Swearing Effects on Citizen-to-Citizen Commenting Online: A Large-Scale Exploration of Political Versus Nonpolitical Online News Sites

K. Hazel Kwon[1] and Daegon Cho[2]

Abstract
Swearing, the use of taboo languages tagged with a high level of emotional arousal, has become commonplace in contemporary political culture. The current study attempts to understand the ways in which swearing influences citizen-to-citizen news commenting online. Based on a large corpus of the 2-month user comments from 26 news websites in South Korea, the study examines swearing effects as well as its interplay with anonymity on garnering public attention and shaping other users' perceptions of the comments. Findings suggest that swearing generally has a positive effect on increasing user attention to comments as well as gaining other users' approvals. Comparisons between political and nonpolitical topics further suggest that swearing effect on gaining public attention is particularly prominent for political discussions. In contrast, the magnitude of change toward positive valence in public perception to comments is much greater for nonpolitical topics than for politics. From the findings, we conclude that an acceptable degree of swearing norms in online discussions vary across news topical arenas. The results also lead to discussions about the possibility of like-minded exposure to political comments as a default condition for online discussions. Finally, the study highlights the role of high-arousal emotions in shaping discursive participation in contemporary networked sociodigital environment.

Keywords
swearing, profanity, emotions in politics, incivility, anonymity, online comments, discursive participation

[1] School of Social and Behavioral Sciences, Arizona State University, Phoenix, AZ, USA
[2] Department of Industrial and Management Engineering, Pohang University of Science and Technology (POSTECH), Seoul, South Korea

Corresponding Author:
K. Hazel Kwon, School of Social and Behavioral Sciences, Arizona State University, 4701 W. Thunderbird Rd., MC 3051, Phoenix, AZ 85306, USA.
Email: khkwon@asu.edu

Introduction

A provocation of high-arousal emotion such as anger and frustration has become increasingly prevalent in contemporary political culture ranging from politician debates to election campaigns, to media coverage, and to citizen discussions. Online user comments are no exception, with commonplace swearing and cursing. In line with criticisms that aggressive emotional outbursts promoted in mediated political communication pose a "civility crisis" in public life (Mutz & Reeves, 2005, p. 1), recent research have shown concerns that uncivil user comments online are not only numerous (Coe, Kenski, & Rains, 2014) but also have "nasty effects" on polarizing audience attitudes (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2014, p. 373).

Either explicitly or implicitly, swearing is often considered to be one type of uncivil behaviors. However, attributing negativity to an inherent trait of swearing may be questionable, since swearwords can be used not only for malicious intentions but also as a rhetorical function to create an ambience of informality (Burgoon, 1993; Cavazza & Guidetti, 2014; Jay, 2009). Therefore, it would be hasty to categorize swearing as an uncivil behavior without investigating its impacts on message recipients' perceptions and responses. While studies on online incivility have grown in recent years, to our knowledge, few studies have been conducted with a particular focus on the effect of swearing on online discursive participation. Instead of subsuming it to incivility or any other high-level concepts that connote negativity (e.g., flaming, trolls, etc.), this study adapts a rather neutral definition of swearing, an utterance of a taboo word that conveys a high level of emotional arousal (Jay, 2009). This definition helps situate swearing effect within a broader inquiry of political impacts of emotions, which recent studies have found to be contagious through online textual interactions even in the absence of nonverbal cues (Kramer, Guillory, & Hancock, 2014). By defining swearing in comment as a textual emotional utterance, the study intends to advance the understanding of the roles of high-arousal emotional expressions in shaping citizen discussions online.

Specifically, the aims are 3-fold. First, the study attempts to understand how widely swearwords occur in online discussion contexts, particularly through news commenting behaviors. This article is based on a large corpus of user comments in various news websites, of which descriptive analyses may offer far-reaching insights on the extent to which public swearing becomes an online social norm. Second, the study attempts to explore the effect of swearing on online citizens' perceptions on the comments. In particular, anonymity is one of the important affordances of the Internet, often associated with aggressive user behaviors (Kling, Lee, Teich, & Frankel, 1999). Therefore, it is worth exploring how swearing interplays with user anonymity in gaining public approval of the comments. Lastly and most importantly, this study considers online commenting as a form of political participation and attempts to understand the effects of swearing on promoting (or discouraging) participatory democracy. Online commenting is a popular form of "discursive participation," which includes a broad range of citizen-to-citizen political talks and expressions (Delli Carpini, Cook, & Jacobs, 2004). Studies have shown that electoral voting is affected by the ways in which political expressions are exchanged and interpreted among the public (Bond et al., 2012; McLeod et al., 1999). Therefore, by choosing to explore an election campaign period, this study intends to discuss the role of online commenting as an impetus of participatory democracy. In doing so, the study differentiates the swearing effects between political and nonpolitical comments and discusses the results to speculate about the implications of political swearing.

This study responds to the special issue call to leverage online big data to advance social scientific knowledge. Our data set aggregates 2 months of user comments collected from 26 South Korean news websites in 2012, including a total of 83,322 comments written by 24,415 commenters. Big data are often characterized by three V's: volume, velocity, and variety. Although the volume of this current data set is not too "big" to be called big data, its scale is evidently much larger than traditional content analytic approach that political communication studies conventionally take.

Moreover, the data set resonates with the two other characteristics in that the data were collected in real time surrounding the congressional election campaign period in 2012 (velocity) and that it is an aggregate of comments from different news media platforms (variety). Considering the difficulty in gaining large-scale swearing utterances in a traditional research setting (McEnery & Xiao, 2004; Thelwall, 2008), the use of online data provides a novel opportunity for more rigorous examination of the impact of swearing on public discussions online.

