), $\chi^2(1, N = 95) = 0.85$, $p = .356$. Variation in how success was portrayed was evident throughout *Grey's Anatomy* with attention given to organ recipients ($n = 48$) and donors ($n = 34$), $Q(1\ N = 95) = 8.91$, $p = .003$, Cramér's V = .31.Greater attention was given to the benefits (54.7%) of transplantation compared to the barriers (31.6%), $z = 38.50$, $p < .001$. An example of how *Grey's Anatomy* shows the medical and social achievements of advances in transplantation comes from 2008.

> **"There's No 'I' in Team"** The surgeons work to pull off a "domino" kidney transplant surgery. Six-pairs of people enter into an exchange with the intent of six patients receiving transplants simultaneously, from someone they've never met. Throughout the course of the day, the system almost collapses multiple times due to interpersonal conflict and fears of donation. Donors in the chain struggle, but ultimately overcome barriers and hesitations with the help of the medical staff. Six lives are successfully saved.

The majority of episodes (69.4%) did not highlight transplant barriers ($n = 65$), $\chi^2(1, N = 95) = 12.90$, $p < .001$, Cramér's V = .37. Several barriers to registering as an organ donor have been identified in the literature such as financial costs, religious reasons, open casket funeral difficulties, lack market purchase myths, doctors not saving patients, body mutilation, superstition, as well as rich and famous privileges. Of the 11 barriers, variability in portrayal was discovered, $Q(10, N = 95) = 47.57$, $p < .001$, Cramér's V = .22. Specifically, the analysis revealed the undeserving recipient barrier ($n = 7$) was promoted most often followed by the doctor will not save patients' life barrier ($n = 4$), and the distress barrier ($n = 4$). None of the other barriers were promoted once across the 15 seasons.

Although *Grey's Anatomy* promoted many of the barriers identified in prior studies, the program also successfully refuted a number of these myths across the 15 seasons. Of the 11 barriers mentioned above, significant variation in refuting these barriers was discovered, $Q(10, N = 95) = 51.39$, $p < .001$, Cramér's V = .23. Specifically, *Grey's Anatomy* successfully refuted the distress myth ($n = 9$), undeserving recipient myth ($n = 7$), superstition myth ($n = 3$), doctor will not save my life myth ($n = 3$), and the body mutilation myth ($n = 1$). With respect to the superstition myth, proportion tests revealed greater attention was given to refuting, as opposed to promoting, the myth, $z = 32.0$, $p < .001$. Similarly, proportion tests revealed greater attention was given to refuting, as opposed to promoting, the distress myth, $z = 17.67$, $p < .001$. Conversely, proportion tests revealed greater attention to promoting, rather than refuting, the doctor will not save my life myth, $z = 5.0$, $p < .001$. Many story arcs in *Grey's Anatomy* start with a barrier but refute and overcome myths and barriers in falling action and resolutions. An episode from season nine (originally aired in 2013), episode seven illustrates this quite well:

> **"Transplant Wasteland"** An ALS patient, and former medical student, wishes to die on his own terms. He comes to the hospital for a planned "donation after cardiac death," because he wants to die before his disease progresses to a terrible quality of life and want to be an eligible organ donor. One doctor at the hospital, a former medical school classmate, is upset by his choice and confronts him about choosing his own death. However, the patient goes through with it, knowing his organs will save many people. The transplant is almost blown when his mother becomes severely distressed after her son's death. The doctors convince her she must move, so that they have time to recover the organ before they are no longer usable. The mother fights past her distress to honor her son's wishes.

The "undeserving recipient" was a common dilemma used by writers to tell intricate stories. A prime example comes from season eight, from an episode airing in 2006 originally:

> **"Tainted Obligation"** The father of Dr. Meredith Grey comes to the hospital with end-stage liver failure, needing a transplant. It is communicated that patients are only eligible for the waiting list a year after being sober, refuting the idea that organs may be wasted on poor health behavior. Grey's father, Thatcher, has clearly not been sober and cannot get on the waiting list. Instead of appealing to UNOS or trying to bend the rules, Dr. Grey decides to give part of her liver to her father. The surgery is successful.

