The Role of Media Use in the Genderization of Disease: The Interplay of Sex, Culture, and Cultivation

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Abstract

A large body of cross-national research grounded in cultivation theory has shown that media use contributes to gender stereotypes across media platforms and content types, including health messages. However, little is known about the relationship between media use and gendered perceptions of diseases. This topic is important for health communication scholars because if individuals, including health professionals, associate certain conditions more with one gender than the other, they may miscalculate health risks, or inadvertently contribute to the stigmatization of diseases. This in turn can cause delays in treatment or result in inconsistent or even incorrect diagnoses. The present work aims to investigate how media use (generally and genre-specific) contributes to genderized perceptions of disease beyond other potential influences such as biological sex and cultural upbringing. Results from this cross-national survey (N = 1,299) showed that young adults viewed most diseases as more prevalent among one gender and that media significantly contributed to the variance in disease genderization, even after controlling for participant sex and cultural background. The more respondents watched medical media content, the more they feminized diseases. In all, medical media appear to cultivate a view on illness as being (somewhat) more typical for women than for men.

Key Words: health perceptions; culture; gender; sex; media use; cultivation; US; Netherlands

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People tend to perceive some diseases as more common among either men or women (e.g., Wirth & Bodenhausen, 2009). A mental illness such as depression is, for example, widely viewed as something that women suffer from, whereas men are closely associated with substance abuse (Schnittker, 2000; Wirth & Bodenhausen, 2009). There is good reason to implicate media portrayals of diseases in these public perceptions of risk. Skin cancer, for instance, is portrayed in both news and entertainment

media as a disease common among women who tan (Kelly, Miller, Ahn & Haley, 2014). Moreover, skincare-related advertising more commonly targets women than men (Coupland, 2007; Lee et al., 2006). Yet, men are more likely to get melanoma, the deadliest form of skin cancer, and they are more prone to die from the disease than women (Center for Disease Control and Prevention, 2014). Underestimating susceptibility to a disease or avoiding stigma associated with gender-atypical diseases may delay seeking medical assistance until symptoms are severe, result in incorrect diagnoses, and lead to skewed health statistics (Lane & Addis, 2005; Michniewicz et al., 2015). Thus, genderization of disease has serious potential consequences for public health and deserves research attention.

The aim of the current study is to assess to what extent people genderize a variety of common diseases and to discern the role that media play in this process beyond other factors that contribute to gender-based perceptions. We present a quantitative, cross-cultural assessment of gendered diseases – i.e., the degree to which people perceive a disease as being typical of women or men, regardless of its actual prevalence among women and men – and therewith complement existing research on gendered health perceptions that is mostly qualitative in nature and focused mainly on mental illnesses (Michniewicz et al., 2015). Gender-based constructions of disease have been linked to broader gender stereotypes (Schnittker, 2000; Wirth & Bodenhausen, 2009) and heavy media consumption has been related to the cultivation of such gender role stereotypes (Signorielli, 1990). Drawing on these two research traditions the current study investigates the role of media use in genderization of disease beyond other influences such as biological sex and cultural upbringing.

Based on the tenets of cultivation theory, a survey of young adults was conducted in the US and the Netherlands, countries that have shown to differ in gender role socialization (Hofstede, 1980). Respondents were asked to estimate the typicality of 48 common diseases among men and women and reported their use of health- and non-health-related media. Differentiating between multiple types of media content (i.e., news and entertainment) allows for an assessment of media genre influences on gendered perceptions of diseases.

Disease Genderization

Sex, Gender, and Health

Differences in health outcomes between men and women are striking. Men die earlier and suffer from more *serious* illnesses than women; women more frequently report to *have* an illness across their lifespan. Increasingly, research efforts are devoted to disentangling the biological and sociological factors

that contribute to these large health disparities (Courtenay & Keeling, 2000; Johansson, Bengs, Danielsson, Lehti, & Hammarström, 2009). An interplay of biological differences such as genetic and hormonal makeup, as well as *perceived* health differences between men and women seem to drive the wellness gap. A division in gender roles is thought to be a large underlying contributor to these interconnected findings. Gender roles are shaped by a variety of biological and societal factors (Annandale & Hunt, 1990) of which sex/gender, culture, and media are discussed in this study.