Literature

Discursive Participation and Emotion Online

The Internet has become a predominant channel for ordinary citizens' political expressions. Along with the overflow of user-generated content and conversations in social media and various web 2.0 platforms, citizens' discursive participation sometimes becomes so influential that it affects the process of journalism gatekeeping (Goode, 2009; Kwon, Oh, Agrawal, & Rao, 2012; Shoemaker & Vos, 2009) and media agenda setting (Neuman, Guggenheim, Jang, & Bae, 2014). The exposure to other citizens' opinions and attitudes has become an important source for an individual to acquire political knowledge, curiosity, and participatory motivations (Eveland, Morey, & Hutchens, 2011; Gil de Zúñiga, Jung, & Valenzuela, 2012). Studies have shown that online discursive participation not only reinforces a user's preexisting political attitudes and opinions but also increases discussion network size including not only like-minded but also nonlike-minded others (Brundidge, 2010; Kim, 2011; Kim, Hsu, & Gil de Zúñiga, 2013). The effects of online political discussion have been largely studied from a rational information processing perspective. For example, political discussions have been found to either induce the articulation of rationales and reasoning (Eveland & Hively, 2009) or instead increase cognitive uncertainty and perceived social cost of participation (Eveland & Hively, 2009; Mutz, 2006; Valenzuela, Kim, & Gil de Zúñiga, 2012). Such perspective underscores political discussions as public deliberation, conceptualized as rational, open-minded, mutually respectful, and judicious arguments (Burkhalter, Gastil, & Kelshaw, 2002).

However, democratic potential of online political discussions may not be exclusive to deliberative democracy. That is, hearing and responding to other citizens' voices is in itself an act of political engagement and associated with other political activities (Delli Carpini et al., 2004; McLeod et al., 1999; Scheufele, Nisbet, Brossard, & Nisbet, 2004). According to Delli Carpini, Cook, and Jacobs (2004), discursive participation is a broader umbrella term, within which public deliberation is a "specific . . . and idealized category" (p. 319). Discursive participation includes not only deliberation but also other casual and unplanned talks and opinion expressions shared with other citizens. While the emphasis on public deliberation may complement the voting-centric democratic theory (Chambers, 2003), Mutz (2006) contends that participatory democracy is conceptually distinctive from deliberative democracy, often accentuating the role of *emotion* as well as reasoning.

Therefore, emotion-based explanation may provide an alternative lens to understand online discussion participation as a type of political activity. An underlying premise of the emotion-based approach is that the impacts of others' publicized political opinions—either agreeable or disagreeable to the readers—may be contingent upon the level of emotional arousal. This proposition is drawn from the recent findings that social transmission of online messages is affected by the level of emotional activation: for example, among the equally negative valence messages, messages that convey high-arousal emotions such as anger are more likely to be viral than low-arousal messages such as sadness (Berger, 2011; Berger & Milkman, 2012). Emotional contagion does occur during online textual interactions even in the absence of other nonverbal cues (Kramer et al., 2014). Therefore, it is conceivable that high-arousal emotional expression on political matters can be easily

spread online since the low level of social and visual presence may prompt opinions to be expressed in a more aggressive and emotionally charged tone (Diener, 1979; Suler, 2004).

The Role of High-Arousal Emotions in Networked Publics

Reduced social cues and anonymity often explain why users engage in aggressive behaviors online. Less inhibited emotional utterances could allow user discussions to stray from the main topic into flaming, trolling, and hate speech (Herring, Job-Sluder, Scheckler, & Barab, 2002; Moor, Heuvelman, & Verleur, 2010). Indeed, content service providers' attempts to implement various control mechanisms against flaming and trolling, for example, real name policy (e.g., *Huffington Post*, *Washington Post*, and Facebook), crowdsourcing moderation (e.g., Slashdot), and even extreme measures such as a nationwide identity verification policy (e.g., South Korea and China) resonate with the concerns related to the increased emotional disinhibition online (Cho, Kim, & Acquisti, 2012; Cho & Kwon, 2015; Lampe, Zube, Lee, Park, & Johnson, 2014).

Such concerns are in line with deliberation scholars who have examined the undermining effect of citizens' aggressive online commenting behaviors on the process of public rational decision making, which has been assumed to be a foundation for deliberative democracy (Burkhalter et al., 2002; Delli Carpini et al., 2004). For example, studies have indicated that high-arousal aggressive comments result in biased support for public policy (Gault & Sabini, 2000), reluctance to engage in follow-up discussions online (Coe et al., 2014), and "flaming norms" by which verbal attacks become reciprocal (Lea, O'Shea, Fung, & Spears, 1992; Moor et al., 2010, p. 1542). Even scholars who claim emotions to complement rational decision making tend to perceive anger to be normatively bad, associating it with the adamancy without reasons (Wolak & Marcus, 2007), disregard of bilateral information (Huddy, Felman, & Cassese, 2007), and even genocide (Marcus, Neuman, & MacKuen, 2000).

In contrary to the aforementioned deterrent effects, however, other findings suggest that the anger often promotes participatory democracy. For example, Best and Krueger (2011) examined the effect of government surveillance awareness, showing that the perceived government surveillance induces, rather than chilling, various political activities such as contacting political representatives, signing petitions, and engaging in political talks when the perception triggers anger in citizen minds. Other studies also show that aggressive emotional provocation in televised messages—largely referred to as incivility—is associated with the increased political interest and attention (Mutz & Reeves, 2005) and even the likelihood of voting (Brooks & Geer, 2007), although it can reduce political trust (Mutz & Reeves, 2005).

The role of high-arousal emotions is particularly highlighted when it comes to collective sense-making among social media publics, since greater emotionality contributes to more rapid and broader transmission of messages in social media than the neutral toned (Stieglitz & Dang-Xuan, 2013). Similarly, studies of contemporary social movements suggest that personalized expressions of emotions—outrage, excitement, frustration, and surprises—spread via online networks facilitate political collective actions across geographically dispersed publics (Bennett & Segerberg, 2012; Castells, 2013). Social media is apt to leverage affects for discursive participation and political mobilization, given that users are accustomed to blending ostensibly discrete genres of information such as facts, emotions, opinions, and interpersonal conversations and to blur the line between private and public spheres (Papacharissi & de Fatima Oliveira, 2012). The convergence of emotions and reasoning and of informal chats and formal news coverage into a single stream of information has become a normative user practice in web 2.0, calling for redefining the nature of discursive citizenship, toward namely "affective publics" (Papacharissi, 2014). As much as the traditional image of rational public warrants a reevaluation, the role of high-arousal emotional expressions in the process of discursive political participation in networked environment needs to be closely examined.

