

The Impact of Online Network Diversity on Familiarity and Engagement with Social Issues News on Facebook

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This study of U.S. adults ($N = 296$) investigates the relationship between the ethnic and religious diversity of users' Facebook networks and their familiarity and engagement with news about social issues on that platform—the Black Lives Matter movement, the Dakota Access Pipeline protests, and Muslim immigration. The results showed that greater ethnic and religious diversity in a user's Facebook network explained higher familiarity and a higher willingness to engage with information

about recent social issues, even after controlling for overall network size, political ideology, and the user's own demographic characteristics. These results suggest that online network diversity is an important consideration when studying contemporary social issues and media effects.

Keywords: social media, race, ethnicity, religion, network diversity, crystallization, news, Facebook, social networks, online networks, news engagement

Online social media platforms have increasingly become a primary source of news for the public, supplanting a role that was once served exclusively by legacy media (Mitchell et al., 2016; Oeldorf-Hirsch, 2018). However, this shift is not simply the substitution of one particular news outlet for another, but rather the participation in a different kind of experience altogether. To think of social media services such as Facebook and Twitter as uniform media entities analogous to, for example, a newspaper masks the complexity of the information that people encounter on such platforms. As social media become more central to how people experience news, people are increasingly concerned about the role that the platform plays in the curation of information (Pariser, 2011). Overlooked in this discussion, however, is the influence of user network composition. Since some social media content is created, commented on and

curated by users, the content that individuals see in their feeds comes from content that their network posts (Wohn & Bowe, 2016), which can play a significant role as a source of information (e.g., Bode, 2016; Gil de Zuniga et al., 2017; Park, 2019) and even encourage political participation (Bode et al., 2018; Lu, 2019; Min & Wohn, 2018). Moreover, this exposure to news on social media can be incidental (Fletcher & Nielsen, 2017; Oeldorf-Hirsch, 2018), which means that even for those who do not see social media as a news platform it is still functioning as such. Therefore, it is important to conceptualize social media as not just a platform of news delivery but as a socially embedded experience that has an influence on individuals' understandings of events unfolding in the world around them.

To examine these trends and the implications of online network diversity, this study of U.S. adults investigates the relationship between the racial/ethnic and religious diversity of users' Facebook networks and their familiarity and engagement with social issues — the Black Lives Matter movement, the Dakota Access Pipeline protests, and Muslim immigration. By testing theory-driven hypotheses in the context of contentious contemporary social issues, this research aims to understand the specific network effects that reside within social media.

RECONSIDERING ONLINE MEDIA EFFECTS FOR A NEW ERA

Over several generations of communication theory, the mass media level has tended to be considered separately from the interpersonal level. However, those lines have become blurred with the advent of social media platforms like Facebook and Twitter. While mass media has always been a social endeavor (Papacharissi, 2015), the affordances of these new platforms have brought an era of masspersonal communication (O'Sullivan & Carr, 2017). As such, some of the longstanding assumptions of well-established communication theories need to be re-examined, though by no means jettisoned. In particular, it is necessary to increase the understanding of journalism's networked components from the perspective of the attributes of actors and the structures of their networks. (Fu, 2016). The crystallization framework (Wohn & Bowe, 2014) was developed as a response to this need. Building on the insights of agenda setting and social influence theories, this framework attempts to bridge these two levels of theory by taking into

account the complexity of individual networks in exposure to and engagement with certain topics in the news.

The rising role of social media contacts in people's exposure to news via social media (Ahmadi & Wohn, 2018; Mitchell et al., 2016) as well as their engagement with news (Matsa & Mitchell, 2014; Oeldorf-Hirsch, 2018) underscores the importance of studying the potential the influence of one's social media contacts. This innate desire to create a shared reality and affiliate oneself with a group is the underlying psychological mechanism of the crystallization model. Since achievement of shared reality is the outcome of a communicative process (Higgins, 1992), understanding the psychological motivations that influence this process will help in understanding a critical missing piece in how social media may influence audience perceptions at the individual level, rather than just the macro-social level.

