Challenge Accepted! Evaluating the Personality and Social Network Characteristics of Individuals Who Participated in the ALS Ice Bucket Challenge

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The ALS Ice Bucket Challenge was a popular campaign on Facebook for raising awareness and money for the research of ALS. Given its unprecedented success, it is important to identify the personality and individual difference characteristics that distinguished participants from non-participants. Using an online survey of Facebook users (N = 261), this study investigates the influence that the Big Five personality variables, narcissism, altruism, online social capital, and online opinion leadership have on participation in the ALS Ice Bucket Challenge. Results indicated that extraversion, openness to experience, and altruism positively predict bridging social capital on

Facebook. Facebook users with higher social capital were found to have greater opinion leadership on Facebook, which in turn made them more likely to participate in the ALS Ice Bucket challenge. These findings have important implications for predicting which individuals will participate in future online social campaigns, which may help organizers target these audiences.

Keywords: ALS Ice Bucket Challenge, Big Five personality characteristics, online social capital, opinion leadership, Facebook, social media campaigns

During the summer of 2014, the Internet was flooded with videos of people dumping buckets of ice water on their heads. Friends and family nominated one another through their Facebook posts to take part in the "ALS Ice Bucket Challenge." The campaign was designed to raise awareness and funds for research on Amyotrophic Lateral Sclerosis (ALS), also known as Lou Gehrig's Disease. The campaign was unique, requiring participants to record themselves dumping a bucket of ice water on their heads and then nominate three more individuals to accept their challenge of doing the same thing, or they would be socially required to donate $100 to the ALS research foundation. The ALS Ice Bucket Challenge was successful, as more than 1.2 million videos were shared on Facebook during the summer of 2014 alone (Steel,

2014). In 2016, funds associated with the ALS Ice Bucket Challenge were responsible for helping researchers uncover a finding that variants in the NEK1 gene are linked to increased risk of ALS (The ALS Association, 2016). It was estimated that the campaign raised over $115 million for the ALS association (Rogers, 2016).

From a media psychology standpoint, the Challenge created its own compelling research question: What type of person was most likely to participate in this unique campaign? Therefore, the goal of this study is to identify the personality and individual difference variables associated with participation in the ALS Ice Bucket Challenge. Specifically, we seek to determine if an individual's personality characteristics are predictive of their online social capital and Facebook opinion leadership, and then test the hypothesis that an individual's Facebook opinion leadership predicts their participation in the ALS Ice Bucket Challenge.

Online Social Capital and Personality Characteristics

The most common assessment of personality is the Big Five (Goldberg, 1993), which categorizes individuals in terms of five traits: extraversion, openness to experience, agreeableness, conscientiousness, and emotional stability (sometimes conceptualized as neuroticism). Research has found links between these personality characteristics and online social capital, which is conceptualized as the features of social networks that facilitate coordination and cooperation for mutual benefit (Putnam, 1995). Of the Big Five personality factors, extraversion has been strongly linked to various conceptualizations of social capital, with a wealth of evidence revealing it as a positive predictor of social capital (Baay, Van aken, & De Ridder, 2014; Grieve & Kemp, 2015; Stronge, et al., 2015). Social capital is also positively linked to openness to experience, agreeableness, conscientiousness, and emotional stability (Baay, et al., 2014; Grieve & Kemp, 2015; Stronge, et al., 2015).

In addition to the Big Five, narcissism and altruism are two other key personality variables potentially related to social network participation (Buffardi & Campbell, 2008). Narcissism, defined as "a grandiose yet fragile sense of self and entitlement as well as a preoccupation with success and demands for admiration" (Ames, Rose, & Anderson, 2006, p. 441), is a self-focused characteristic, potentially leading one to participate in online

social campaigns for attention. Conversely, altruism, defined as "the intention to benefit others as an expression of internal values, regardless of social or motivational reinforcement" (Price, Feick, Guskey, 1995, p. 257), is an other-focused characteristic, leading one to participate in social campaigns for the good of others. Though contrasting characteristics, research has found that both narcissism (Mo, et al. 2014) and altruism have positive links to social capital (Theurer & Wister, 2010).

There are two primary types of social capital: bridging and bonding (Williams, 2006). Bridging capital occurs when individuals from various backgrounds make connections between social networks, resulting in opportunities for new information or resources by broadening social horizons. Conversely, bonding social capital is the emotional support that occurs between already strongly tied individuals who have less diversity within their network, but stronger personal connections. Broadly, both forms are related to a higher rate and greater variety of social networking site usage (Choi & Kim, 2016). In this study, the focus is on bridging social capital, which will be utilized to capture how much Facebook users feel they have access to and can share diverse information and perspectives within their network (Jung, Gray, Lampe, & Ellison, 2013).

Our predictions regarding the influence of personality traits on bridging social capital are as follows:

> *Hypothesis 1:* Bridging social capital on Facebook will be positively predicted by (a) extraversion, (b) openness to experience, (c) agreeableness, (d) conscientiousness, (e) emotional stability, (f) narcissism, and (g) altruism.