Most often, the storylines of *Grey's Anatomy* conveyed many dimensions of the organ donation crisis along with the barriers and benefits of donation through intricate storylines, which demonstrate the struggles individuals face regarding decisional efficacy. An exemplar of this complexity is found in a season 11 episode:

"When I Grow Up" After a bank robbery, two responding officers, who are also brothers, are killed in the line of duty, and the getaway driver is injured. All are at Seattle Grace. The driver, a young teen, needs a liver transplant to recover from his injuries. The hospital staff and victim's family face an ethical dilemma when they realize that one of the deceased officers is a donor match for the shooter. While Dr. Grey is pitching the victim's mother on consenting to organ donation generally, Dr. Bailey barges in and asks the mother to direct a donation to the driver. The mother is distressed and withdraws consent. Outside the patient room, Dr. Grey says to Dr. Bailey "You just screwed dozens of transplant patients." A cop that knows both brothers, and the driver, explains to the mother shortly after that the driver is a young boy her sons had tried to help in the past. The victim's mother eventually overcomes the idea that the driver is undeserving of a donation, instead seeing him as a young man with potential that her sons would want her to save. She orders a directed donation of her deceased son's liver to the young teen and saves his life. For her sacrifice, the surgeons present her a list of all the other waiting list patients saved by her sons' organs.

RQ5: Organ donation registration

The overwhelming majority of episodes mentioning organ, eye, and tissue donation did not mention how to register as a donor ($n = 85$), $\chi^2(1, N = 95) = 59.21$, $p < .001$, Cramér's V = .79.In fact, only one episode referenced the importance of indicating an intention to donate on a driver's license and there was no mention of communicating registration intentions on a donor card or registry. Modest attention was given to talking with family ($n = 6$) about their donation preferences while no mention was given to talking to friends ($n = 0$), $Q(1, N = 95) = 6.0$, $p = .014$, Cramér's V = .25.

Discussion

The current study stands as the most extensive analysis of organ donation portrayals on, *Grey's Anatomy*, arguably the most popular medical drama in television history (France, 2019; Lynch, 2019). The current study extends the explanatory power of the health belief model by providing a corresponding operationalization of narrative content. This research can be used to better understand how health beliefs about organ and tissue donation can be transmitted through entertainment narratives like *Grey's Anatomy*. With the results here, practitioners are better situated to create promotional messages to reinforce certain beliefs (i.e., organ donors are heroes) and refute others (i.e., doctor will not try to save a registered donor's life).

Additionally, the procedures employed in the content analysis improve on previous work (e.g., Quick et al., 2014) that relied on transcripts and shortened clips to understand show depictions. Specifically, by having coders watch all organ donation episodes in their entirety, the current study utilized the maximum narrative context for organ donation storylines within *Grey's Anatomy*, which informed the results. Moreover, the current study was the first that we know of to complete an inter-reality comparison (Dixon & Williams, 2015) within the context of organ donation and with the HBM as a framework, demonstrating evidence that the nature of the organ shortage is misrepresented.

The specific results of this study can inform future research and present efforts to promote donation. Approximately 25% of all *Grey's Anatomy* episodes addressed organ donation, and Figure 1 indicates that this trend was steady over time. Given the media's role in educating viewers about transplantation (Conesa et al., 2004), understanding donation portrayals across entertainment medical dramas (Morgan et al., 2007, 2010; Quick et al., 2014) remains an important task. Previous research depicts *Grey's Anatomy*, among other dramas, as problematic storytellers due to their sensational and inaccurate storylines (e.g., Harrison et al., 2008; Morgan et al., 2007). For years practitioners warned against the dangers of Hollywood's counter campaign against donation (e.g., Harrison et al., 2008). After all, these claims were not unfounded since prior analyses revealed a consistently grim portrayal of donation comprised of sensationalized myths and inaccuracies (Morgan et al., 2007). And these portrayals regularly emerged as grounds for not registering by prospective donors (Morgan et al., 2005; Williamson et al., 2017). By examining benefits of organ donation, such as success stories of donors and recipients, and medical advances in transplantation, this study gives a more holistic picture of the range of organ donation portrayals on the show, ranging from problematic to exemplary. Further, this study adds important nuance to the discussion of portraying barriers to donation, showing that any narrative can choose to promote or refute common myths. Although attention to *Grey's Anatomy* is not a novel expedition (Morgan et al., 2007; Quick et al., 2014; Quick, 2009), no study to date examines the sheer number of seasons as done within the current study. Below, attention is given to the results within the context of the theoretical and practical implications of these findings.