Crystallization Framework

The agenda setting process has always relied as much on the structure of the medium as the characteristics of particular content. For example, newspapers and television present news in very different ways, but each medium has ways of signaling the importance of a story through length and placement. While agenda setting may still apply to contemporary circumstances (Djerf-Pierre & Shehata, 2017), the manner in which the public obtains news has significantly changed in recent years (Gottfried & Shearer, 2016). Many of these changes involve the addition of individual-level signals to the selection and distribution of news stories. For example, Facebook's structure provides a variety of novel affordances that focus public attention on some stories rather than others. It could even be that certain news that is not covered by mainstream media can be brought to one's attention.

While first- and second-level agenda setting effects have been at the center of a great deal of mass communication scholarship, they may work differently in a social media landscape. The crystallization model adds a network perspective to the insights of traditional agenda setting research. Crystallization describes the process of information flow and reality formation in the age of social media. This model suggests the notion that social media creates filter bubbles (Pariser, 2011) is too simplistic because network composition (both online and offline) influences what people think, and because everyone's

network is different, people may have completely different perceptions of what “reality” is (Wohn & Bowe, 2014).

Based on the assumption that individuals have a fundamental psychological desire to create a shared reality with those they perceive as within their in-group (Higgins, 1992), crystallization posits that individuals’ online social networks will act as *micro agenda setters* at both the first and second level (Wohn & Bowe, 2016). In other words, the network will help the individual curate the abundance of information generated by multiple media sources, including legacy “mainstream” media, alternative media (e.g., blogs, social media), and an individual’s personal connections. Those individuals will also develop attitudes about the cognitive and affective attributes of the information that is presented to them. This leads to development of both objective and subjective reality (Adoni & Mane, 1984). According to the crystallization framework, attributes of the network play a central role in what people think about and how they think about it. Thus, crystallization describes that the way in which people form their attitudes is more emergent, as opposed to the top-down model of agenda setting.

The crystallization framework highlights the importance of network diversity. However, diversity can manifest in different ways, and much of the measurement of diversity in communication research has been limited to occupation diversity or relationship type (e.g., strong vs. weak ties). Initially, crystallization did not make any concrete claims about what type of diversity matters, only saying that different types of diversity will matter in different contexts based on the content of the news (Wohn & Bowe, 2014).

A Study of Network Diversity

In this study, we take a closer examination of how the diversity of race/ethnicity and religion in one’s Facebook network influences their familiarity with news that involves race/ethnicity and religion, respectively, and how much users then choose to engage with those issues on social media. This study examines three news events with social policy issues that were highly salient at the time the study was conducted — Black Lives Matter, the Dakota Access Pipeline, and Muslim immigration. While not entirely about race or ethnicity, Black Lives Matter and Dakota Access Pipeline involve a strong racial/ethnic component; Muslim immigration touches specifically on religious issues

(though also has racial/ethnic overtones). This study will then consider the how online network diversity factors into individuals' understanding of "reality" and their willingness to engage with it online. Using these three social issues, this study will determine how having diversified sources of information on social media impacts the understanding of and willingness to engage with those issues. The following sections will briefly explain each of the social issues examined in this study, paying particular attention to the role of news and online media in the dissemination of information about these movements.

Black Lives Matter. Black Lives Matter erupted in 2014 in the United States after a series of police killings of unarmed Black citizens were mostly left unpunished (Freelon et al., 2016), creating a sense that law enforcement was able to act with impunity. The response was the creation of this modern activist movement against state sanctioned violence toward Black individuals (Heinrich et al., 2016). The movement has created many varying opinions regarding news coverage of it after receiving much mainstream and citizen-generated news coverage (Heinrich et al., 2016). Some argue that legacy media does not accurately depict or represent the goals of the movement, which seeks justice for Black individuals as well as to acknowledge, respect, and celebrate differences (Heinrich et al., 2016).