Social Capital, Opinion Leadership, and Campaign Participation

Related to the concept of social capital is opinion leadership. Burt (1999) identifies opinion leaders as those who fill holes or gaps that exist within social networks, thus bridging them together. Opinion leaders are those who introduce ideas and influence the spread of these ideas throughout the network. Research has found that social capital and opinion leadership are highly intertwined (Falzer, 2007). Carpenter, Boster, Kotowski, and Day (2015) note that being highly connected is one of the key characteristics of effective opinion leaders. For instance, in online social support groups, opinion leaders were able to provide better knowledge, and thus better support (Kim, Scheufele, Han, & Shah, 2016).

The relationship between social capital and opinion leadership suggests that individuals with greater social capital are also more likely to exhibit higher characteristics of online opinion leadership, especially in the context of social media sites such as Facebook. Furthermore, while these two concepts share similarities this study seeks to investigate the relationship between the two. Thus, we predict:

Hypothesis 2: Individuals with more social capital will demonstrate greater opinion leadership than those with less social capital.

In conjunction with social capital, opinion leadership can have a positive influence on social media behaviors (Chiu, Hsu, & Wang, 2006; Maksl & Young, 2013). For instance, Chiu and colleagues (2006) found that elements of social capital including social interaction ties (strength of relationship and interactions between members), reciprocity (returning the favor for other users' sharing), and identification (users seeing themselves as part of the virtual group) increased the amount of knowledge individuals shared online. Knowledge sharing is a key part of opinion leadership. Importantly, those who are high in opinion leadership share information that is of higher informational utility (Bobkowski, 2015). Thus, opinion leaders play a role in the early diffusion of information on social media, reaching the key crowds that then carry the information out broadly (Zhang, Zhao, & Xu, 2016). Given the importance and potential impact of the ALS Ice Bucket Challenge, opinion leaders may be more likely to participate in this online social movement, leading to our final prediction:

Hypothesis 3: Individuals with greater opinion leadership will be more likely to have participated in the ALS Ice Bucket Challenge than those with lesser opinion leadership.

METHODS

Participants

Participants ($N = 261$) were recruited using a snowball sampling method on Facebook, starting with a link to the survey shared by the researchers and research assistants. The sample ranged in age 18-71 years ($M = 29.33$, $SD = 11.38$), was 81% female, and was mostly college-educated (96%). This sample mirrors the population of Facebook users who are generally younger, well-educated, and more likely to be female

(Pew Research Center, 2017). Eighty-one percent of the sample identified as White/Caucasian, 8% as Asian, 2% as Black/African American, 2% as Hispanic/Latino, 4% as multi-ethnic, and 3% as other ethnicities. Facebook network sizes ranged from 22 to over 2,000 friends (M = 596.92, SD = 381.19).

Procedure

Data collected for this study were part of a larger survey research project. The study was approved by the University's research ethics board and participants provided their consent to participate. Data was anonymously collected using an online survey hosted on Qualtrics. Participants were asked whether they participated in the ALS Ice Bucket Challenge, and completed measures about their personality characteristics, social capital, and opinion leadership. They were also asked to provide their age, sex, ethnic background, and number of Facebook friends, as well as their level of education.

Measures

Individual differences. The Big Five personality traits were measured using the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003) with two 5-point Likert items (1 = strongly disagree; 5 = strongly agree) for each trait. Narcissism was measured with the NPI-16 (Ames, et al., 2006), which uses 16 binary pair items. Altruism was measured using Price, et al.'s (1995) five-item 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). See Table 1 for reliability statistics and correlations between measures. Given the two-item nature of the TIPI, low alphas have been noted as potentially inaccurate in two-item measures by the scale's creators (Gosling, n.d.).

Social capital. Bridging social capital was measured using Lampe, Vitak, and Ellison's (2013) 10 item 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) of Facebook bridging social capital, adapted from Williams's (2006) online social capital scale. The scale included items such as: "Interacting with people in my Facebook network makes me feel like part of a larger community," and "Interacting with people in my Facebook network reminds me that everyone in the world is connected."