Gender socialization processes shape functional role divisions and are thought to be built on traditional sex role divisions. Traditionally, the male personae is emotionally stoic, tough, and self-reliant (Michniewicz et al., 2015). In line with this reasoning, men are less likely to recognize and acknowledge illness, seek help, and generally choose riskier lifestyles than women (Courtenay & Keeling, 2000; Stergiou-Kita et al., 2009). Conversely, the female gender role embodies emotionality, sociality, and vulnerability. Violating those gender norms has more serious repercussions for men than for women (Michniewicz et al., 2015).

Gender role conventions may affect perceptions about the typicality of specific diseases among men and women. For instance, AIDS, heart disease, and lung cancer are often perceived as diseases befalling men (Sabo & Gordon, 1995), while eating disorders, breast cancer, and anxiety disorders are largely labeled as problems common among women (Bekker & van Mens-Verhulst, 2007; Buick, 1997; Sundgot-Borgen & Torstveit, 2004).

Perceptions of an illness as gendered are important to study because they may carry over into gendered health-related behaviors and communication practices, regardless of the actual vulnerability of men and women for particular diseases. For example, when men perceive their health concern to be gender atypical (such as depression), they are unlikely to seek professional help (Lane & Addis, 2005). Michniewicz et al. (2015) demonstrated that women expressed levels of stress when imagining the experience of any psychological disorder, whereas men reported higher distress imagining gender atypical than typical mental illness. Gendered perceptions of health conditions can also affect treatment and the way that care is offered. Afifi (2007) found that doctors are more prone to diagnose depression in women compared to men, even when applicable depression test scores and symptoms are nearly identical across gender. In general, women are diagnosed for internalizing disorders – characterized by mood-related symptoms– more frequently than men (Michniewicz et al., 2015).

The aforementioned research on gender and disease perceptions offers the basis for the first two research questions related to 48 common diseases:

RQ1: Which diseases are most clearly associated with a specific gender?

RQ2: Do male and female participants differ in their patterns of disease genderization?

Culture and Health

Culture is an important co-determinant of personal views related to health and illness. Health beliefs, behaviors, and the experience and expression of emotions are all affected by culture (Courtenay, McCreary, & Merighi, 2002; Helman, 1990). Gender role conventions are shaped by culture as well (Hofstede, 1980). Although perceptions about masculinity and femininity have been connected to health behavior over the past decades, few studies have investigated cultural influences as explanations for shaping health perceptions (Gough, 2006). This study draws on Hofstede's notion of a masculinity/femininity dimension in culture. According to Hofstede, "culture consists of the unwritten rules of the social game. It is the collective programming of the mind that distinguishes the members of a group or category of people from others" (Hofstede, 1991, p. 6), affecting how they think, feel, perceive, and react to the world. Hofstede initially identified four separate cultural dimensions, of which the masculinity/femininity dimension (Hofstede, 1998) is of particular relevance here. This dimension captures cultural leanings in gender roles. For example, the US is a masculine country (score 62 on Hofstede's 0-100 scale) and the Netherlands a feminine country (score 14 on Hofstede's 0-100 scale). These two counties offer a meaningful point of comparison for gender research as they have similar values across other cultural dimensions (Hofstede, 1980). In countries leaning towards the masculine side, gender differences are more pronounced than in feminine countries. Males typically comply with being assertive, tough, and strive to be successful. Females display more socially oriented and caring behavior and are more focused on achieving quality of life. In feminine-oriented countries, gender roles are more fluid with men and women taking up a blend of traditional gender roles.