Swearing as High-Arousal Emotional Utterances

Words are tagged with semantic and pragmatic nuances that define its appropriateness, offensiveness, and level of arousal (Osgood, Suci, & Tannenbaum, 1978). One convenient way of expressing intensive emotions is to use the words suggestive of high arousal and offensiveness, namely, swearwords. Jay (2009) points out that the swearwords are primarily emotional connotations in the form of "epithets," defined as "emotional outbursts of single words or phrases used to express the speaker's frustration, anger, or surprise" or "insults" directed toward others (p. 155). Stated differently, the use of swearwords occurs mostly to express high-arousal emotions such as anger, which have greater contagion effect than low-arousal emotions such as sadness (Berger, 2011).

The psychological effects of swearing have been found in both positive and negative ways. On a positive note, swearing could replace physical violence with speech or help feel a sense of relief or catharsis (Jay, Cling, & Duncan, 2006). On a negative note, even a vicarious experience of swearing can evoke aggression behaviors. According to Coyne, Stockdale, Nelson, and Fraser (2011), the media exposure to profanity, including the Internet exposure, induces more frequent use of profane languages, which subsequently increase physical and relational aggressive behaviors among adolescents. Although often discussed as a defining feature to incivility (Mutz & Reeves, 2005), swearing is associated with positive social outcomes in some contexts. For example, the use of swearwords in the form of jokes and humors may promote social harmony or cohesion (Clark, 1996; Zoglin, 2008). Similarly, Mabry (1974) points out that the use of obscene words in private conversations is an indicator of intimacy of the relationship. More recently, Cavazza and Guidetti's (2014) study on the effect of politician swearing on voters' perceptions and voting intentions suggests that swearwords used by a politician in a written message (i.e., a blog post) had a positive indirect effect on voting intentions by increasing "language informality," which contributes to enhance the impression of the candidate (p. 539). The authors address positive effects of swearing based on the expectancy violation theory, which suggests that the same behavior can be differently decoded (i.e., whether it violates the expected patterns of interactions) depending on the characteristics of communicators, relationships, and contexts (Burgoon, 1993). Furthermore, the expectancy violation can be interpreted as either irritable or positively surprising depending on the situation (Burgoon, 1993).

Therefore, the acceptability and impact of swearing is contingent on a social context in which swearwords are used (Jay, 2009). As long as the use of swearwords during online discussions does not negatively violate a communicative expectancy, swearing may contribute to create an ambience of informality, which could actually lubricate discursive interactions among the discussants. If this is the case, swearing could result in emotional arousals constructive to the readers' attention and interests without necessarily offending them. On the contrary, however, if swearing is not a shared norm in online discussion setting and thus perceived to cause a negative violation of the expected behaviors, it may be interpreted as hostile and negatively aroused emotional responses from the readers. Especially when swearing occurs anonymously, the utterance can be viewed as irresponsible epithets or insults, disapproved by other audiences, and even attacked by the reciprocation of hostility. Few studies have been conducted on the acceptability of swearing in online discussion contexts, aside from Thelwall's on MySpace (2008), which compares swearing norms between genders and countries. His findings indicate that the expectancy of gendered swearing differs between the United States and the United Kingdom with significantly more frequent uses of strong swearwords by female youths in the United Kingdom. To our knowledge, the impacts of swearing on citizen-to-citizen discursive participation online have not been much explored to a large scale.

To summarize, online discussions have become predominant sources for citizen's political learning, participation, and discursive interactions. While some user discussions may well be elaborated to promote rational reasoning, others take a more expressive form often charged with aggressive emotional utterances. The affordance of anonymity and the rising culture of affective publics

(Papacharissi, 2014) in web 2.0 calls for revisiting the role of emotions, in particular the high-arousal ones. While emotional expressions may facilitate informality in online discursive participation, the frequent occurrence of high-arousal emotional expressions may or may not be perceived as hostile by online publics. Mixed findings on the role of high-arousal emotions in political participation have been documented to this date, and understanding its implications on shaping the culture of citizen-to-citizen public discussions requires further investigation. Swearing is one common way of expressing high-arousal emotions, which has not yet been rigorously studied in online public discussion contexts. This study intends to delve into the use of swearwords in online public commenting and the subsequent impacts on audience perception and responses based on a large-scale online user commenting data.

Research Hypotheses

Based on the discussion above, the current study investigates swearing effects on shaping online discursive participation. Among others, commenting in news sites is one of prevalent discursive activities online. User activities in a news site are not limited to commentaries directed toward news articles. A nontrivial portion of user activities comprises of responses to peer commenters, which are often expressed in the form of voting on whether or not to endorse the comment (e.g., like/dislike). Although it may appear as a passive mode of engagement, showing (dis) agreement in the form of voting contributes to enliven discursive participatory culture by collectively increasing salience and signifying popularity of comments. In this study, swearing effects on voting of other users' comments is the locus of examination.

A set of research hypotheses is proposed. First of all, existing studies have shown that high-arousal emotional provocation is associated with greater attention to the information (Cavazza & Guidetti, 2014; Mutz & Reeves, 2005) and is spread more widely and quickly than neutral or low-arousal messages (Berger & Milkman, 2012; Stieglitz & Dang-Xuan, 2013). We define swearing as a speech that includes taboo words explicitly tagged with high level of emotional arousals. As a highly arousing expression, swearing is thus assumed to easily draw the attention of other users or public.

> **Hypothesis 1:** Comments with swearing are more likely to gain public attention than non-swearing comments.

While there is general consensus that an aggressive emotional expression may draw more eyeballs, lesser known is how readers would evaluate its acceptability when being exposed to it. On the one hand, swearing can be perceived positively by increasing language informality as long as it does not negatively violate the expectancy of communicative norms (Cavazza & Guidetti, 2014). Also, it could help like-minded readers feel liberated through vicarious experience of emotional outburst (Jay, 2009). On the other hand, uncivil comments, of which swearing is operationalized as one subset, may reduce citizens' political trust (Mutz & Reeves, 2005). The aggressive narrative could also make nonlike-minded readers feel uncomfortable. Accordingly, we propose two competing hypotheses regarding how online public perceives swearing comments in citizen-to-citizen discussion contexts.

> **Hypothesis 2a:** The valence of public perception on comments will be more positive if swearing is included.

> **Hypothesis 2b:** The valence of public perception on comments will be less positive if swearing is included.