Casual viewers of the show will likely recognize the increasing shift toward socially conscious portrayals of organ donation. Overall, results revealed greater attention to the benefits of donation as opposed to barriers. Relatedly, results revealed an abundance of lives changed and saved due to transplantation. Similar to other studies (Morgan et al., 2007), we also found mention of several myths on *Grey's Anatomy* (e.g., body mutilation, doctor not saving a donor's life); however, how these myths were portrayed took a different route. For instance, previously superstition of an eminent death following a donor registration has been portrayed in TV dramas (Morgan et al., 2008; O'Carroll et al., 2011; Quick et al., 2014). However, superstition about registering as a precursor to death was not portrayed in *Grey's Anatomy*. Producers and writers have begun to effectively refute the myth that doctors will not save donor lives and challenged the undeserving recipient narrative. Unfortunately, these latter two were promoted throughout the seasons as well. The combination of promoting and refuting donation myths may be ineffective at changing mistrustful viewers' perceptions of the transplant process. Mistrust continues to pervade across the U.S., particularly among African American communities where mistrust of the government, medical establishment, and law enforcement is entrenched (Williamson et al., 2017). Although work remains, the producers and writers of *Grey's Anatomy* should be recognized for refuting many donation myths. In addition to refuting many prevailing donation myths, *Grey's Anatomy* brought attention to the number of individuals waiting for a transplant.

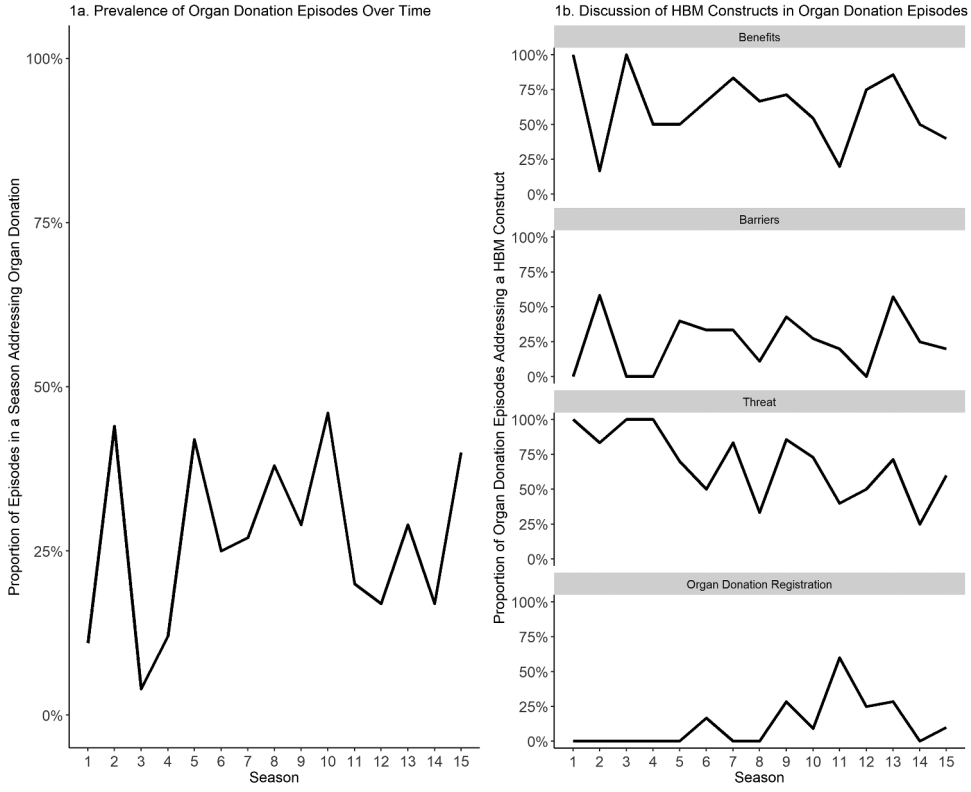

Figure 1. Prevalence of organ donation episodes and discussion of HBM constructs over time.