Dakota Access Pipeline. The Dakota Access Pipeline is a pipeline that a Texas-based energy company wants to build in order to transport approximately 570,000 barrels of crude oil per day from North Dakota to Illinois (Worland, 2016b). However, the Native American Standing Rock Sioux tribe has opposed the pipeline since they first learned of it in 2014 (Worland, 2016b). Therefore, thousands of protestors, including many Native Americans, have gathered in North Dakota in hopes of stopping the 1,200-mile project, particularly because it runs through a body of water that is a major source of drinking water and considered sacred by the tribe (Worland, 2016a, 2016b).

The Dakota Access Pipeline protests have not only captured the attention of environmental activists, but also that of the media and the public (Worland, 2016a). Due to the mass spread of media coverage and the critical concern of the issue, the Obama administration stepped in to halt the construction in December of 2016 (Worland, 2016a); although this was overturned by the Trump administration in 2017. The present study

took place in early October of 2016, just as mainstream media was gaining traction on coverage of this issue.

Muslim Immigration. During the time period when this study was conducted, the issue of Muslim immigration also was rising in public salience, thanks in part to then-candidate Donald Trump's provocative campaign pledge to clamp down on Muslim immigration if elected. In December 2015, the Trump campaign issued a "Statement on Preventing Muslim Immigration." In this statement, Trump called for "a total and complete shutdown of Muslims entering the United States until our country's representatives can figure out what is going on" (para. 1). This statement cited poll research to make the specious claim that half of American Muslims wanted to install a form of Islamic law that authorized atrocities against non-believers.

There are deep partisan divides over attitudes about immigration generally (Jones, 2016) and Muslim immigration specifically (Sides, 2017). After Trump was elected he reiterated on Twitter that his goal was to enact a ban on Muslim immigration (Zapotosky, 2017). Because of the incendiary campaign rhetoric and strong public attention paid to the issue, the Religion News Association listed Muslim affairs and immigration among the top stories of 2016 (McCallan, 2016).

Racial/Ethnic Makeup of Social Networks

Through the lens of these three social issues, this study considers the effect of the racial/ethnic makeup of one's online social network. This is a key component of the crystallization framework that has yet to be directly tested and applied, particularly in the context of the understanding engagement with social policy news.

Americans' core social networks offline demonstrate substantial homogeneity by race and ethnicity, meaning that they tend to be composed of people of the same racial or ethnic background (Cox et al., 2016). Prior research has pointed to offline network heterogeneity as an influential factor in use of news media, particularly based on exposure to a greater number of viewpoints leading to an increase in for more information on those topics (Nisbet et al., 2003). Scheufele et al. (2006) also found that offline network heterogeneity can lead to greater political knowledge and participation. This leads to the prediction that a more diverse representation of racial/ethnic groups in one's network would make one more familiar and engaged with issues relating to race/ethnicity.

Similarly, a greater diversity of religious voices in one's online social network should predict a greater level of familiarity and engagement with religious issues.

H1. The racial/ethnic diversity of one's Facebook network will be positively related to familiarity with news about race/ethnicity-related social issues.

H2. The racial/ethnic diversity of one's Facebook network will be positively related to online engagement with news about race/ethnicity-related social issues.

H3. The religious diversity of one's Facebook network will be positively related to familiarity with news about religious social issues.

H4. The religious diversity of one's Facebook network will be positively related to online engagement with news about religious social issues.

Influence of Social Network Size

Many studies have shown that the overall size of online social networks also can be influential (Anderson & Hitlin, 2016; Bakshy et al., 2009; Brandtzaeg et al., 2010; Cha et al., 2010; Herrington et al., 2003; Wohn & Bowe, 2016). A recent study conducted by the Pew Research Center reported that 20% of social media users say they have modified their stance on a social or political issue because of material they saw on social media (Anderson, 2016). Moreover, Bakshy et al. (2009) found that roughly 52% of users are socially influenced in the adoption of online content with people that are not their friends, and roughly 48% with people that are their friends. Moreover, they found that the rate of adoption increases as more of one's friends adopt, and that this is more significant for smaller, niche assets (Bakshy et al., 2009).