Aggressive user expressions are often linked with anonymity. The majority of studies on disinhibition effects of anonymity has centered on "self-anonymity," a sender's perceived anonymity to

others, and how such self-perception influences the message sender's own behaviors. Lesser high-lighted is "other-anonymity," a message recipient's experiences during an interaction with unidentified source (Scott, 1998, p. 388). The focus of this study is to understand how recipients perceive swearing comments. It may be possible that readers evaluate swearing comments differently depending on the level of other anonymity (i.e., swearing by an anonymous user vs. by an identifiable user). Anonymous swearing could be perceived to be irresponsible and thus interpreted more negatively, while real name-based swearing could be perceived as outspoken yet responsible free speech, being interpreted more positively. Accordingly, a third hypothesis is posited as such:

> **Hypothesis 3:** Anonymity will moderate the effect of swearing on public perceptions on the comments.

Lastly, this study is particularly interested in understanding swearing effects in a *political* discussion context. Considering that democratic society tends to tolerate aggressive political outspokenness more easily than nonpolitical ones for the sake of free speech rights (Sunstein, 2009), the occurrences and communication expectancy of swearing could be different across political and nonpolitical topics. Moreover, high-arousal emotional provocation increases political engagement, of which discursive participation is a part (Best & Krueger, 2011). In particular, Valentino, Brader, Groenendyk, Gregorowicz, and Hutchings (2011) suggest that anger-invoking discussions during an election campaign period influence voting participations. These studies imply that political swearing could actually evoke emotional arousal conducive to mobilization. By comparing swearing effects between political and nonpolitical comments, the study proposes to examine disproportionate swearing effects across topical contexts. Specifically, we examine whether news topical difference moderates swearing effects on the public's attention and perceptions toward comments.

> **Hypothesis 4:** Swearing effects on public attention to comments will be different between political and nonpolitical topics.
>
> **Hypothesis 5:** Swearing effects on the valence of public perception on comments will be different between political and nonpolitical topics.

Method

Data

A rich data set of online comments was collected in collaboration with the largest third-party company in South Korea, which continues to provide domestic mainstream news websites with a commenting plug-in service. Our data set contains 83,322 comments written by 24,415 commenters on 26 major news media sites for 8 consecutive weeks (March 8–May 2) in 2012, in the middle of which was the congressional election campaign period (March 29–April 11). The election was held on April 11, 2012. The examination of the campaign period may offer an insight about swearing effect on participatory democracy, considering that communicative process preceding voting has been the main locus of "talk-centric democratic theory" (Chambers, 2003, p. 308) and has been found to be contributory to mobilize citizens' voting intention and behaviors (Bond et al., 2012). The data set shows a sufficient amount of variety through diverse types of news media and news articles that may hold idiosyncratic characteristics.

South Korea has been a good case nation to demonstrate active online discursive participations, which often promote other types of political activities. Thanks to the high penetration of broadband nationwide and the diversification of political discussion platforms that complement conservative traditional media off-line, the Internet has become an essential means for citizens to share and express their opinions. In the past decades, South Korean online publics have shown the spillover

of online discursive participation into off-line political processes including its impacts on presidential elections and policy reforms (Woo-Young, 2005) and large-scale protest mobilizations (Kwon, Nam, & Lackaff, 2011).

The progressive political culture of South Korean web sphere, however, has also displayed an ideological conflict with government Internet monitoring effort, notably under the law called Identity Verification System, which has been in place from 2007 to 2012. This nationwide law mandated major website providers to collect the information about each user's personal identity. The law stirred nationwide debates and criticisms due to its potential harm to privacy rights and freedom of speech. In December 2011, the court officially announced that the law would be repealed in 2012. The data collection for this study was held during the transitional period preceding the expiration of the law. Although another moniker of this law was a "real-name" policy, the law did *not* actually request a user's real name and other personal information to be publicized in online platforms. Instead, the use of pseudonym and keeping privacy from other users were fully permitted as long as personal information was submitted to the service provider (Cho & Kwon, 2015). In other words, a user's anonymity to other users could be maintained by using a pseudonym. While the law might have influenced the likelihood of online discussants' identity disclosure to service providers and government, we assume that anonymity to peer users should be seldom affected by this law, given the discretionary use of pseudonym and privacy setting.

Variables

Swearing. A dichotomous variable of whether or not swearing appears in a comment was operationalized. According to Thelwall (2008), swearwords are varying in levels of explicitness. Considering that this study is interested in understanding high-arousal emotional utterances, a dictionary consisting of 593 strongly explicit swearwords was referenced to classify whether or not a comment includes swearing. These 593 words were made of the variations of original 319 words designated as offensive by a transnational company *Nielsen Korea*, one of the largest audience and consumer research firms in South Korea. The selected terms included expletives and epithets (or commonly used pseudoswearwords to bypass automatic filtering procedures) and other extreme terms frequently used in online communities in South Korea. Two former journalists who worked at a major South Korean news media organization reviewed the dictionary to reassure the legitimacy of the dictionary. Exemplary swearing comments were translated into English for demonstration, with swearwords boldfaced. The first three were from the political news sections and the other two from the nonpolitical sections:

> These 6-year-old *birdbrains*, with no sense of the most basic principle that public officials should care about citizens' lives, keep avoiding their responsibility and are busy filling their own stomachs. Do they deserve to be the congressmen of our nation?
>
> Min-Tong-Dang (one of the political parties in Korea) is a melting pot *filled with bitches*. How dare they nominate a *bitch* like Mr. Kim? These *bitches* are *commies* in blood, and they don't care whether or not (a candidate is) an imposter, a liar, etc. as long as he has the *commie* taste.
>
> President Rho (one of the former presidents in Korea) assisted your "beloved" North Korea to arm with nukes. He should have been impeached at least 100 times. You *retards* need to get a sense back . . . or get hit by nuke!
>
> Why are they making too much fuss . . . ? Do not suppress the freedom of speech, *assholes*!
> Such a wretched author. What on earth is he trying to say? Nothing touching, nothing fun, it's just *shitty*.

Anonymity. Each comment was posted either anonymously (or pseudonymously) or with a real identity. When a user chose to disclose real identity to others, he or she could use either the registered

real name or a social media plug-in, through which the user's social network site (SNS) profile would be linked to the comment. As mentioned before, users could freely create a pseudonym that would make them anonymous to other users. Any comment authored by a pseudonym was coded as an anonymous comment, whereas any comment either authored by a real name or linked to an SNS profile was coded as a nonanonymous comment. We treated the display of a formal first and last name as a registered real name because it has become customary among South Koreans not to fake a formal name when creating a pseudonym, partly thanks to the Identity Verification law.

