

# Meaner on Mobile: Incivility and Impoliteness in Communicating Contentious Politics on Sociotechnical Networks

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## Abstract

This study explores the nature of how mobile social media may potentially be sharpening the tenor of communicating online. Specifically, randomized representative Twitter data were collected for several controversial issues, and then examined to determine the extent to which mobile or web-based content tends more toward greater incivility and impoliteness. Additional analyses further model how certain dialogic features, such as explicitly mentioning other users and retweeting others' posts, positively relate to hostility in the discourse. Building on the basis of technological affordances and user negotiation in digitally mediated environments, this study contributes to a better understanding of how individuals express themselves on mobile devices as these are rapidly becoming normalized modes for communicating with one another online.

## Keywords

mobile communication, social media, incivility, impoliteness, dialogic affordances, big and small data

On the sixth anniversary of Twitter (March 2012), the late night talk show, Jimmy Kimmel Live, aired their first installment of the popular segment “Mean Tweets.” In this piece, an assortment of celebrities read some of the most egregious insults Twitter users have directed at them—often riddled with expletives, name-calling, and accusations. While this segment may be humorous to watch, it also illustrates an important point about how social media platforms such as Twitter and other online discussion environments can sometimes elicit hostile communication. Online social networks like Twitter essentially allow the community at large the power to direct insults at whichever users they please from a distance and with little fear of retaliation or punishment. Especially with the widespread adoption of mobile phones and availability of data-enabled cellular networks, this form of online-mediated bullying can take place at any time or place at the whim of the connected user, who may be on either a genuine or anonymized pseudo-account.

Of course, since the time when people first started communicating online, there has been an ongoing debate over the capacity for digital political communication to become hostile and polarize or silence participants (Baum & Groeling, 2008; Lee, Choi, Kim, & Kim, 2014; Prior, 2013). In addition, though we know this is especially true for anonymous online forums (Santana, 2014), relatively little work

has examined the importance of place, device, and certain types of content indicators, such as retweets and user mentions. While Murthy, Bowman, Gross, and McGarry (2015) recently found differences where tweets from mobile platforms were more egocentric and negative than web-based tweets, there is no research to date that has examined how the ongoing transition of social media to mobile devices relates to the incivility of user posts.

This gap in the literature is crucial because from a practical sense, mobile communication has intersected with online and social media in such a way that has made these spaces anything but separate. Yet, just as previous research has shown that communicating face-to-face facilitates conversations unique from interactions over electronic media (Baym, Zhang, & Lin, 2004), this study investigates how the shift to communicating digitally while mobile factors into incivility and impoliteness as individuals engage with contentious politics and one another.

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## The Tenor of Communicating Digitally in Review

Historically, the Internet has been broadly conceived and idealized as a great democratizer or a virtual public sphere (Papacharissi, 2002) where anyone is free to enter, regardless of social status, race, gender, or other characteristics. Essentially, the Internet has been conceptualized as a medium that can erase ties to identity and hierarchy. Discussions are free to take place without a particular context, seeing as the Internet has no real location (Barlow, as cited in Hess, 2015). Because of this lack of context, the Internet as a medium encourages more casual interaction and can act as an equalizer among people of different status (Gurak, 2001). For instance, Sproull and Kiesler (1991) studied online interactions in the workplace, and found that inequalities in discussion that existed in face-to-face interaction were reduced or eliminated when communicating via e-mail. Whereas a person of higher status in the workplace usually dominated in-person discussion, other voices were more equally expressed in e-mail.

In one respect, the equalizing nature of the online environment allows marginalized groups to voice their opinions in an open forum, but on the other hand silences discussions about such social divisions, thereby creating a tension in these spaces (Shepherd, Harvey, Jordan, Srauy, & Miltner, 2015). For instance, this tension has characterized the recent “Gamer Gate” controversy among the video gaming community, where a crucial lack of consequences for hostile offenders has been shown in previous research (Hsu, 2015; Lin, 2015). In essence, the online gaming community was founded by a primarily White, male population, many of whom identified as “geeks” (Massanari, 2015). These males carried their own set of social insecurities and prejudices that they wished to shed upon entering the online world. In 2014, when female gamers began speaking up about prejudices against women in video games, much of the gaming community reacted defensively. In these online spaces where no context exists, marginalized individuals may feel the need to speak “louder and harsher” in order to vocalize their differences and ultimately be heard, contributing to a vicious cycle of hostile online discussion (Hess, 2015).