On the other hand, considering specific social network sites, Brandtzaeg et al. (2010) found that users who have a larger number of Facebook friends disrupt the sharing process due to experiences of social surveillance and social control (Brandtzaeg et al., 2010). Similarly, looking at the influence within Twitter, Cha et al. (2010) performed a comparison of three different measures of influence-directed communication toward the person (called "in degree" in network analysis terminology), retweets, and user mentions. They found that even though retweets and user mentions correlated with one another, the directed communication patterns did not correlate well. Based on this, the authors hypothesized that the number of followers a user has on Twitter may not be a good

measure of influence. Given the mixed results regarding overall network size, we postulate the following research question:

***RQ1.** What is the relationship between a person's total number of Facebook friends and familiarity/engagement with social issues on Facebook?*

METHODS

Procedure and Respondents

This study employed a nationwide survey of Facebook users and was approved by IRB. The sample was limited to Facebook users because of the social media giant's dominance in news distribution as well as this study's focus on social network diversity. Respondents were asked to consider three different social issues, permitting comparisons of the impact of online network diversity on news familiarity and engagement across topics. The three issues selected include the Black Lives Matter movement, the Dakota Access Pipeline protests, and Muslim immigration. Each of these issues was selected due to its prominence in the news at the time this study was conducted and also its relatedness to aspects of network diversity, in this case racial/ethnic and religious diversity.

Between October 6 and 10, 2016, a Qualtrics web panel consisting of 584 individuals took part in the survey and 296 completed it, yielding a completion rate of 50.1%. The sample's average age was 41 years old ($SD = 14.93$), and it consisted of about 66% women. The racial makeup was 74% White Caucasian, 9.8% Asian, 9.2% Black, 5.7% Latino/a, and 1.3% American Indian or Alaskan Native. The majority of participants identified as Christian (68.6%).¹ Other responses included no religion (20.3%), Jewish (2.2%), Buddhist (1.5%), Muslim (1.1%), Hindu (1.1%), or some other religion (5.2%). Republicans and Democrats consisted of 40% of the sample each, while 20% identified as Independents.

Measures of Online Network Diversity

Racial/ethnic and religious network diversity on Facebook was measured by the Simpson's D index, a popular measure utilized by communication researchers (e.g., Beam et al., 2017; Eveland & Hively, 2009; McDonald & Dimmick, 2003). To generate the index,

¹ Included Protestant, Methodist, Baptist, Catholic, and non-denominational Christian.

each survey respondent was asked to estimate the proportions of their friends' races/ethnicities and religions in their Facebook network. The proportions were then squared and summed, which made the index range from zero to one. One meant complete homogeneity, meaning, for example, when someone's Facebook friends consist of completely one race/ethnicity only. In this research, the inverse of the index was used to make a number closer to one denote higher diversity and a number closer to zero to denote homogeneity. In mathematical terms, the diversity index (D) was calculated as the following:

$$D = 1 - \sum_{i=1}^n p_i^2$$

Figure 1. Diversity index calculation.

where p_i is the proportion of friends within each ethnic/religious category. The racial/ethnic diversity and religious diversity indexes were calculated separately.

Racial/ethnic network diversity on Facebook was measured by asking respondents to indicate the percentage of each race/ethnicity represented in their own Facebook network, ranging from 0 to 100. Respondents reported that White individuals had the largest representation in their networks ($M = 65.18$, $SD = 29.43$), followed by Black ($M = 18.92$, $SD = 21.26$), Asian ($M = 13.19$, $SD = 19.93$), American Indian ($M = 7.22$, $SD = 14.26$), and Hawaiian ($M = 6.56$, $SD = 14.10$) individuals. Using the Simpson's D measure, the average racial/ethnic network diversity was .41 ($SD = .25$).

Respondents reported that Christian (Protestant) individuals had the largest representation in their networks ($M = 51.98$, $SD = 30.26$), followed by Catholic ($M = 24.93$, $SD = 21.98$), Jewish ($M = 9.92$, $SD = 14.38$), Muslim ($M = 6.39$, $SD = 13.77$), Hindu ($M = 5.94$, $SD = 13.75$), and Buddhist ($M = 5.20$, $SD = 10.97$). Again using the Simpson's D measure, the average religious network diversity was .48 ($SD = .25$).