Topics. News topic was classified as either political or nonpolitical in content. The classification was based on the categories predefined by the news sites. Specifically, every news site displayed the categories of politics and diplomacy that primarily deal with election, political affairs, and national defense/security issues (which has been a long-standing political issue in South Korea due to the conflict with North Korea). If a comment was made to a news article categorized into the politics or diplomacy sections, it was coded as a political comment. Regarding the nonpolitical topics, we referred to the predefined news categories of business, technology and science, sports and entertainment, and living. We selected these four categories because of their common appearance across all news sites examined and discernible topical distinctions from politics. The category of society was also commonly found; however, it was excluded due to some topical overlaps with politics.

Public attention. One of the dependent variables is the degree of public attention each comment received from other users. To quantify this measure, the number of reader votes was used. Two voting buttons were available to each comment: support and dislike. We operationalized the level of attention as the total number of votes a comment received, including both support and dislike votes.

Perception valence. Another dependent variable is the valence of public perception of a comment. This variable was measured by the gap between positive and negative votes. In other words, we measured it by subtracting the number of dislikes from number of supports. A greater positive value indicates that the comment was perceived more positively, while a greater negative value indicates that the comment was perceived more negatively. The comments with a zero vote were excluded.

Control variables. Comment and commenter-specific variables that may affect commenting behaviors and perceptions were identified. In particular, the length of each comment and the total number of comments made by each user were included in the analysis models as control variables.

Results

Descriptive Analysis

Table 1 provides descriptive statistics on variables explained. There were 31,290 comments (37.55%) that received no vote at all, resulting in skewness in the distribution ($M = 25.55$, $SD = 54.93$). Therefore, the number of total votes was log transformed for further analysis. The perception valence showed that, in general, the comments were perceived more positively than negative, receiving 10.664 more support than dislike votes on average. The majority of comments were written anonymously by using a pseudonym (76.02%), and 28.90% of comments were made to the political news. About 1 in 10 comments included swearing to some extent (10.66%).

When compared with nonpolitical comments, political comments tended to receive more total votes, $M_{difference\ between\ the\ topics} = 21.78$, $t(83,320) = 52.75$, $p < .001$; receive more positive support, $M_{difference\ between\ the\ topics} = 4.056$, $t(83,320) = 13.70$, $p < .001$; and be written longer, $M_{difference\ between\ the\ topics} = 36.58$, $t(83,320) = 73.66$, $p < .001$, than nonpolitical

Table 1. Descriptive Statistics.

Variable	All		Nonpolitics		Politics	
	Mean	SD	Mean	SD	Mean	SD
Attention: Total vote	25.547	54.930	19.251	44.658	41.034	72.088
Log (total vote)	1.847	1.770	1.599	1.688	2.458	1.817
Perception valence	10.664	38.781	9.492	33.235	13.548	49.748
Swearing	0.104	0.305	0.093	0.290	0.132	0.339
Anonymity	0.760	0.427	0.732	0.443	0.829	0.377
Politics	0.289	0.453	0.000	0.000	1.000	0.000
Length	87.538	67.059	76.966	63.982	113.545	67.361
Log (length)	4.143	0.901	3.987	0.924	4.528	0.708
All comments	29.435	65.134	28.672	69.729	31.312	52.089
Log (all comments)	2.143	1.553	2.037	1.558	2.402	1.508
Observations (n)	83,322		59,240		24,082	

Note. N = 83,322.

Table 2. Bivariate Correlations Among Variables.

		1	2	3	4	5	6	7	8	9	10
1	Total vote	—									
2	Log (total vote)	.681***	—								
3	Perception valence	.539***	.386***	—							
4	Swearing	.056***	.072***	.031***	—						
5	Anonymity	.039***	.065***	−.001	.017***	—					
6	Politics	.180***	.220***	.047***	.059***	.102***	—				
7	Length	.093***	.140***	.008*	.170***	.009*	.247***	—			
8	Log (length)	.105***	.151***	.017***	.156***	.034***	.273***	.905	—		
9	All Comments	−.054***	−.115***	−.050***	−.001	.135***	.018***	.034	.044***	—	
10	Log (all comments)	−.037***	−.078	−.056***	.020***	.189***	.106***	.041	.055***	.685***	—

Note. N = 83,322.
***p < .001; *p < .01.

comments. Frequency tests indicated that political comments included more swearing, $\chi^2(1) =$ 291.5124, $p < .001$, and were written more anonymously, $\chi^2(1) = 870.1025$, $p < .001$, than non-political comments. As correlations among the variables show in Table 2, anonymity and swearing are positively correlated. Also, political comments are positively correlated with all other variables, including total votes, swearing, anonymity, valence of public perception, comment lengths, and commenter's commenting frequency.

Swearing Effects on User Attention to Comments

To test the hypotheses predicting the level of user attention (Hypotheses 1 and 4), a series of ordinary least squares (OLS) regression modeling was performed. A dependent variable, public attention, was skewed and transformed into a logarithm term of the total number of votes received. The three dummy variables of interest were swearing, anonymity, and topic, each of which indicating the use of swearwords (=1), the absence of real identity (=1), and political topic (=1), respectively. Inter-action effects among these variables were added to test differentials across groups. Specifically,

Table 3. Regression Models Predicting Level of Public Attention to Comments.

Variables	(1)	(2)	(3)
Swearing	.339** (.020)	.271** (.021)	.374** (.046)
Anonymity	.173** (.014)	.259** (.014)	.250** (.016)
Politics	.829** (.014)	.773** (.014)	.722** (.032)
Anonymity × Swearing			−.089 (.050)
Anonymity × Politics			.077* (.035)
Politic × Swearing			−.095* (.043)
Log (lengths)		.184** (.007)	.184** (.007)
Log (all comments)		−.134** (.004)	−−.134** (.004)
Constant	1.440** (.012)	.921** (.029)	.925** (.029)
Adjusted R^2	.054	.074	.074

Note. N = 83,322. Robust standard error is in parentheses. DV = "Public Attention" measured by Log (total votes).
**$p < .01$; *$p < .05$.

conditioning swearing = 0, anonymity = 0, and topic = 0 corresponded to the group of nonswearing comments to a nonpolitical topic with the display of real identity, which was the baseline group. This model allowed us to obtain the estimated differentials over the three variables by changing the value of each variable to 1 to test our hypotheses.