Thus, it is important to consider here how the tone of communication in online environments can be conceptualized and defined. This study thus follows from previous research in considering hostility online by looking at two key factors: incivility and impoliteness. To start with the first of these, incivility has been defined by Papacharissi (2004) as “a set of behaviors that threaten democracy, deny people their personal freedoms, and stereotype social groups” (p. 267). This sort of communicative activity has been found in previous literature to be apart from impoliteness, which allows for a more open expression of disagreement that while not uncivil, still demonstrates an unwillingness to agree or acquiesce for the sake of avoiding hurt feelings. To wit, the

same study by Papacharissi (2004) found that an exchange lacking appropriate manners—or politeness—“does not set a democratic society back” (p. 267). In fact, Massaro and Stryker (2012) argued the same point, noting that impoliteness can often surface when political discussions engage strongly held opinions and raise passionate feelings.

Thus, not all researchers have supported the Internet as equalizer argument, and there are varying findings regarding the power of the Internet to facilitate productive, democratic discussion that may include impoliteness but not incivility. In an analysis of 30,000 tweets about the shooting of an abortion doctor, Yardi and Boyd (2010) found that Twitter’s social media platform contributed to a greater polarization of viewpoints and in-group bias. They argued that constraints of the medium make it difficult to have a meaningful discussion even when users are exposed to other perspectives. Cullen and Sommer (2011) also found that those who engage in online discussions are not as satisfied with their participation as those engaged in face-to-face debate. Furthermore, Himelboim (2011) found evidence of hierarchical social structures in online newsgroups, suggesting that inequalities continue to persist online especially as discussions grow in size, and these can be activated by incivility but not necessarily impoliteness.

There are many ways in which the fundamental nature of online interaction differs from interpersonal communication which may significantly impact behavior. In an online environment, the speed at which messages can be delivered and the relative ease of sending messages can encourage impulsive and sometimes aggressive behaviors (Gurak, 2001). One possibility is that online environments lack social cues and context, including tone of voice, body language, and facial expression, which leaves much room for misinterpretation. From an evolutionary perspective, when people are faced with ambiguity they are likely to perceive the situation as threatening, and therefore react defensively (Gardner, 2012). The online environment also affords a level of anonymity that is not available in face-to-face interactions and most traditional forms of communication.

In one study, online comments made anonymously on newspaper message boards were significantly more uncivil than non-anonymous comments (Santana, 2014), and recently *The Guardian* newspaper released an analysis of more than 70 million made to its website since 1999 where researchers identified that hostility was most frequently directed toward women and racial or ethnic minorities (Gardiner et al., 2016). According to Santana (2014), “In general, anonymity can foster a sense of impunity, loss of self-awareness and a likelihood of acting upon normally inhibited impulses in a way that is markedly inconsistent with a person’s offline self” (p. 6).

Beyond overarching observations such as those outlined here thus far, the primary theoretical framework for this study builds on the work of Suler (2004), who articulated an “online disinhibition effect” that occurs when individuals

interact on the Internet. Following this work, disinhibition can manifest itself in both positive (benign) and negative (toxic) forms—inducing people to be more generous, for instance, or alternatively, more aggressive and hostile.

Specifically, Suler outlined six factors that can contribute to disinhibition in both forms, the first being dissociative anonymity. Here, Suler wrote, “When people have the opportunity to separate their actions online from their in-person lifestyle and identity, they feel less vulnerable about self-disclosing and acting out” (p. 322). On a platform like Twitter, for example, users need not disclose their real name—they can simply contrive a username. The second factor is invisibility: users are not physically seen and, in turn, they cannot see the reactions of other users. A third factor, asynchronicity, describes how interaction does not always take place in real time online, and Suler argues that the delay in responses between users further disinhibits them.

The next factor, solipsistic introjection, describes a process by which invisible users create a mental representation of their “online companion,” and they often use their own internal voice to read the companion’s messages (p. 323). According to Suler, imagining the conversation in one’s own voice feels safer and lowers inhibitions. Next, dissociative imagination is a sense that the online persona one has created and the characters they have imagined for other users exist in some space apart from the real world. In dissociating from the real world, Internet users are more likely to act in atypical ways. And finally, minimization of status and authority is a factor similar to the previous discussion about the Internet as an equalizer. Since everyone has a relatively equal chance to express themselves and status is less or not as apparent, people are more likely to speak up.