Hofstede's approach has been criticized mostly for methodological reasons and oversimplification of culture, including the masculinity/femininity dimension (McSweeney, 2002; Witte, 2011). Yet, it has "weathered the storms of time" (Jones, 2007, p. 1), with many of its predictions replicated across studies, including in media research (e.g. Joshi, Peter, & Valkenburg, 2014). Acknowledging its limitations, we used Hofstede's masculinity/femininity dimension to generate a hypothesis about cultural influences on disease perceptions.

For example, in masculine countries media present men in more professional and important roles than women compared to portrayals in feminine countries (Tartaglia & Rollero, 2015). Moreover, men report more gender role stress from the pressure to conform to expectations of masculine behavior in countries that score high on the masculinity dimension (Arrindell et al., 2013). It can be expected that tendencies to genderize diseases would follow similar gender role patterns. Accordingly, the first hypothesis was formulated:

H1: People from a masculine country (US) will be more likely to genderize diseases than people from a feminine country (NL).

Media Consumption and Health

Media use is a documented factor contributing to gender socialization. Cultivation theory, in particular, offers a conceptual connection between media use, sex/gender roles, culture, and perceptions of health. This theory posits that the more television one views over time, the more one believes that the televised world mirrors the physical world (Gerbner, 1998). High volume television viewers are more susceptible to televised depictions of reality than low volume viewers. While the advent of the Internet and popularity of social media have expanded upon the ways in which people consume media, Morgan and Shanahan (2010) argue that the Internet has not changed the fundamental tenets of cultivation theory. In fact, the online environment reflects the same cultural narratives and stereotypes as traditional media content. While more research is needed, the Internet mainly increases exposure to culturally relevant media, including traditional formats (Morgan, Shanahan, & Signorelli, 2015).

Cultivation is an apt framework for the present investigation of media use and gender and disease-related perceptions because previous empirical research has demonstrated that sustained media use contributes to gender stereotypes (e.g., Gauntlett, 2008). Depictions of men and women on TV are imbalanced in terms of frequency and role distribution (Signorielli, 1990). According to Morgan and Shanahan (2010), "Cultivation studies of gender and family roles continue to show that television contributes to traditional images and aspirations, despite the massive social changes that took place in women's roles in recent decades" (p. 346).

In addition to media reinforcing gender stereotypes, cultivation research findings point to a relationship between television viewing and audience views of health-related issues that line up with television content. This is particularly important as contemporary media consumers are confronted with and have access to copious amounts of health-related information (Tian & Robinson, 2008).

For instance, Chung (2014) found in a nationally representative survey that heavy viewing of

medical television dramas was associated with an underestimation of chronic illness severity compared to light viewing. Quick (2009) demonstrated that viewing the popular US medical drama *Grey's Anatomy* led to higher levels of perceived credibility of the show, as well as higher estimates of the average real-life doctor's courage. McCreary and Sadava (1999) showed that heavy television viewing was related to negative self-assessments of ideal weight and appearance. When it comes to mental illness, patients have long been portrayed as violent and dangerous (Wahl, 2003). Heavy viewing leads to less tolerance of people with mental illness (Granello & Pauley, 2000) and greater desire for social distance from them (Diefenbach & West, 2007).

Regarding media portrayals of gender and health, there is little systematic research. Individual studies provide some evidence that portrayals of women in poor health are not uncommon. For instance, Saad (1999) analyzed representations of chronic illness in children's books and found that chronically ill characters were mostly (80.8%) female. An analysis of portrayals in *Men's Health Magazine* demonstrated emphasis on muscles, violence, unsafe sex, drinking alcohol, and eating red meat, while at the same time disregarding topics like cooking and vulnerability (Stibbe, 2004). Another study found that Swedish media portrayed social circumstances such as work stress as reason for depression among men and dysfunctional inner (hormonal, emotional) states as the explanation for women (Johansson et al., 2009). These mediated juxtapositions of health and gender provide context for the persistent pattern of portraying women as most vulnerable to disease while men are discouraged from showing emotional and physical weakness.