Measures of News Familiarity and News Engagement

Familiarity with news related to the Black Lives Matter movement was measured by asking respondents to indicate how familiar they were with the following Black Lives Matter issues: 1) Colin Kaepernick sitting during the national anthem, 2) Ferguson, 3) the death of Michael Brown, 4) the shooting of Mark Duggan, 5) Alton Sterling, 6) the

Charlotte North Carolina protest, and 7) Beyonce's Lemonade album. These events were chosen to represent some of the most topical and heavily covered news items related to the BLM movement during the timeframe of this study (the news items related to the other two topics were similarly selected). Respondents rated each item on four-point scales (1 *Not familiar* to 4 *Very familiar*) ($M = 2.43$, $SD = 0.80$, $\alpha = .84$). Dakota Access Pipeline news familiarity was a three-item measure asking the respondents how familiar they are with the three Dakota Access Pipeline issues: 1) Dakota Pipeline Protest, 2) the Treaty of Fort Laramie, and 3) the Standing Rock Sioux tribe ($M = 1.86$, $SD = 0.89$, $\alpha = .79$). Familiarity with news about Muslim immigration was measured with five items: familiarity with 1) Trump's proposal to ban Muslims, 2) the Orlando nightclub shooting, and 3) the bombing in Chelsea, New York City, 4) the Paris terrorist attacks, and 5) the San Bernadino shooting ($M = 2.98$, $SD = 0.76$, $\alpha = .83$).

Online engagement with Black Lives Matter issues on Facebook was measured using a six-item scale, where respondents were asked how often they: 1) click on links to news stories related to Black Lives Matter, 2) post links to news stories about Black Lives Matter, 3) share or repost links to news stories about Black Lives Matter, 4) "like" or react to news stories about Black Lives Matter, 5) post own photos or videos of Black Lives Matter, and 6) discuss issues about Black Lives Matter on Facebook. Respondents rated each item on four-point scales (1 *Never* to 4 *Often*) ($M = 2.06$, $SD = 0.91$, $\alpha = .92$). Engagement with Dakota Access Pipeline issues on Facebook used the same six-item measure but referenced the pipeline ($M = 1.74$, $SD = 0.91$, $\alpha = .95$). Similarly, engagement with Muslim immigration repeated the same six-item scale but focused on that specific issue ($M = 1.78$, $SD = 0.88$, $\alpha = .94$).

Importantly, respondents' overall network size also was considered, where the average network size (i.e., total number of Facebook friends) was 423, ranging from 0 to 5,000 ($SD = 800$).

Control Variables

In addition to gender, race/ethnicity, and age, educational level (*Median* = some college; ranging from less than high school to doctoral degree) and income level (*Median* = \$50,000 to \$59,999; ranging from less than \$9,999 to \$200,000) were included as control variables in each of the subsequent models. Additionally, respondents were asked to

report their political ideology on a seven-point scale (1 *extremely liberal* to 7 *extremely conservative*), and this item was included as a covariate as well ($M = 3.90$, $SD = 1.72$).

RESULTS

Hierarchical linear regression was used to test each of the following relationships. The first block of each model contained the demographic variables of interest (age, gender, race/ethnicity, education level, household income, and political ideology), the second block contained respondents' total number of Facebook friends, and the third block included the measure of network diversity.

Issue 1: Black Lives Matter

The first model tested the relationship between familiarity with news about the Black Lives Matter movement – given the movement's focus on racial/ethnic issues – and respondents' racial/ethnic network diversity. Table 1 illustrates that the racial/ethnic diversity of individuals' Facebook networks significantly and positively predicted greater familiarity with news about this issue, supporting H1. Importantly, individuals' total number of Facebook friends did not predict news familiarity, indicating that the diversity of the network – rather than the size – is important in considering understanding of race- and ethnicity-related news.