Continuing from the work of Suler, another related term used in the media psychology field to describe the phenomenon of impolite or uncivil online behavior is “flaming.” Gurak (2001) refers to flaming as the “road rage” of the Internet (p. 50). More precisely, flaming has been defined as “hostile and aggressive interactions via text-based computer-mediated communication” (O’Sullivan & Flanagin, 2003, p. 69). This term is not new, as it has been recognized even in the beginning stages of the Internet’s inception in the early 1990s (Santana, 2014). As an example, Singer (1996) analyzed political message boards of Prodigy and America online, and found that 14% of the anonymous comments counted as “flames.” In another online discussion group concerning immigration in California, a large proportion (61%) of anonymous comments were deemed very/somewhat hostile (Singer, 1996, as cited in Santana, 2014). While the incidence of flaming differs depending on the context, Singer’s study illustrates evidence of flaming in online environments. O’Sullivan and Flanagin (2003) further argue that flaming must involve a harmful or negative intention as well as recognition of the harm on the receiver’s end. This distinguishes flaming from mere miscommunication.

Another similar term that has gained much traction is “cyberbullying,” mainly to describe online attacks among children and adolescents. Similar to flaming, cyberbullying involves both an intention to hurt someone and a perception of harm in the receiver. It also involves a pattern of repetitive abuse and a power imbalance (Vandebosch & Van Cleemput, 2008). As of 2015, Whittaker and Kowalski found that cyberbullying is most prevalent within the contexts of texting and social media, and among a sample of about 240 college students, 55% reported having witnessed cyberbullying within the past year. Yang (2012) also found a significant relationship connecting cyberbullying, aggression, hostility, and preference for video games among adolescent online gamers.

Similar to flaming and cyberbullying, “trolling” has emerged in recent years. Whereas flaming and cyberbullying usually occur among individuals as a result of personal attack, a troll pretends to be a part of an online community and feigns sincere intentions, while their “real intentions are to cause disruption and/or trigger or exacerbate conflict for the purposes of their own amusement” (Hardaker, 2010, p. 237). Trolling carries with it another level of aggression—that which actively seeks to cause problems through *deception* within a larger community—and represents another level of aggression that has evolved from the Internet. Hardaker (2010) argues that trolling behavior is aggravated in an online environment where there is a lack of accountability.

Moreover, social networking sites (SNSs) are a particularly interesting space for communication that can differ from face-to-face discussion. In some respects, social network use can have positive effects on self-esteem and well-being because these sites can provide a means of self-expression. Users can also selectively present information that portrays themselves in a positive light. In turn, users often gain positive feedback from others in the form of “likes” and comments (Wilcox & Stephen, 2013). At the same time, such a boost in self-esteem can contribute to more impulsive behavior and reduced self-control. In a series of studies, Wilcox and Stephen (2013) found that social media site use negatively impacted participants’ self-control, particularly for those focused on “strong ties” in their network. Those who reported having a higher concentration of “close friends” on Facebook and who browsed the site for 5 min exhibited less healthy eating choices and gave up more easily on a puzzle task than those with weak ties on Facebook and those who did not browse. Drawing from this, for some users the inflated sense of self-esteem that SNSs afford might contribute to impulsive behaviors, potentially in the form of more aggressive or opinionated interactions.

### *Civility and Mobile Social Networks*

While a considerable body of literature has focused on comparing uncivil or aggressive behavior on the Internet to the

real world, there is a lack of research comparing fixed Internet devices and mobile ones. At this point in time, though, what is expressed in mobile communication is of particular importance, especially as that output has been vastly understudied but is now crucial to interpreting the personal and social effects of digital political communication platforms. Moreover, users are increasingly accessing SNSs through mobile apps and data-enabled wireless networks. The two most popular SNSs, Facebook and Twitter, both recently released statistics, indicating that 70% and 80% of their users, respectively, access the service through a mobile device regularly (Brandt, 2015; Cohen, 2015). Apart from the obvious physical distinctions that separate fixed web from mobile communication, there are conceptual differences in how physical place is both disrupted and negotiated (Wellman, 2001) by mobility, and in “how major cultural and social interaction patterns are being readjusted, and what newly created structures and processes result” from mobile communication (Katz, 2008, p. 11).