Cross-Cultural Studies of Cultivation

Media-based cultivation effects take place in a wider pool of societal and cultural norms and tides. As noted by Morgan, Shanahan, and Signorielli (2009), "cultivation analysis is ideally suited to multinational and cross-cultural comparative study" (p. 42). Gerbner (1969) makes specific reference to television content reflecting the historical, political, economic, and cultural values of the country within which it was developed. However, researchers have found that the amount of television viewing can impact audience perceptions of traditional gender roles independent of their country's cultural leaning. For instance, in a study of adolescents from four countries (US, China, South Korea, Argentina), the amount of television viewing, not culture, predicted participant endorsement of traditional gender roles for women.

Cultivation theory has endured criticism over the years, such as the small effect sizes and its limited application to mostly television. Constraints on the theoretical development of cultivation have been attributed to its frequent application in search of explanations for short-term effects of specific media messages, while Gerbner intended cultivation theory to explain macro level phenomena (Potter, 2014). Moreover, according to Hofstede, the cultural programming of the mind outweighs the potential influence of media, even in the digital era (Hofstede, 1991). The current study attempts to incorporate these notions by looking at cultivation effects at a macro level, regardless of the media platform, while controlling for the influences of culture and sex.

RQ3: After controlling for sex, gender role perceptions, and culture, to what extent does media use contribute to the genderization of diseases?

Associating disease genderization with distinct types of media use, such as entertainment and news, remains largely unexplored. Ex, Janssens, and Korzilius (2006) showed that views on motherhood among young Dutch women were affected by the *type* of content (traditional vs. contemporary) more than the *quantity* of their media consumption. Regarding health and risk prevention, local TV news viewing has been linked to beliefs about cancer prevention (Lee & Niederdeppe, 2011). Viewing entertainment content that touches on health issues, like medical dramas, can also influence disease-related beliefs. For example, Brodie et al. (2001) showed that, a week after watching specific episodes of the entertainment TV show *ER,* subjects had significant knowledge gain about emergency contraception and the relationship between HPV and cervical cancer (Brodie et al., 2001).

Research has also demonstrated that gender interacts with genre when it comes to media effects (Cohen & Weimann, 2000). For example, research has shown that biological sex serves as a strong predictor for selective exposure to gendered media content, which in turn reinforces gendered concepts of self (Knobloch-Westerwick & Hoplamazian, 2012). Moreover, women look up health information online more frequently than men (Manierre, 2015). In order to assess specific media genre influences in a hierarchical regression model predicting genderization of diseases, the last research question was formulated:

RQ4: How do different media genres (i.e., news versus entertainment) contribute to the genderization of diseases?

Method

Data were collected through an online survey conducted among students at one university in the Midwest US and at two colleges in the Eastern part of the Netherlands. Respondents were recruited to participate in the study in one of the following ways: (1) Classes across disciplines were visited to

announce the opportunity to participate, followed by an email that included the link to the survey, (2) Announcements were placed on the web-based learning management system of several courses. After completing the questionnaire, participants either received a course credit or small gift coupon.

Sample

A total of 1,299 respondents were included in the data analysis. In the Netherlands, 655 respondents participated, but 120 were excluded for the following reasons: (1) Incomplete responses (n = 53); (2) Did not grow up in the Netherlands (n = 63); (3) High school instead of university students (n = 3); (4) Double participation (n = 1); and (5) Outlier in terms of age–52 years old (n = 1). This left 535 Dutch respondents in the dataset. From a total of 1,025 US respondents, 764 were included in the final dataset. The same exclusion criteria were used: (1) Incomplete responses (n = 23; (2) Not raised in the US (n = 238).

Measures

Background variables. The combined sample had slightly more females (55%) than males. The Dutch sample contained 273 women (51%) and 262 men; the US sample consisted of 442 women (57.9%) and 332 men. The average age of respondents was 20.13 years (SD = 1.97); 20.28 years (SD = 2.32) for the Dutch and 20.02 years (SD = 1.67) for the US respondents.