First, the results of the modeling are presented in Table 3. The estimated coefficients showed that swearing was significantly positively associated with the level of public attention, $\beta = .37$, $p < .01$, as reported in column (3). Therefore, Hypothesis 1 was supported. For example, comments including swearwords received more votes from the audience by 33.9% than comments without swearwords as reported in column (1).

Aside from the conditional effect of swearing, the estimated coefficients of topic were also positive and statistically significant, $\beta = .72$, $p < .01$, as reported in column (3). Political comments received a markedly greater public attention than nonpolitical comments, increasing by 82.9% of votes on average as seen in column (1). Furthermore, estimated coefficients of *anonymity* were positive and statistically significant, $\beta = .25$, $p < .01$, as reported in column (3).

It is noteworthy that a coefficient estimated for an interaction term (Topic × Swearing) in column (3) was significantly associated .with the level of public attention, $\beta = -.10$, $p < .05$, implying the differential swearing effects on user attention across topics. This finding supports Hypothesis 4. In order to delve more deeply into these results, Figure 1 presents the differences among different conditions. Specifically, given the average value of control variables, swearing generally showed a positive effect on the number of total votes regardless of the commenter's anonymity. Although swearing increased the number of votes for nonpolitical topics, political comments showed a particularly high, positive effect of swearing on garnering public attention. Meanwhile, the comparison between Figure 1A and B suggests that anonymous comments generally received more votes than nonanonymous comments, and the anonymity effect on public attention was significantly larger for political commenting than nonpolitical commenting, $\beta = -.08$, $p < .05$.

Finally, control variables were log transformed due to skewness. The test of control variables showed that a longer comment and a comment written by nonfrequent commenter were likely to receive more votes. A three-way interaction among anonymity, topic, and swearing was tested but not significant and thus not included.

Swearing Effects on the Valence of User Perceptions

To test the hypotheses predicting the other dependent variable, the valence of perception on comments (Hypotheses 2, 3, and 5), another series of OLS regression modeling was performed. The
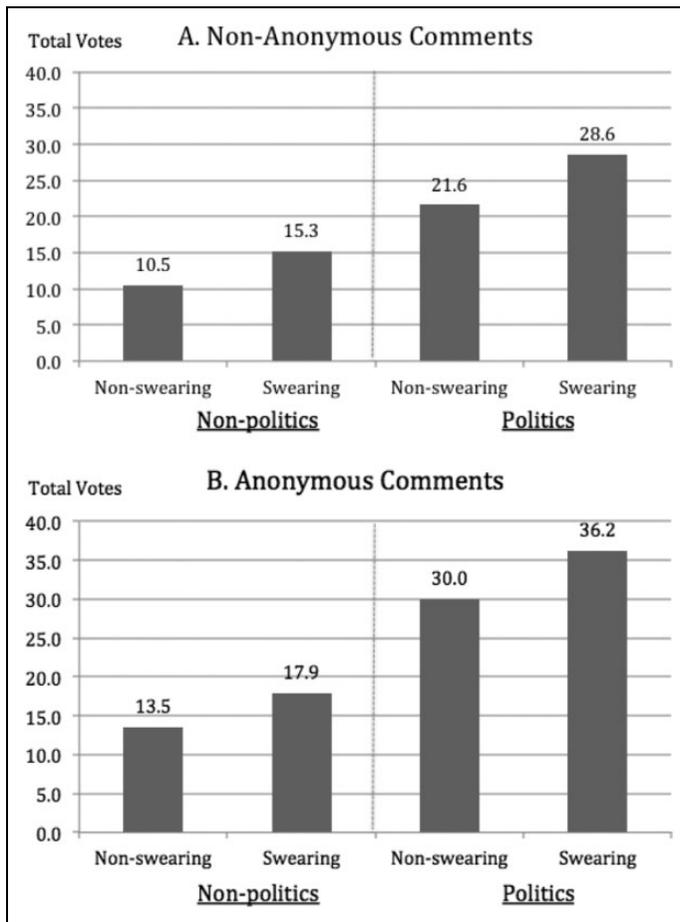
Figure 1. Comparison of different conditions based on anonymity, swearing, and news topics: Figures A and B are separated by anonymity of the commenter. The Y-axis is the estimated total number of votes received by a comment, indicating that greater value means larger public attention to a comment ($N = 83,322$).

dependent variable, public perception, was measured as the difference between the numbers of supports and dislikes received, by which positive value denotes a greater number of supports than dislikes. All other variables remained same to the previous models above.

Table 4 reports the results. The estimated coefficients of swearing were positively associated with the valence of public perception, $\beta = 7.50, p < .01$, as reported in column (3). Using swearwords was likely to increase positive public perception (supports) more than negative perception (dislikes), which supported Hypothesis 2a. For example, the magnitude of the difference between the numbers of supports and dislikes for swearing comments was greater by 3.8 times than for nonswearing, as seen in column (1) in Table 4.

In terms of anonymity, the results indicated that anonymous comments were likely to be negatively perceived, receiving more dislikes than supports, $\beta = -1.38, p < .01$, as reported in column (2), before adding interaction terms. However, after adding the interaction terms, its conditional effect was not significant any more. Topic was positively associated with perception valence, $\beta = 5.04, p < .01$, as reported in column (3), indicating that political comments were perceived more positively than nonpolitical comments.

Table 4. Regression Models Predicting the Valence of Public Perception on Comments.

Variables	(1)	(2)	(3)
Swearing	3.862** (.711)	4.527** (0.723)	7.503** (1.472)
Anonymity	−2.598** (.478)	−1.379** (0.496)	−0.523 (0.549)
Politics	1.238** (.480)	2.564** (0.487)	5.037** (1.093)
Anonymity × Swearing			−1.626 (1.676)
Anonymity × Politics			−2.409* (1.196)
Politics × Swearing			−4.059** (1.517)
Log (lengths)		−1.054** (0.253)	−1.082** (0.253)
Log (all comments)		−1.784** (0.147)	−1.772** (0.147)
Constant	18.235** (.419)	24.857** (1.140)	24.123** (1.136)
Adjusted R^2	.001	.004	.005

Note. N = 52,032. Robust standard error is in parentheses. DV = "Perception Valence" measured by the difference between the numbers of support and dislike votes.
**$p < .01$; *$p < .05$.