Table 1

Hierarchical regression model results explaining news familiarity with the Black Lives Matter movement

	β	t	R^2	Adj. R^2	R^2 change	F
Step 1			.17	.15	.17***	9.51***
Age	-.11	-1.91				
Gender	-.16	-2.81**				
Race/ethnicity	.18	3.14**				
Education level	.06	1.02				
Household income	.19	3.16**				
Political ideology	-.09	-1.53				
Step 2			.17	.15	.00	8.20***
Network size	.04	0.70				
Step 3			.18	.16	.01**	7.86***
Racial/ethnic network diversity	.13	2.17**				

Note: Women coded as 1; men as 0. Non-White individuals coded as 1; White individuals as 0.

* $p < .05$; ** $p < .01$; *** $p < .001$

To probe the impact of racial/ethnic network diversity further, this variable was tested predicting online engagement with information about BLM. After controlling for the aforementioned demographic factors as well as overall network size, the ethnic diversity of respondents' Facebook network significantly and positively predicted their engagement with news about BLM. This result provides support for H2. In this model, the overall number of Facebook friends did significantly and positively predict engagement with BLM topics, indicating that while this variable is influential, network diversity still was predictive of engagement beyond just overall network size. Table 2 shows the full model.

Table 2

Hierarchical regression model results for online engagement with Black Lives Matter movement

	β	t	R^2	Adj. R^2	R^2 change	F
Step 1			.14	.12	.14***	7.57***
Age	-.16	-2.70**				
Gender	-.02	-0.42				
Race/ethnicity	.17	2.86**				
Education level	.04	0.73				
Household income	.12	2.05*				
Political ideology	-.15	-2.51*				
Step 2			.17	.15	.03**	8.21***
Network size	.18	3.25**				
Step 3			.22	.20	.05***	9.74***
Racial/ethnic network diversity	.24	4.14***				

Note: Women coded as 1; men as 0. Non-White individuals coded as 1; White individuals as 0.

* $p < .05$; ** $p < .01$; *** $p < .001$

Issue 2: Dakota Access Pipeline

To better understand the impact of online network diversity on familiarity and engagement with social issues, the Dakota Access Pipeline protests were assessed as the second topic of interest in this study. The first model specifically examined news familiarity, where racial/ethnic network diversity significantly and positively predicted it (see Table 3). Overall network size, however, did not predict news familiarity in this case. These results provide additional support for the predictions made in H1.

Table 3

Hierarchical regression model results for news familiarity with Dakota Access Pipeline protests

	β	t	R^2	Adj. R^2	R^2 change	F
Step 1			.10	.08	.10***	5.28***
Age	-.09	-1.53				
Gender	-.14	-2.41*				
Race/ethnicity	.07	1.10				
Education level	.13	2.12*				
Household income	.09	1.45				
Political ideology	-.10	-1.72				
Step 2			.11	.09	.01	4.88***
Network size	.09	1.64				
Step 3			.14	.12	.04**	5.93***
Racial/ethnic network diversity	.21	3.46**				

Note: Women coded as 1; men as 0. Non-White individuals coded as 1; White individuals as 0.

* $p < .05$; ** $p < .01$; *** $p < .001$

Secondly, the model was rerun with the online engagement scale as the dependent variable, determining if racial/ethnic network diversity was influential in predicting engagement with information specifically related to the Dakota Access Pipeline protests. This relationship was statistically significant and in the anticipated direction (see Table 4), providing additional support for H2. Once again, network size was a significant predictor, but online racial/ethnic diversity maintained its influence after controlling for overall network size.

Table 4

Hierarchical regression model results for online engagement with Dakota Access Pipeline protests

	β	t	R^2	Adj. R^2	R^2 change	F
Step 1			.10	.08	.10***	4.61***
Age	-.12	-1.98*				
Gender	-.19	-3.02**				
Race/ethnicity	.05	0.83				
Education level	.06	0.90				
Household income	.07	1.01				
Political ideology	-.12	-1.91				
Step 2			.13	.11	.04**	5.64***
Network size	.19	3.29**				
Step 3			.19	.17	.06***	7.69***
Racial/ethnic network diversity	.27	4.38***				

Note: Women coded as 1; men as 0. Non-White individuals coded as 1; White individuals as 0.