Indeed, the shift from being geographically tethered to information and communication networks to being spatially “freed” to always-on and constantly connected selves (Turkle, 2008) has broad implications on nearly all facets of personal and social life. As the development and embeddedness (Ogan, Ozakca, & Groshek, 2008) of smartphones into everyday life has brought Internet facilities into the palms of our hands and the mobile technology industry continues to grow, the impact of mobile social networks is still in need of further exploration. Using the Internet and social networks via mobile phones brings with it many of the same characteristics as the Internet in general (e.g., anonymity, invisibility, distance, etc.) but makes these networks all the more accessible, all the time. For example, O’Neill and Dinh (2015) surveyed seven European countries and found that the incidence of cyberbullying has increased, and they attribute this rise to the vastly increased use of mobile technologies, especially by younger individuals. While speculative, those authors point to “the ‘always-on’ connectivity afforded by portable and personal media as a contributory factor to increased reports of being bullied online” (p. 396).

Billieux, Van der Linden, and Rochat (2008) also draw a strong connection between problematic cell phone use and impulsivity. They argue that it may follow that the higher level of accessibility associated with mobile devices would exacerbate preexisting issues of flaming and trolling on the Internet, and therefore contribute to even more impulsive, aggressive behaviors. Similarly, Murthy et al. (2015) suggest that “social media content that is produced on mobile versus web platforms may be qualitatively different” (p. 816), and their study identifies a certain form of “reporting” from mobile devices on “immediate thoughts, feelings, physical self, and surroundings” (p. 816). To some extent, the increasingly mobile nature of social media invokes McLuhan (1964) in terms of mobile-specific affordances (cf. Katz, 2005) and Deuze (2012) who pointed to how widespread smartphone

diffusion sharpens greater levels of individualization and personalization in terms of media content.

Based on this review of relevant literature and the intersection of technological affordances of social media, this study therefore also incorporates user mentions and retweets (Halpern & Gibbs, 2013) that Bae and Lee (2012, p. 2522) noted “should be considered as other important measures of influence.” In taking both into account, there are of course conceptual and practical differences between these affordances, namely that mentions are “used for conversational interaction and collaboration between users” (Bae & Lee, 2012, p. 2522; cf. Honeycutt & Herring, 2009), whereas “retweets are to disseminate information to other people” (Bae & Lee, 2012, p. 2523) by “forwarding another user’s tweet to all of your followers” (p. 2521). Yet when considering these unique aspects of mentions and retweets, these specific features have been shown in previous work to connect with negativity (Nahon & Hemsley, 2013; Tsugawa & Ohsaki, 2015) and emotional sentiment (Kim & Yoo, 2012) in terms of sharing via retweets and discussion through user replies. Thus far, however, analyses have stopped short of connecting either of these affordances to mobility.

When taken together with the previously discussed concept of online disinhibition, this study therefore poses the following hypotheses and research questions to explore a range of conceptual grounds that have been underexplored to varying degrees in previous work:

*H1.* Tweets that originate from mobile devices will be more (a) uncivil and (b) impolite than tweets that originate from fixed web devices.

*RQ1.* Are tweets sent from mobile devices that mention other users more (a) uncivil and (b) impolite than tweets that mention other users on fixed web devices?

*RQ2.* Are retweets that originate from mobile devices more (a) uncivil and (b) impolite than retweets that originate from fixed web devices?

*H2.* All else equal, mobility is a more effective predictor of (a) incivility and (b) impoliteness than other factors.

## Method

In carrying out this inquiry, public content from Twitter was collected through the Boston University Twitter Collection and Analysis Toolkit (BU-TCAT) that handshakes with the Twitter streaming Application Program Interface (API) (Borra & Rieder, 2014) on an ongoing basis and that has archived over 375 million tweets to date (Groshek, 2014). While the BU-TCAT does not collect every tweet posted, this open source software nonetheless captures customizable samples of public tweets, and output has been shown to be generalizable to Twitter content more broadly (Gerlitz & Rieder, 2013). Using this interface as a starting point, a randomly generated

and representative subsample of 1,000 tweets and accompanying metadata were downloaded for three distinct areas that we consider controversial topics for manual human coding (which inform the machine learning component of a larger ongoing project).