More interesting results were observed when three interaction terms were included, reported in column (3). First, a coefficient estimate of an interaction term, Anonymity × Swearing, was not statistically significant, indicating that a commenter's anonymity did not moderate user's perception on swearing comments. This finding did not support our Hypothesis 3.

In contrast, however, coefficient estimates of two other interaction terms, Anonymity × Topic and Topic × Swearing, were relatively big, negative, and statistically significant, suggesting differential effects on user perceptions between political and nonpolitical comments. This finding supported our Hypothesis 5. In order to investigate the interaction patterns in more details, Figure 2 (A and B) presents the comparisons of different conditions, by giving the average values to control variables.

First, the comparison between nonanonymous and anonymous comments indicated that anonymous comments showed lower positive valence than nonanonymous comments in general, which was in line with the significant conditional effect of anonymity as mentioned above. The interaction effect of anonymity was statistically significant between political and nonpolitical group, $\beta = −2.41$, $p < .05$. Second, the comparison between nonswearing and swearing indicated that swearing comments tend to receive larger supports than dislikes, resulting in the magnitude change toward a greater positive perception. In particular, the swearing effect was significantly different between political and nonpolitical comments, $\beta = −4.06$, $p < .01$. Although swearing comments to political topics were the most positively perceived across all types of comments, the largest swearing effect was actually found among the nonpolitical comments. In nonpolitical topics, nonswearing comments were associated with a relatively lower positive valence in user perception ($M = 16.9$ for nonanonymous and 17.3 for anonymous condition). Swearing, however, was associated with a marked change toward positive perception ($M = 28.4$ for nonanonymous and 27.2 for anonymous condition). In contrast, political topics appeared to be perceived highly positive by default, as seen from nonswearing comments associated with relatively high positive valence ($M = 23.9$ for nonanonymous and 22.0 for anonymous condition). Swearing effect then contributed to even higher positive valence, but the surge was not as large as nonpolitical topics.

Both the control variables, comment lengths and commenting frequency, were negatively associated with perception valence, indicating that a longer comment and a comment written by heavy commenter were likely to receive lesser positive votes. A three-way interaction among anonymity, political topic, and swearing was tested but not significant and thus not included.
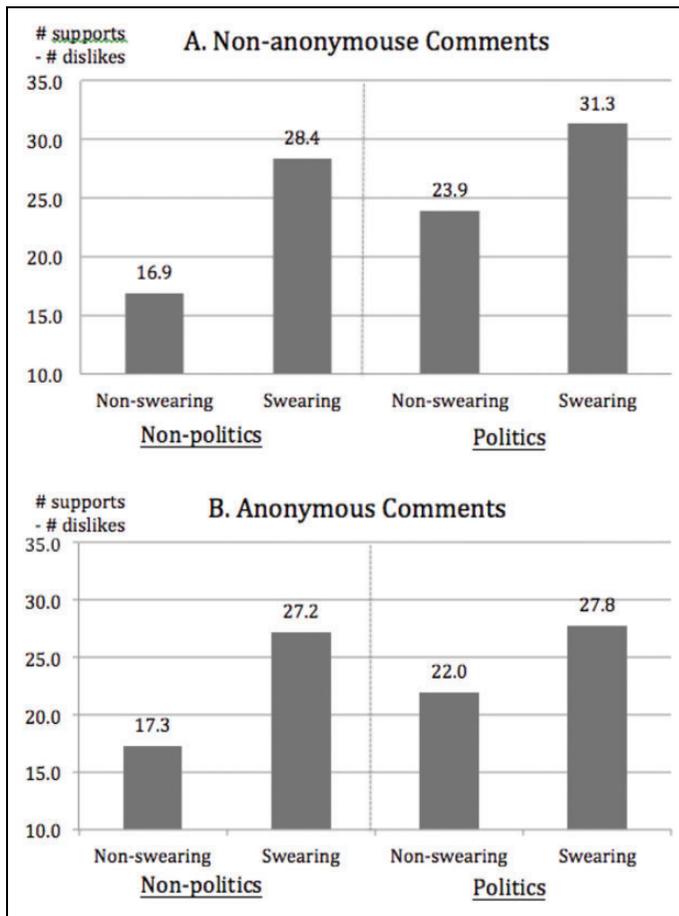
Figure 2. Comparison of different conditions based on anonymity, swearing, and news topics: Figures A and B are separated by anonymity of the commenter. The Y-axis is the estimated difference between numbers of support and dislike votes, indicating that greater value means more positive public perception of a comment ($n = 52{,}032$).

Discussion

Swearing has become commonplace in technology-mediated discursive interactions, often associated with rising concerns about online incivility. Rather than investigating swearing as a subcategory of incivility, this study proposes to adapt a neutral definition of swearing as the use of taboo languages tagged with high-arousal emotions to delve into its role in shaping citizen-to-citizen discursive interactions online. By exploring swearing effects on public attention to, and perceptual valence of, user comments, the study attempts to revisit a common depiction of the rational public as an ideal image of citizenship (Burkhalter et al., 2002; Delli Carpini et al., 2004) and to reassess functions of high-arousal emotions in the process of discursive participation and participatory democracy in general.

The study is in line with recent scholarly efforts that delineate the role of emotions in facilitating collective sensemaking and political participation among networked publics (Castells, 2013; Papacharissi, 2014). Along with the studies that explore highly intense emotions as an impetus for promoting political participation (Best & Krueger, 2011; Valentino, Brader, Groenendyk, Gregorowicz,

& Hutchings, 2011), the current study examines its role in shaping public attention to, and popularity of, news comments. Although some scholars in the past have suggested that high-arousal emotional expressions, especially anger, are normatively bad, implying malevolent effects on public political discussions (Marcus et al., 2000), revisiting the effects of high-arousal emotions shall be a timely endeavor along with contemporary sociodigital conditions, wherein the boundary between deliberative and participatory democracy has become greatly blurred (Bennett & Segerberg, 2012; Papacharissi & de Fatima Oliveira, 2012).