* $p < .05$; ** $p < .01$; *** $p < .001$

Issue 3: Muslim Immigration

The third and final topic explored in this study was Muslim immigration. Since this social issue focused on a religion-related topic, respondents reported their perceptions of the religious diversity of their Facebook social network. The first model related to this topic included respondents' online religious network diversity as the independent variable of interest predicting familiarity with news related to Muslim immigration. As Table 5 illustrates, the relationship was in the anticipated direction, but it did not reach statistical significance. This does not provide support for H3. Overall network size did not predict news familiarity in this case either.

Table 5

Hierarchical regression model results for news familiarity with Muslim immigration

	β	t	R^2	Adj. R^2	R^2 change	F
Step 1			.09	.07	.09***	4.46***
Age	.03	0.44				
Gender	-.11	-1.72				
Race/ethnicity	.15	2.33*				
Education level	.06	0.89				
Household income	.19	2.95**				
Political ideology	-.02	-0.27				
Step 2			.10	.07	.00	3.91***
Network size	.05	0.82				
Step 3			.10	.07	.00	3.55**
Religious network diversity	.06	1.01				

Note: Women coded as 1; men as 0. Non-White individuals coded as 1; White individuals as 0.

* $p < .05$; ** $p < .01$; *** $p < .001$

The second model – predicting online engagement with news about Muslim immigration – did show the hypothesized result. Religious network diversity significantly and positively predicted individuals' level of engagement with news about Muslim immigration, even after controlling for overall network size. Such a result shows support for the predictions made in H4.

Table 6

Hierarchical regression model results for online engagement with Muslim immigration

	β	t	R^2	Adj. R^2	R^2 change	F
Step 1			.12	.11	.13***	6.27***
Age	-.14	-2.35*				
Gender	-.22	-3.60***				
Race/ethnicity	.06	0.93				
Education level	.03	0.39				
Household income	.13	2.01*				
Political ideology	-.10	-1.60				
Step 2			.15	.13	.02**	6.50***
Network size	.16	2.65**				
Step 3			.19	.16	.04**	7.46***
Religious network diversity	.21	3.50***				

Note: Women coded as 1; men as 0. Non-White individuals coded as 1; White individuals as 0. * $p < .05$; ** $p < .01$; *** $p < .001$

Taken together, these results illustrate the substantial impact of online network diversity on news familiarity and engagement for related social issues. Where issues related to race and ethnicity arise, social network diversity related to race/ethnicity predicts individuals' familiarity and engagement with news related to those issues. Though religious network diversity did not predict familiarity with news related to a religious topic, it was related to online engagement with religion-related news content on Facebook.

DISCUSSION

This research unpacks the effect of Facebook users' social network diversity on the salience of two racially/ethnically focused issues, namely Black Lives Matter and Dakota Access Pipeline. It also considers the wider implications of online network diversity by considering a religious topic – Muslim immigration. Specifically, this study sought to understand how, within the crystallization framework, the diversity of one's online social network influences understanding of and engagement with social issues.

Perhaps the greatest support for crystallization in this study is its general finding that the mere size of one's online network did not undercut the relationships between

network diversity and news familiarity and engagement. This result supports the idea that the diversity of the individuals in one's social network matters more than simply the number of connections. This is a crucial part of the crystallization framework, which postulates that network composition contributes to the construction of a sense of shared reality. If individuals in an online social network act as micro agenda setters, it would stand to reason that diversity-related social issues would have greater salience for people with more diverse social networks.

However, these effects were not uniform, working differently depending on the issue. In the cases of the Black Lives Matter and Dakota Access Pipeline movements, the results were clear cut: the more diverse users' online networks were in terms of race/ethnicity, the more familiar they were with the issue, and the more they engaged with it on Facebook. This suggests that building a racially and ethnically diverse online social network can create greater awareness of race/ethnicity-related social issues and even contribute to online activism with those issues. This is unlike simply having a large online social network, which could be the result of happenstance or the pursuit of quantity in connections rather than a particular quality.