Masculinity/femininity index. The items used to assess masculinity were taken from Yoo, Donthu, and Lenartowicz (2011), who developed and validated an individual-level variant of Hofstede's cultural values instrument, the Cultural Values Scale. The masculinity subscale of this measure consists of four items prompting response on a five-point Likert scale (1 = completely disagree; 5 = completely agree). The items were: "It is more important for men to have a professional career than it is for women", "Men usually solve problems with logical analysis; women usually solve problems with intuition," "Solving difficult problems usually requires an active, forcible approach, which is typical of men," and "There are some jobs that a man can always do better than a woman." Scores on the item scales were averaged to construct a masculinity/femininity index (M = 2.40, SD = .85), which was reliable (Cronbach's α = .75).

Media use. Six items measured media use. Respondents used a five-point scale (1 = none at all; 5 = a lot) to report how much attention they paid to news media in general (newspapers, television news shows, online news) and to entertainment media in general on a typical weekday (Monday to Friday) and on weekends (Saturday and Sunday). Scores on the item scales were averaged to build a Media Use index (M = 2.91, SD = .62; Cronbach's α = .66), a general news media use index (M = 2.88, SD = .95; Cronbach's α = .79), and a general entertainment media use index (M = 3.50, SD = .98; Cronbach's α = .82).

In addition, respondents were asked "How often do you watch medical or health-related news media?" and "How often do you watch medical-based entertainment media?" to which they answered 1 (not at all) to 5 (a lot) on a Likert-type scale. These scales were combined and averaged to form an index of Medical Media Use (M = 2.08, SD = .90; Cronbach's α = .66).

Perceived disease typicality based on gender. To assess gender judgments of diseases, respondents were asked to rate 48 diseases on a five-point scale where 1 meant "Typical of men" and 5 meant "Typical of women." The most common diseases were selected from official prevalence lists in the US and the Netherlands. Scores were averaged for disease judgments (M = 3.06, SD = .15, M range across diseases = 2.23 to 3.72). The higher the value on disease judgments, the stronger the indication that the ailment was perceived as typical among women. We delineated a disease as masculine or feminine when the judgment differed significantly (lower or higher respectively) from the neutral midpoint (3) of the scale.

Results

Genderization of Diseases

To address RQ1, which asked whether certain diseases are perceived as gendered, comparisons across all 48 diseases were made. The results indicated that diseases were more likely to be associated with females than males, t(1298) = 13.48, p < .001, the mean (M = 3.06, SD = .15) and the median (3.05) were above the midpoint (3). The average disease judgment score ranged from 2.23 to 3.72. Diseases that were judged to be most typical among males (ratings closer to 1) were alcohol dependency, attention disorders and drug dependency. Diseases judged as most typical for females (ratings closer to 5) were breast cancer, eating disorders, anxiety disorders, and panic disorder (see Table 1).

Table 1 *Top 5 masculine and feminine diseases according to Dutch and US respondents*

		Male diseases	*M*	*SD*		*Female diseases*	*M*	*SD*
Overall	1.	Alcohol dependency	2.22	.67	1.	Breast cancer	4.61	.63
	2.	Attention disorders	2.41	.71	2.	Eating disorders	4.30	.70
	3.	Drug dependency	2.47	.63	3.	Anxiety disorders	3.59	.67
	4.	Colon cancer	2.57	.69	4.	Panic disorder	3.59	.67
	5.	PTSD	2.61	.92	5.	Migraines	3.58	.73
US	1.	Alcohol dependency	2.30	.68	1.	Breast cancer	4.55	.69
	2.	Colon cancer	2.39	.75	2.	Eating disorders	4.32	.71
	3.	PTSD	2.41	.90	3.	Anxiety disorders	3.59	.69
	4.	Attention disorders	2.55	.71	4.	Panic disorder	3.49	.68
	5.	Drug dependency	2.56	.64		Migraines	3.49	.72
						Anemia	3.49	.78
The Netherlands	1.	Alcohol dependency	2.12	.64	1.	Breast cancer	4.71	.51
	2.	Attention disorders	2.20	.65	2.	Eating disorders	4.26	.67
	3.	Drug dependency	2.34	.60	3.	Migraines	3.72	.73
	4.	Narcissism	2.54	.83	4.	Anxiety disorders	3.59	.63
	5.	Antisocial Disorder	2.60	.67	5.	Panic disorders	3.72	.64