The selected topics were gay marriage, genetically modified organisms (GMOs), and Black lives matter. The rationale in making engaging these topics was simply on the basis that all three were high on the agendas of mainstream and social media at the time of data collection, but they do not conceptually overlap explicitly in the political arena. In short, we felt that these topics provide a diverse overview of contentious politics as defined by Tarrow (2013), and analyses would produce results not specific to just one topic or group of users that were active in communicating about controversial topics online. Yet even given the factors that were taken into consideration for data collection, it remains important to reiterate that the BU-TCAT does not capture every tweet, and relying on randomness to produce a representative sample, particularly when population parameters may be unknowable, introduces unavoidable potential error in measurement to analyses.

In order to mitigate any such error and control for variations in time frame and population sizes, data for the key terms were collected as follows: Using the BU-TCAT keyword search facility, gay marriage data were collected with the search terms “#gaymarriage, #marriageequality, #samesexmarriage” from May 12, 2015 through September 30, 2015 and archived 67,931 tweets. GMO data comprised of tweets that had one or more of the following words: “biotech foods, genetically altered food, genetically engineered crops, genetically engineered foods, genetically modified crops, genetically modified foods, GMO, GMO crops, or GMO foods” during April 23, 2015 through September 30, 2015, which resulted in a total of 591,778 tweets. Data for the Black lives matter archive likewise ended on September 30, 2015 for this study, and 1,637,224 tweets were gathered using only the search term “black-livesmatter” beginning on March 7, 2015. With these larger corpuses of varying sizes and time frames to draw from, a random subset of 1,000 representative tweets for each topic was exported by the BU-TCAT in spreadsheet format for manual coding.

In terms of coding decisions, the two key dependent variables of incivility and impoliteness were operationalized based on the previous work in this area of Santana (2014) and Rowe (2013), which generally followed from previous categorizations by Papacharissi (2004). To operationalize incivility, the number of instances of any of the following was coded for each tweet: (a) personal or inflammatory attacks; (b) threats; (c) vulgarities, abusive, or foul language; (d) xenophobic or other hateful language or expressions; (e) epithets or ethnic slurs, sentiments that are racist or bigoted, and/or disparaging on the basis of race/ethnicity or that assign stereotypes.

Similarly, impoliteness was determined with the same sort of Ratio-Level Additive scale where any of the following per tweet were observed and then summed: (a) contained name-calling, (b) cast aspersions (an attack on the reputation or integrity of someone or something), (c) accused others of lying, (d) used hyperbole, (e) used pejoratives for speech (derogatory terms, expressing contempt or disapproval), (f) signaled non-cooperation/disagreement, (g) sarcasm, and (h) any grammar/punctuation indication, including using all caps or multiple exclamation marks and/or rude emojis.

In both instances of coding these data, this study does not attempt to take into account the intensity of the hostility expressed by ranking some type of threat or attack as stronger than another. Rather, like previous research in this area (de Boer, Suetfeld, & Groshek, 2012), this study sums the occurrences of incivility and impoliteness to arrive at metrics based on the frequency rather than intensity of hostility. Once the incivility and impoliteness values were determined for each tweet, in cases where those scores were 0, tweets were considered “civil” and “polite” because there were no indicators of incivility or impoliteness. In creating a binary measure of incivility and impoliteness for additional analyses, any tweets with one or more indicator of those features were considered “uncivil” and “impolite” in collapsing the categories to their most basic level.

The other key variable was extracted from a metadata field available through the BU-TCAT identified as “source” that made it possible for coding to generally determine if a tweet originated for a mobile or fixed web device. While the concept of mobility itself is a somewhat fluid term, here we were seeking specifically to identify devices that were specifically intended to be used on the go, namely mobile phones, tablets, and wearable devices. We thus considered laptops and desktop PCs as fixed web devices, based primarily on operationalizations from the metadata field. For example, the source field regularly indicates tweets as originating from “Twitter for Ipad” or “Twitter for Android” or “Twitter Web Client” and, for the most part, making mobile categorizations (the former two examples) against fixed web (the latter example) was fairly obvious and required little interpretation. Still, there were some items that required further investigation, and altogether 8.8% of the total sample was left uncoded, which also includes items that were otherwise removed from analysis for other reasons, such as being in a foreign language or gibberish. In short, the fidelity checks on this item were straightforward but were still examined with intercoder reliability.