In the case of Muslim immigration, religious network diversity was not related with familiarity with the issue, although it was reasonable to hypothesize so. This finding is perhaps related to the difficulty some Americans have in categorizing Muslims and Islam. Although Muslim immigration seemingly looks like an issue of religion, it may be indexed in people's minds as a geopolitical issue, especially in light of the belief expressed by some on the American right that Islam is a political ideology and not a religion (Schulson, 2017). Furthermore, scholars have argued that Muslim identity has become a racialized category in the U.S. (Love, 2009; Joshi, 2006). Therefore, the current social debate surrounding Muslim immigration has strong political, ideological, racial/ethnic, and political overtones. This confusing status may have complicated the analysis. However, religious network diversity was associated with online engagement with Muslim immigration. When individuals reported having a more diverse online network in terms of religious makeup, they were more likely to engage with content about Muslims immigration on Facebook.

These findings illustrate the importance of considering online network diversity for research interested in social media-based effects, including the potential impact of agenda

setting in the age of news consumption through social media platforms. It is the diversity within one's online social network that influences perceptions of social issues – not simply the size of that network. This research supports that notion, particularly for recent and highly relevant social issues. Future research should continue to examine the impacts of more and less diverse online social networks and how they influence individuals' understandings of news and social reality.

Limitations and Future Research

It is important to situate these results within the social context at the time this study was conducted. This survey was administered in October of 2016 when the Dakota Access Pipeline protests were ongoing but had not yet received the attention of the general public. This is probably why respondents' familiarity with the issue was low (Google Trends indicates that the interest of Dakota Access Pipeline was at 8 in early October, but rapidly went up to 100 in early November). Similarly, the data collection took place before Trump's executive orders related to restricting travel from certain countries, which caused a spike in interest related to Muslim immigration in particular. The Black Lives Matter movement, on the other hand, was an ongoing and well-known issue at the time. As such, it would be interesting to reevaluate these issues to better understand how individuals form and maintain their opinions as well as how they use social media to find and share news about these issues. Moreover, these findings should be tested with social issues related to other forms of diversity (e.g., sexual preference and identity as well as other races, ethnicities, and religions).

This was also a cross-sectional study, so these models do not indicate causality. Further research should look into longitudinal or experimental models to determine any causal relationships. For this study, it was beneficial to look at cross-sectional relationships, because social network compositions evolve over time. Also, this was one of the first attempts at looking at network racial/ethnic and religious diversity in social media contexts.

Additionally, racial/ethnic network diversity was a self-perception measure. Although many studies probing network characteristics routinely use self-report measures (Scheufele et al., 2006; Scheufele et al., 2004) and subjective and objective measures of

diversity are correlated (Mislevy, 2009), researchers may want to expand data collection methods related to respondents' networks to obtain more accurate network information.

Finally, since engagement on social media was used as a measure of salience, these results should only be interpreted within the boundaries of social media activities. Future studies should consider how social media engagement leads to other types of engagement, which could include multiple types of online media as well as offline activities.

CONCLUSION

This study continues the attempt to extend the theories of agenda setting and social influence into the social media era by further testing some of the underlying assumptions of the crystallization framework, which was purely theoretical with no empirical evidence (Wohn & Bowe, 2014). At the first- and second-levels, agenda setting theory predicts that the more something is covered, the more salient and important it will be considered by audience members (Ceron et al., 2016). In the realm of social media, salience can be conceptualized as engagement. Rather than an attitude, salience becomes an action — the action of liking something or sharing it on one's own page.

The results of this study are largely in line with the idea of a micro agenda setting effect on social media in which the diversity of a users' social network contributes to the creation of a shared sense of reality through exposure to issues that may transcend individual demographics. It may prove exceptionally difficult to completely disambiguate the agenda setting effect of particular content as opposed to its source or the related Facebook algorithm. However, the fact that current technology has muddied these conceptual waters makes it all the more important to try to find a way through the murk. Thus, rather than viewing the system of social media as a news source, this study examined the composition of one's network on the platform. The strong effect of online network diversity on social issue news familiarity and engagement is the first step toward resolving the seemingly conflicting arguments around whether or not social media has a positive or negative effect in these areas. These results clearly show that online network diversity is an important factor of online media effects, particularly as they may occur via social media, and that understanding different facets of that diversity provides further insights into the effects of the medium.

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