Portraying waiting list patients effectively communicates the threat brought on by the organ shortage. However, *Grey's Anatomy* falls short by not portraying how many individuals die while waiting for a life-saving transplant. On average, 17 people die daily waiting for a transplant (UNOS, 2022). Failing to emphasize lives lost on the waiting list undermines the severity of the United States organ shortage and may unintentionally communicate that all waiting list candidates eventually receive a transplant.

The transplants performed and highlighted on *Grey's Anatomy* do not match reality. Specifically, kidney transplants account for approximately 60% of organ transplants within the United States (UNOS, 2022). However, on *Grey's Anatomy*, kidney transplants constituted only 20% of organ transplants. Conversely, heart transplants account for less than 10% of organ transplants in the United States (UNOS, 2022), but on *Grey's Anatomy*, that represent nearly half of all transplants. The consequences of this erroneous portrayal are unknown, but at the very least, they could reasonably paint an inaccurate picture of the overall need for kidneys, which continue to rise (UNOS, 2022). The infrequent portrayal of kidneys is also a missed opportunity to promote living donation, a type of donation that may sidestep common fears (e.g., superstition, doctor will not save life because they want organs for another patient).

Finally, the analyses also revealed *Grey's Anatomy*'s inadequate attention to how to register to be a donor. Knowing how to register is critically important to actually registering as a donor (Anker et al., 2010; Williamson et al., 2017). Similar to Morgan et al. (2007), our analysis found no mention of how to register. Expecting *Grey's Anatomy* to educate its viewers on how to register as an organ, eye, and tissue donor is a big ask and risks being too educational. As opposed to modeling the registration process during the show, perhaps *Grey's Anatomy* could provide hotline and website information for interested viewers for critical topics (i.e., mental health awareness, organ donation registration, substance abuse addiction) discussed during the episode. Albeit infrequently, a few episodes encouraged registered donors to talk to their family and friends about their donation intentions. Without knowledge of how to register, individuals are less likely to perform the desired behavior (Glanz & Bishop, 2010).

The trends in organ donation episodes over time also deserve note. One striking trend illustrated in Figure 1 involved the salience of organ donation across the 15 seasons of *Grey's Anatomy*. Organ donation was addressed in a minimum of 11% of episodes (season one) and a maximum of 46% of episodes (season ten). As these data indicate, organ donation has been a relatively prominent and enduring element of *Grey's Anatomy* over its 15 seasons. Figure 1 also illustrates several trends over time in the HBM constructs that have been addressed in organ donation episodes. Threat and benefits appear relatively frequently and consistently in organ donation episodes across the 15 seasons, whereas barriers and ways to register as a donor tended to be addressed less frequently[1].

The accurate portrayal of donation on *Grey's Anatomy* is of paramount importance considering many Americans cite television as their primary source for information about organ donation (Conesa et al., 2004). Two recent focus groups reinforced this finding among African Americans. Reinhart and Lilly (2020) discovered the inaccuracies about donation portrayed by Hollywood surfaced as a barrier for African

American adults. Similarly, Williamson et al. (2017) found unfavorable donation portrayals on medical dramas provided the grounds for some African American adults' refusal to register as donors.

The persuasive nature of medical drama narratives like *Grey's Anatomy* cannot be understated (Bilandzic & Busselle, 2012; Cho et al., 2014). For instance, Reynolds-Tylus and Quick (2017) found that medical drama realism predicted organ donation registration intentions among African American, Caucasian, and Latin young adults after controlling for beliefs pertaining to bodily integrity, disgust, medical mistrust, and superstition. Given the persuasiveness of high-quality medical dramas, the investment in pro-social entertainment seems to be paying off. For nearly a decade, Hollywood, Health, and Society has teamed up with Hollywood producers to assist in creating accurate storylines of organ donation portrayals, and their achievements are evidenced here. This group provides entertainment industry professionals with timely and accurate storyline information regarding health, safety, and security issues. This study revealed *Grey's Anatomy's* move away from myth promotion to myth refutation in recent years. From Figure 1, it appears the focus on barriers is constant over time, though they are consistently addressed in fewer episodes than are benefits. In fact, *Grey's Anatomy* doctors were portrayed as altruistic miracle workers serving the best interest of their patients. Continued efforts should be made to team up organ donation practitioners with Hollywood producers to ensure compelling portrayals without sacrificing entertainment quality.