Note: Lower values are more masculine and higher values are more feminine, on a 1-5 scale

Genderization of Diseases across Sex

RQ2 asked about sex differences among participants in genderizing diseases. A significant difference was found, $t(1170) = 13.19$, $p < .001$, Cohen's $d = .71$, indicating that females ($M = 3.10$, $SD = .13$, range: 2.49 to 3.71) perceived diseases as more feminine than males ($M = 3.00$, $SD = .15$, range: 2.23 to 3.72).

Genderization of Diseases across Countries

H1 predicted that respondents from a masculine country (US) would have more traditional views on gender roles than those from a feminine country (NL) and would be more likely to genderize diseases. Contrary to expectation, the results of the individual masculinity/femininity index indicated that the American and Dutch respondents did not fall neatly into the Hofstede (1980) masculinity/femininity categories. The average Dutch respondent score on the masculinity/femininity Index ($M = 2.52$, $SD = .78$) was significantly higher, $t(1197) = -4.31$, $p < .001$, indicating higher levels of masculinity than US respondents ($M = 2.32$, $SD = .87$).

For both countries, 42 disease judgments significantly differed from the midpoint of the scale. The total number of genderized diseases as well as the gender assignment was similar across countries. Dutch respondents feminized ($n = 22$) and masculinized diseases ($n = 20$) to a comparable extent. US respondents assigned both genders to diseases with similar frequency ($n = 21$). Regarding the extent of genderization, Dutch respondents judged illnesses to be significantly more typical of females ($M = 3.07$, $SD = .14$) than US respondents did ($M = 3.05$, $SD = .15$), $t(1297) = 3.26$, $p < .01$, Cohen's $d = .14$. Looking at the range of averages however, Dutch respondents were most likely to score towards the masculine end of the scale (average range = 2.23 to 3.58), whereas the US respondents were more likely to score towards the feminine pole (average range = 2.49 to 3.72). These results do not support H1. Diseases were not more genderized in a masculine (US) than feminine (NL) country. In fact, as indicated by the average of the judgments, findings are counter to the direction of prediction. Dutch respondents were more likely than Americans to assign gender (female) to a disease.

Media Use as a Predictor for Genderization of Diseases

First, media use across countries was assessed. Dutch respondents reported significantly, $t(1269) = -7.00$, $p < .001$, lower overall levels of media use ($M = 2.75$, $SD = .58$) than US respondents ($M = 3.02$, $SD = .62$). Additionally, Dutch respondents reported paying significantly, $t(1269) = 6.59$, $p < .001$, less attention to medical media ($M = 1.88$, $SD = .88$) than US respondents ($M = 2.21$, $SD = .88$).

To assess the potential role of media in shaping gendered disease perceptions (RQ3), a hierarchical linear regression model with four blocks of variables was tested with disease judgment (lower score is more masculine, higher score is more feminine) as the dependent variable. This procedure affords a conservative estimate of media influence, allowing three other blocks of variables to account for variance in the model before media variables were added. Respondent sex (1) was entered first into the model representing potential biological variance, followed by country (2) and the masculinity/femininity index (3) to account for cultural and individual influences respectively. As a final step (4) three separate media use variables (news, entertainment, and medical media use) were entered.

The overall model was significant, $F(6, 1264)$ = 38.43, $p < .001$, and explained 15.4% of the variance in disease genderization. Three of the four blocks significantly contributed to the variance (see Table 2). Sex of the respondent (0 = female, 1= male) significantly influenced the genderization of diseases, $F(1,1269)$ = 191.51, $p < .001$, and accounted for 13.1% of the variance. The second block, including country (0 = Netherlands, 1 = US), added significant change, $F(1,1268)$ = 15.38, $p < .001$, to the model and explained 1% of the variance. Third, the masculinity/femininity index, $F(1,1267)$= 4.74, $p < .01$, contributed less than 1% to the model change. The set of media variables, added last, accounted for a small (1%) but significant, $F(3,1267)$ = 4.75, $p < .01$, amount of variance.