The intercoder reliability checks for the items of incivility, impoliteness, and mobility were performed by a second coder working independently, and all achieved scores over 0.70 using a random subsample of 10% and Cohen’s kappa to control for chance agreement. The other codes (mentions, retweets, and verified account) were directly received from the metadata that were downloaded with the tweets and required only technical and not interpretative coding. Tweets

were eliminated from the analyses if they were unintelligible, clearly not relevant, noise (as in capturing a GMO tweet because the letters gmo appeared in a link), or if they were in a language or character set other than English.

## Findings

Before reporting on specific hypotheses and research questions, it is worthwhile to note the overall parameters of the incidence and extent of incivility and impoliteness in the data examined here. Altogether, after filtering out invalid units, 977 gay marriage tweets were coded, along with 766 tweets about GMOs and 993 that mentioned blacklivesmatter. In terms of incivility in this sample of 2,735 randomly selected tweets on these topics, just 36.1% of all tweets had at least one (or more) indicator of incivility. Comparatively, far more tweets, 66.2% of the sample, could be similarly categorized as impolite. Overall, this equates to an average of 0.41 uncivil indicators per tweet and 1.58 impolite items per tweet. When looking at the other features of the units of analysis, 57.7% were from mobile devices, 22.5% mentioned another user, and 56.5% were retweets.

In turning to analyze the first hypothesis, there were indeed greater percentages of uncivil and impolite tweets that originate from mobile devices compared to fixed web devices. Thus, the empirical support for this hypothesis found that 39.0% of mobile tweets included at least one indicator of incivility compared to 32.2% of fixed web tweets,  $\chi^2(df: 1) = 13.35, p < .001$ . This was also the case with impoliteness, where 69.3% of mobile tweets had at least one indicator of being impolite, compared with 61.9% of fixed web tweets that were impolite at this binary level,  $\chi^2(df: 1) = 16.66, p < .001$ .

Upon further examining this hypothesis using ratio-level data, on average, mobile tweets featured 0.44 uncivil indicators per tweet compared to 0.37 for fixed device tweets, which in an independent samples *t* test of these averages,  $t(2,553.16) = 3.18, p = .001$ , equal variances not assumed, achieved statistical significance. Similarly, there were 1.71 impolite items per mobile tweet and 1.40 impoliteness indicators on average from fixed tweets that was also a statistically significant difference in the direction predicted,  $t(2,732) = 5.62, p < .001$ . Thus, there is reasonably strong support for this hypothesis, and it can be observed that in a generalized random sample of tweets on these topics, users were more uncivil and impolite on when tweeting from their mobile devices.

RQ1 also found some patterns of statistical significance, where there was a greater percentage of tweets with mentions that were uncivil (43.3%) than tweets without mentions, 34.0%;  $\chi^2(df: 1) = 17.78, p < .001$ , but there was not a clear statistically significant difference in impoliteness, with 68.8% of mentioning tweets being impolite compared with 64.3% of tweets without mentions,  $\chi^2(df: 1) = 2.42, p = .120$ . These results were mirrored by a statistically significant

difference in mean levels of incivility,  $t(2,732) = 3.08, p = .002$ , and at this level of analysis averages in impoliteness were significantly different as well,  $t(2,732) = 2.37, p = .018$ . In the instances where users mentioned another user with the @username convention on Twitter, there were, on average, 0.48 uncivil and 1.70 impolite indicators per tweet compared to 0.39 uncivil and 1.54 impolite indicators per tweet in cases without user mentions. Put somewhat briefly, users are actually more hostile when they mention another user, though there is no statistically significant interaction between mobility and mentioning.

However, at the binary level, in cases where user mentions originate from mobile devices, 48.6% were uncivil compared with 35.7% of uncivil user-mentioning tweets from fixed web devices, which represented a statistically significant difference, Mantel-Haenszel  $\chi^2(df: 1) = 17.27, p < .001$ . Impoliteness showed a similar relationship, where there were 72.1% of mobile user mentions that were impolite compared with 63.9% of fixed web user mentions, but those distributions did not reach statistical significance, Mantel-Haenszel  $\chi^2(df: 1) = 2.05, p = .152$ .