Limitations and future research

This research is important for health communication and public health professionals in helping to understand the competing messages of donation promotion. Organ donation practitioners should be aware of competing messages within the environment by the entertainment industry. Campaigns can use this information to design refutational messaging to combat prevalent misunderstandings and donation myths. Conversely, they can build on the positive messaging displayed on *Grey's Anatomy* through their work and possibly in coordination with entertainment television. Prior research by Morgan et al. (2009) has shown exposure to storylines affects viewer perceptions. Considering the results of the current study (i.e., less emphasis on myth promotion), future research should examine why writers choose to promote or refute these lingering donation myths. For example, *Grey's Anatomy* seems to strategically use myths as central plot points, and then refute them as a resolution to the story. Anecdotally, it seems television writers and producers are making increasing attempts to write more socially conscious plots. Shows like NBC's *New Amsterdam*, featuring doctors addressing social disparities within a public hospital, and ABC's *The Good Doctor*, portraying an accomplished surgeon with autism, may be harbingers of a new era for medical dramas.

Regarding the skewed representation of certain organ transplants, it would be worth examining why narratives favor hearts over kidneys. Plausibly, dramas favor hearts because of their association with love and emotion, and because they present life-or-death scenarios. Research should examine if kidneys are underrepresented in the larger media environment beyond *Grey's Anatomy*. Strategies for encouraging story-writing about kidney shortages, the most sought-after organ (UNOS, 2022), should be considered. Those concerned about media misrepresentation should systematically examine the television writing process and how writers and producers could be influenced to incorporate prosocial messaging. Hollywood, Health, & Society has consulted on *Grey's Anatomy, New Amsterdam*, and other programs. Collaborations between Hollywood and prosocial interest groups should continue to be explored and studied as a process and evaluated to establish best practices moving forward. Entertainment media has the potential to impact upstream issues related to donation. Given media influence to educate us about transplantation (Reinhart & Lilly, 2020; Williamson et al., 2017), *Grey's Anatomy* represents an avenue to propose an opt-out system for the states across the United States, as opposed to the current opt-in system. Entertainment programs represent a viable platform to present controversial legislative policies for viewers to consider. Perhaps portrayals of an alternative registration system would offer fresh insight to an ongoing societal dilemma and in turn, serve as a catalyst to conversation.

Despite the contributions advanced by the current study, it does come with its share of limitations. Our analyses cannot be extrapolated to medical television shows more generally as we only examined *Grey's Anatomy*. Further, this was an analysis of entertainment programming created solely for entertainment purposes, so the findings presented here will not contribute to our understanding of entertainment education projects, like *East Los High*, which was created with education as the primary goal (Wang & Singhal, 2016). Future research could consider direct comparisons of the educational and persuasive utility of entertainment and edutainment for influencing viewers' beliefs. Another limitation of the current study is the overlap of threat severity and susceptibility within the context of entertainment medical dramas. Despite their conceptual differences, disentangling threat severity from susceptibility organ donation storylines within *Grey's Anatomy* was untenable in the current study given the frequent portrayal of relatable, yet severe, narratives portrayed throughout *Grey's Anatomy*. Our coding of self-efficacy was impacted as we were unable to ascertain actor confidence in their abilities to register as organ donors. Instead, we relied on organ donation registration portrayal and communication on the various ways to register as a self-efficacy proxy.

Conclusion

This study represents the most extensive content analysis and effects study of organ donation portrayal in *Grey's Anatomy* to date. Popular entertainment programs such as *Grey's Anatomy* inform society about the donation process (Williamson et al., 2017) and thereby play a critical role in the registration process. By examining myths as storytelling devices and coding at the episode level, this study shows how barriers can be promoted or refuted through a complete narrative. Finally, this study casts optimism on to future prosocial collaborations with entertainment media industry. We hope the current study sets the stage for

continued research examining the content of media health portrayals.

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