Table 2 *Summary of Hierarchical Regression Analysis for Variables Predicting Genderization of Diseases (N = 1,299)*

	Model 1			Model 2			Model 3			Model 4		
	B	SE B	β	B	SE B	β	B	SE B	β	B	SE B	β
Sex	-1.08	0.08	-0.36**	-0.10	0.08	-0.37**	-0.12	0.08	-0.39**	-0.12	0.08	-0.38**
Country				-0.03	0.08	-0.10**	-0.03	0.08	-0.10**	-0.03	0.08	-0.11**
Masculinity/ Femininity							0.01	0.05	0.59*	0.01	0.01	0.05
News media										0.01	0.00	0.04
Entertainment media										-0.00	0.00	-0.01
Medical media										0.02	0.01	0.09**
R^2 change		0.13			0.01			0.00			0.01	
$F (R^2)$ change		191.51**			15.38**			4.74*			4.75**	

Note: For sex, females 0 =, males = 1; For country, Netherlands = 0, US = 1; For masculinity/femininity, lower is more masculine, higher is more feminine; For media, higher is more attention paid

$^*p < .05$; $^{**}p < .01$.

RQ4 asked if media genres vary in how they affect the genderization of disease. Medical media was the main contributor to the observed variance ($β = .09$, $p <. 01$), as summarized in Table 2. The more respondents watched medical media content, the more they feminized diseases. General news consumption and entertainment media use were not significantly associated with disease genderization.

Discussion

The aim of this study was to explore the relationships between genderization of diseases and sex, culture, and the viewing of different media genres. The findings show that, overall, diseases are gendered in that they are perceived as being more common among women. This genderization is particularly visible among Dutch participants (rather than US participants), and among those that regularly watch medical media content (rather than infrequently).

This study proposes that these estimations are in part due to stereotypical media portrayals about gender that spill over to notions of gender typical diseases. These media portrayals of genderized diseases are likely to result in misconceptions about being at risk for a disease. For example, men may not be open to the idea that they could suffer from breast cancer or depression. While previous research presented connections between media use and gender stereotypes, it had not established a link between media use and disease genderization. This study fills that void and revealed that media use has an impact on genderized notions of disease above and beyond gender and culture.

In all, the study shows that genderization of diseases is a complex phenomenon that is related to individual, cultural, and media characteristics and provides an empirical foundation for future work to be able to test the ramifications of gender-based disease perceptions on risk perceptions and health-related behaviors.

Specifically, this study established that respondents genderized the majority of the diseases. On average, respondents perceived diseases as more feminine than masculine. This result could be an indicator of the stereotype that women are the vulnerable, weaker sex and more disease prone than men. Further insight can be gained by considering how specific types of illnesses are associated with different genders and stereotypes that overlap with the nature of medical conditions. According to previous studies men are perceived as risk-takers, whereas women are seen as emotional beings. Indeed, in this study, mental illness relating to risk-taking behavior, such as substance abuse, was perceived as masculine, whereas mental illness related to emotions, such as depression and anxiety disorders, were associated with females. This data set also serves as a reminder that gender role stereotypes exist across men and women. In fact, women feminized diseases to an even greater extent than men. This finding may serve as a confirmation that women are more likely to see disease as something that could happen to them and are thus more aware of disease risks.

Additionally, this study made cross-cultural comparisons and expected that individuals from countries with strong gender role patterns would be more likely to genderize diseases than people from countries that have less pronounced gender differences. However, results were contrary to expectations. Dutch respondents, living in a culture with no clear gender role division by Hofstede's measures, were *more* likely to genderize diseases than were American respondents who are culturalized into stronger gender role patterns.