Analyses of retweets answered RQ2 by finding that there is a greater percentage of retweets that are uncivil (40.5%) than uncivil non-retweets (30.3%), and that the same holds true for the percentage of impolite retweets and non-retweets (71.1% vs. 59.8%). Both these relationships were statistically significant,  $\chi^2(df: 1) = 30.56, p < .001$ ;  $\chi^2(df: 1) = 38.12, p < .001$ . Average levels of incivility and impoliteness were also statistically significantly higher in retweets, 0.45 and 1.74, respectively, than in non-retweets where the average levels of incivility and impoliteness were 0.36 and 1.37,  $t(2,490.14) = 3.65, p < .001$  for incivility, equal variances not assumed and  $t(2,539.40) = 6.71, p < .001$  for impoliteness, equal variances not assumed. This finding thus suggests that users on Twitter tend to share the content of others (i.e., retweet) when that content is more hostile and aggressive, but there is no interaction effect between retweeting, mobility, and uncivil or impolite tweeting.

Yet when examining mobile retweets and non-mobile retweets at the binary level, 41.3% were uncivil compared to 38.8%, which proved to be statistically significant, Mantel-Haenszel  $\chi^2(df: 1) = 22.11, p < .001$ . Differences in the distributions of impoliteness were also statistically significant, Mantel-Haenszel  $\chi^2(df: 1) = 27.86, p < .001$ , with 72.9% of mobile retweets being impolite as compared with 67.0% of impolite fixed web retweets.

Altogether, the findings already reported in this study inform the final hypothesis, which expects that mobility is a more effective predictor of (a) incivility and (b) impoliteness than other factors. This proposition was examined using two separate and basic ordinary-least-squares (OLS) regression models. In the first model that set incivility as the dependent variable, being mobile was not statistically significant ( $B = -0.01, p = .452$ ), thus H2a was not supported. The only factors that were significant predictors were user mentions

**Table 1.** OLS Regression Model Predicting Increased Incivility.

	B	SE	Sig.	Beta
Mobile	-0.013	0.017		-0.011
Retweet	-0.016	0.017		-0.014
Mention	0.039	0.020	*	0.027
Verified	-0.077	0.109		-0.010
Impolite	0.293	0.006	***	0.690
Constant	-0.043	0.017	*	

Note.  $N = 2,733$ ; adj.  $R^2 = .475$ . OLS: ordinary least squares.

\* $p \leq .05$ . \*\*\* $p \leq .001$ .

**Table 2.** OLS Regression Model for Impoliteness.

	B	SE	Sig.	Beta
Mobile	0.135	0.041	***	0.047
Retweet	0.193	0.041	***	0.068
Mention	0.034	0.047		0.010
Verified	-0.244	0.255		-0.013
Incivility	1.602	0.033	***	0.681
Constant	0.727	0.038	***	

Note.  $N = 2,733$ ; adj.  $R^2 = .483$ . OLS: ordinary least squares.

\*\*\* $p \leq .001$ .

( $B = 0.04$ ,  $p \leq .05$ ) and tweets being more impolite ( $B = 0.293$ ,  $p \leq .001$ ). The full model is summarized in Table 1.

Following the OLS regression for H2b, impoliteness was set as the dependent variable, and in this analysis being mobile was a statistically significant factor ( $B = 0.14$ ,  $p \leq .001$ ). It was not, however, a more effective predictor than other factors, such as being a retweet ( $B = 0.19$ ,  $p \leq .001$ ) or having more incivility indicators ( $B = 1.60$ ,  $p \leq .001$ ). Clearly, incivility and impoliteness are intrinsically related (Pearson's  $r = .69$ ,  $p < .001$ ) but remain separate concepts where incivility is, in most cases, a more intense and damaging vulgar expression of emotion. This model is summarized in Table 2.

In sum, incivility and impoliteness are indeed related to tweets that originate from mobile devices, but only in the case of impoliteness does mobility play a statistically significant role when accounting for other technological affordances such as user mentions and retweets in political discourse. This distinction is an important one, in that incivility has been shown in previous research to stifle democratic discourse, whereas impoliteness or a willingness to disagree has been considered by some scholars as central to the proper functioning of the democratic ideal (Garrett, 2011; Habermas, 1989; Halpern & Gibbs, 2013; Papacharissi, 2002, 2004).