Given that the primary purpose of swearing is an emotional outburst (Jay, 2009), the examination of swearing effects properly responds to the call for looking at the role of high-arousal emotion. The current study leveraged a large-scale user comment data in South Korea collected across 26 major news websites. While the size of our data is not big enough to be labeled as "big data," the scale of analyses is evidently far larger than traditional content analytic approaches. Furthermore, the 2-month data collection includes a major political election period during which citizen discussions on political matters must have been particularly more influential to the electorates' voting decision than in ordinary times. The data set aptly exemplifies the election time period that interlocks public discursive and participative democratic processes. However, we also acknowledge that the data collection amidst an electoral campaign period might result in biases potentially due to the intensified political swearing. Considering the possibility of disproportionate occurrences of swearing during an election period, caution is warranted against generalizing our results in addressing political commenting in ordinary times. Future research may be able to draw a more unbiased, general understanding of swearing effects by comparing political and nonpolitical comments during nonelection periods.

Specifically, the study's focus was on swearing effects in interplay with anonymity and topical difference (political vs. nonpolitical) on public attention and perceptional valence, represented by votes to comments. In general, findings suggest that online publics were more engaged (in forms of voting) when reading political comments than other topics. Although the expression of (dis)agreement in the form of voting may be a somewhat passive mode of engagement, our study confirms that citizens are neither avoiding nor indifferent toward the exposure to political issues, at least during the election period. This finding resonates with Delli Carpini et al.'s (2004) proposition that citizens engage in diverse forms of discursive participations even if they may or may not be enthusiastic about attending public deliberation events. While a high level of public attention to political comments could be due to the election campaign context, this finding seems promising in that online publics were attentive to political issues in time of important decision making.

Regarding anonymity, despite drawing more public attention, anonymous comments were not as positively perceived as identifiable user comments. However, the posited hypothesis about the moderating role of anonymity in swearing effect was rejected, although there was a correlation between the two variables. These findings in combination suggest that, while a low social presence due to anonymity could encourage outspoken, eye-catching comments involving the use of swearwords, anonymity would not affect the ways in which public perceives swearing.

Although not tested in this study, an alternative way of understanding the interrelationships among anonymity, swearing, and public perceptions of comments may be to test for a mediation effect, in particular from anonymity to swearing, then to the public perception. If this mediation path were confirmed, it would imply that, whereas anonymity could trigger swearing, the triggered swearing would actually warrant more public support. Such conjecture on mediation effects would bring forth a new challenge against a commonly taken premise that anonymity-triggered swearing is antinormative. In contrast, online public could have approved anonymous swearing to some extent as an acceptable norm in the online discussion contexts. If public perceives it to be normative, and even more, actually interprets it more positively than negative, it could be a hasty conclusion to reduce swearing simply as a deterrent to civil society.

Similarly, additional findings suggest that online swearing does not violate a negative expectancy (Burgoon, 1993) at least in South Korea: Both conditional and interaction effects indicate that, when swearing occurred, the public perception valence shifted toward a more positive direction. The pattern was consistent between political and nonpolitical topics. However, the magnitude of change was much greater for nonpolitical topics than the political topics. While the perceptual gap between swearing and nonswearing was larger than 10 votes in nonpolitical topics, the gap was much narrower for political topics. Meanwhile, the baseline (i.e., no swearing) public perceptions of political comments were much more positive than that of nonpolitical comments, and political comments with swearing were the most positively perceived across all conditions.

These results may provoke two topics for further discussion. First, swearing norms may vary across topical areas. For example, political swearing, on the one hand, could be a norm and thus not as surprising as in nonpolitical comments. Swearing in nonpolitical comments, on the other hand, could be perceived as more surprising since it is less normative but may actually produce positive effects on the readers' perceptions. In other words, swearing in nonpolitical comments could be a more positive violation of communicative expectancy than swearing in political comments (Burgoon, 1993). Some of the comments that we heuristically reviewed were supportive of this argument in that many of the comments with swearing seemed to reveal an emotional outburst fused with humors and satires. That is, swearing could be interpreted as a rhetorical tactic that increases informality and witticism.

Second, highly positive valence of political comments in both swearing and nonswearing conditions implies that, by default, online publics may be predisposed to read the like-minded citizens' political discussions, while being reluctant to be exposed to the disagreeable comments. That is, publics may be already polarized to some extent. If greater positive perceptions on swearing political comments were, in truth, the by-product of dispiriting the nonlike-minded from reading the comments, swearing could indeed be harmful to civility, consistent with the "nasty effect" thesis (Anderson et al., 2014). The causal effect of swearing on political polarization in citizen-to-citizen discussions is beyond the scope of this study, warranting future research.

Conclusions

To summarize, our findings suggest positive effects of swearing on increasing the public's attention and perception toward the comments, reaffirming the need to further evaluate the role of explicit emotional utterances in facilitating citizen-to-citizen discussions online. As with all other aspects of political practices, swearing norms are socially constructed within the unique context of a given environment. Therefore, the findings from this study are based on the context of election campaign in South Korea and not to be generalized for the universal population. In fact, cross-cultural comparisons of swearing norms would be an interesting advancement of this study. Moreover, swearing is merely one way of expressing high-arousal emotional utterances and therefore is not representative of all types of intensive emotional expressions. More granular investigation may help understand various rhetorical expressions of high-arousal emotions that are exchanged across online discussion settings, and how differently those forms of expressions influence the dynamics underlying public discursive participation. In addition, this study was not able to account for sequential effects of swearing, for example, whether or not swearing encourages more follow-up user discussions within the same discussion thread or whether or not swearing is reciprocated. Testing sequential effects could elucidate ambiguities regarding the extent to which swearing facilitates online discursive participations and the ways in which swearing evolves into a norm (or a taboo).

Despite the aforementioned challenges and limitations, this study offers an alternative lens to research online discursive participation. Furthermore, the study contributes to the use of online big data for the advancement of knowledge in the field of political communication.

Declaration of Conflicting Interests

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Author Biographies

K. Hazel Kwon (PhD, University at Buffalo-SUNY) is an assistant professor of communication in the School of Social and Behavioral Sciences and a faculty affiliated with the School for the Innovation in Society at Arizona State University. Her research focuses on social and behavioral implications of social technologies. E-mail: khkwon@asu.edu

Daegon Cho (PhD, Carnegie Mellon University) is an assistant professor in the Department of Industrial and Management Engineering at Pohang University of Science and Technology (POSTECH) in South Korea. His research focuses on economics and information technology policy. E-mail: dgcho@postech.ac.kr