Assessment of gender role orientation at the individual level, however, did deliver results in line with our theoretical expectations. People with masculine views on gender roles, regardless of nationality, were more susceptible to perceiving diseases as gendered than people with feminine perspectives. These individual views did not coincide with the classification of Hofstede. The respondents of this study represented a young and educated collective; they may be distinct in their views on gender roles from a nationally representative sample. Older adults, for example, have had more opportunity to encounter gendered representations, mediated and unmediated. The type of gendered experiences encountered by a younger generation may differ from those known to older age groups. For example, young people differ from older people in the high number of hours they spend with media and the type of media they use. Moreover, recent studies show that countries in which gender roles are fading – particularly noticeable among younger generations – mental

health disorders such as substance abuse and depression are showing a more equal distribution among genders (Seedat et al., 2009). Future studies investigating intersections of health and gender may benefit from incorporating age in the study designs.

A main insight from this study is the finding that after controlling for sex (male/female), culture (nationality), and individual (masculinity/femininity index) influences on gender perceptions, media use contributed significantly to the genderization of disease. Testing cultivation effects of different media genres provided additional insights. Not all types of media were significantly related to disease genderization. Attention paid to medical media (both news and entertainment) emerged as a predictor of genderization. Since the original cultivation studies, which were based on overall television use, researchers have branched out to test genre-specific effects (e.g., Cohen & Weimann, 2000). This piece contributes to that trend and its utility in teasing apart the role of different media in shaping perceptions of reality.

It is important to note that medical media use varied significantly across the two countries, with lower use in the Netherlands. More work is needed to understand why medical media consumption is different in these countries and how the nature of media content may influence perceptions of gender and disease risk. The contribution of media to the genderization of disease may seem small at first glance. Yet, when one considers the hundreds of millions of people who consume this media across the US and the Netherlands, our finding likely has meaningful impact on public health.

In sum, the current study was exploratory in nature and confirmed that diseases are genderized. It found that in interplay with culture and sex, media have a role in shaping disease perceptions. Future endeavors should build on these insights and investigate how genderization of diseases affects subsequent health behavior. In particular, a test of how media shape people's reactions to gender a-typical symptoms to specific diseases. For instance, a male with a lump in his chest might erroneously assume it could not be breast cancer and delay medical treatment with life-shortening consequences.

Our study also points to opportunities for medical media, in particular, to bring balance to lopsided gender perceptions by featuring content that shows actual disease risk for both genders and openly discussing misperceptions. These shows could address such misperceptions in the context of preconceived gender stereotypes, not just the actual prevalence of the disease. It is important, for example, to explain that substance abuse and mood disorders are different ways to cope with similar emotional challenges, or that high prevalence of a disease among one gender does not mean that the other gender group is immune.

The sample was not random and therefore not generalizable to the entirety of American or Dutch

populations. Our sample consisted of college and university students. That is, it consisted of highly educated respondents. Highly educated people are known to differ from lower educated people in terms of both health knowledge and access to services as well as media use. In general, lower education is related to lower health knowledge, less healthy behavior, and less informational media use (Kenkel, 1991; Wei & Hindman, 2011). Therefore, the effects in this sample of presumably relatively high health knowledge respondents may be underestimating the impact on other social groups, especially lower educated ones. Using probability sampling would overcome this methodological shortcoming. Another worthy future pursuit is to assess if diseases become genderized as either male or female in proportion to their prevalence among men and women. However, prevalence statistics of diseases are generally hard to interpret because gender .

affects health practices on many levels–from self-reports to diagnoses.

This study underlines that professionals aiming to educate the public on their susceptibility to diseases, such as health advocates, healthcare workers, message designers, but also media producers, should take note that gender stereotypes about disease prevalence may be a barrier in getting certain patients to acknowledge their own risks. Gendered disease perceptions could influence health communication practices, risk perceptions, and health behavior. Medical media content (e.g., campaigns or television shows) could counter misperceptions of gender-based prevalence. Next to disease prevalence, these mediated health messages should focus on addressing gender stereotypes as they relate to gender typical and atypical symptoms of diseases. Evolving differences in gender roles across cultures should be taken into account when designing medical media messages.

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