## Discussion and Conclusion

Working from a long-standing body of research in civility in online communication, this study sheds necessary light on

mobile content both in its methodology and in its findings, which provide a larger context of what mobile social networks have meant for online discussion. Based on a representative randomized sample of tweets on three distinct topics, the analyses here found that mobile communication is both more uncivil and impolite than fixed web messages. These findings connect to and extend Suler's (2004) theoretical framework of online disinhibition, and suggest the shift to mobile communication on social networks, and not just being online versus communicating offline might fundamentally change the tenor of human communication through the augmentation of certain affordances, such as impulsivity (Billieux et al., 2008).

Moreover, it was observed that not only are user mentions and retweets generally more uncivil and impolite when coupled with mobility, these affordances are often related to a greater incidence of tweets being uncivil and impolite. This suggests that, as previous work has shown (Billieux et al., 2008; Suler, 2004), the disinhibiting effect of online communication may well be augmented on mobile devices, and that users behave differently on mobile devices than they do on fixed ones (Murthy et al., 2015). As shown in this study, the joint effect of mobility and affordances such as user mentions and retweets was related to statistically significant increases in the likelihood of incivility and impoliteness, most notably at the binary, rather than average, levels.

Relatedly, it has also been shown that users tend to filter content on Twitter based on their personal preferences (Jürgens, Jungherr, & Schoen, 2011). This activity, in combination with the increasing shift toward communicating mobility on social networks, suggests that likelihood of users being exposed to cross-cutting viewpoints on social networks that are civil and polite may indeed be quite rare. With the increasing proliferation of data-enabled networks and users connecting on mobile devices over social media, particularly on controversial topics, the signal from this study is that the norms of civility in communicating online have a greater probability to become even more hostile, and those implications can drastically shape both online and offline interactions, and might well exacerbate polarization and self-selected withdrawal from debates based on the perceived climate online (Porten-Chee & Eilders, 2015).

Of course, this study is limited by its overall time frame and relatively small sample that was spread across just a few topics. Yet given the factors that were taken into consideration for data collection, it remains important to reiterate that the BU-TCAT does not capture every tweet, and relying on randomness to produce a representative sample, particularly when population parameters may be unknowable, introduces unavoidable potential error in measurement to analyses. In addition, the randomized dataset that was collected employed only manual human coding, which increased the contextual dimensions but limited the scope of this work dramatically.

We therefore encourage future scholars to take steps in combining small and big data approaches, and this study is a component of a larger project on machine learning (with an already developed algorithm) to analyze larger and more generalizable samples of trace data at scale. Adopting these sorts of approaches is becoming increasingly accessible and acceptable in the research community (Burscher, Vliegthart, & de Vreese, 2015), but also raises vital questions of how to treat conventional standards of statistical significance in the discipline, and how relevant those are to big data studies (Shah, Cappella, & Neuman, 2015).

Importantly, we feel that this study also opens the door to consider more fully what mobility means and which devices and forms of metadata can signify being mobile. While at the moment, we generally rely on operating systems to identify the sources of posts as being from mobile versus fixed web devices, this differentiation may well prove limited utility as operating systems become more seamless from device to device. Thus, we feel that moving forward in the study of mobile communication, it will be important to examine wearable and non-wearable devices, and how location and mobility itself (i.e., at home, in the office, or in physical transit via car, bus, or similar) and not just certain devices may also shape communicative patterns.

As these steps take place, scholars will be better equipped to make sense of mobile and social network communication, along with the implications for human interaction and cohesion more broadly. The study reported here was an exploratory one, yet has opened a rich theoretical vein for future research to build on Suler's (2004) online disinhibition effect and advance that arena of study to consider what we propose here as a *mobile online disinhibition effect*. This proposition, we believe, stands to have far-reaching implications as many communicative actions become increasingly mobile. Indeed, given recent trends already reported (Brandt, 2015; Cohen, 2015), it is likely that mobile communication via social networks will eventually be the default mode of posting to such platforms, and as a field it is necessary to understand this transformative shift as it relates to the tone of that communication.

This study offers one such effort, and its results, which indicate that increased incivility and impoliteness may be cultivated through mobility and mobile devices, signal a great need for more research in this area. Mobility may not equate to hostility in all instances, but the evidence presented here suggests that, at least on these contentious political topics, users are meaner on mobile. Importantly, however, mobility is more directly connected to impoliteness than incivility, and this differentiation tentatively suggests that constructive democratic discourse may take place on mobile-centric social media platforms.

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