Table 1
Means, Standard Deviations, Cronbach's Alpha Coefficients, and Pearson's Correlations (one tailed)

	1	2	3	4	5	6	7	8	9	10
1. Extraversion	-									
2. Openness	.13*	-								
3. Agreeableness	.01	.13*	-							
4. Emotional Stability (Neuroticism)	.13*	.11*	.16**	-						
5. Conscientiousness	-.01	.12*	.09	.18*	-					
6. Narcissism	.25**	.15*	-.13*	.01	-.02	-				
7. Altruism	.12*	.20**	.23**	.11*	.14**	-.04	-			
8. Social capital	.24**	.20**	.15**	.10*	-.00	-.11*	.26**	-		
9. Opinion leadership	.16**	.04	.06	.07	-.16**	-.02	.19**	.47**	-	
10. Ice bucket campaign participation	.23**	-.11*	.00	-.05	.01	.04	.07	.15**	.26**	-
Mean	3.12	3.79	3.7	3.42	3.96	4.3	4.4	3.51	2.49	.32
SD	1.05	.67	.74	.87	.73	3.26	.55	.64	.92	.47
a	.74	.36	.45	.65	.57	.76	.89	.88	.85	-

Notes: * = $p < .05$; ** = $p < .01$

Opinion leadership. Four items were adapted from Marshall and Gitosudarmo's (1995) opinion leadership scale for Facebook: "I like to share information and talk about social media campaigns with people on Facebook," "I give information about social media campaigns to other people on Facebook," "During the past six months, I have participated in a social media campaign online in a way my Facebook friends could see," and "I am more likely than most people to participate in a social media campaign on Facebook."

Campaign participation. Participants were presented with a "yes" or "no" question regarding their participation in the ALS Ice Bucket Challenge. The question was accompanied by a picture of one individual dumping a bucket of water over another individual's head to help participants identify and recall the nature of the campaign itself. One-third (32.8%) of the sample reported that they had participated.

RESULTS

Hypotheses were tested using multiple hierarchical regression models. Control variables (age, sex, education, and number of friends) were entered in the first block, and individual difference variables were entered in the second block, with social capital as the

dependent variable. Next, social capital was added to the previous model in the third block with opinion leadership as the dependent variable. Finally, opinion leadership was tested using binary logistic regression, with variables from the previous models added in blocks 1-3, and campaign participation was entered as the dependent variable (see Table 2).

Table 2
Multi-step Regression Models of Predictors on Outcomes of Social Capital, Opinion Leadership, and Campaign Participation

Outcome	Social capital (adjusted R^2 = .19)			Opinion leadership (adjusted R^2 = .25)			Campaign participation (yes/no)		
	B	S.E.	ß	B	S.E.	ß	B	S.E.	OR
Age	.01	.00	.14*	.02	.01	.20**	-.02	.02	.98
Sex	.35	.11	.21**	.08	.15	.04	.88	.46	2.40
Education	-.05	.02	-.13*	-.04	.03	-.06	-.38	.11	.68**
Number of Facebook friends	.00	.00	.10	.00	.00	.07	.00	.00	1.00
Extraversion	.11	.04	.18**	.03	.05	.03	.43	.18	1.54*
Agreeableness	-.00	.06	-.00	-.03	.08	-.02	.28	.25	1.32
Conscientiousness	-.09	.05	-.11	-.26	.07	-.21**	.31	.25	1.36
Emotional stability	.06	.05	.08	.01	.07	.01	-.24	.20	.78
Openness to experience	.18	.06	.18**	-.03	.08	-.02	-.66	.26	.52*
Altruism	.19	.07	.16*	.20	.10	.12	-.03	.32	.97
Narcissism	-.03	.01	-.14*	.01	.02	.03	-.02	.05	.98
Social capital (bridging)				.54	.09	.39***	.09	.30	1.09
Opinion leadership							.70	.21	2.00**

Notes. Final model for each outcome presented. Odds ratio (OR) presented for final campaign participation likelihood. * *p* < .05, ** *p* < .01, *** *p* < .001

H1 posited that bridging social capital on Facebook would be predicted by individual personality characteristics. Results indicate that altruism (β = .16, p < .05), extraversion (β = .18, p < .01), and openness to experience (β = .18, p < .01) are positive predictors of bridging social capital on Facebook, while narcissism (β = -.14, p < .05) is a negative predictor. This provides partial support for H1. Age, sex, and education are also significant predictors, such that older individuals (β = .14, p < .05), women (β = .21, p < .01), and those with less education (β = -.13, p < .05) have greater bridging social capital.

H2 predicted that individuals with greater social capital would demonstrate greater opinion leadership. Results show that social capital positively predicts opinion leadership (β = .39, p < .001) beyond individual differences, supporting H2. Additionally, conscientiousness emerges as a significant negative predictor (β = -.21, p < .01), and age remains a significant positive predictor (β = .20, p < .01) of opinion leadership.

H3 predicted that individuals with greater opinion leadership would be more likely to have participated in the ALS Ice Bucket Challenge. Opinion leadership is a significant predictor of campaign participation (Odds ratio(OR) = 2.00, p < .01), controlling for individual differences and social capital. Each unit of increase in opinion leadership predicted twice the likelihood of participating. This finding provides support for H3. Additionally, education re-emerges as a significant negative predictor (OR = .68, p < .01), openness to experience as a significant negative predictor (OR = .52, p < .05), and extraversion remains a significant positive predictor (OR = 1.54, p < .05) of participation.

DISCUSSION

This study set out to identify the type of individual characteristics that were most likely to predict participation in the ALS Ice Bucket Challenge. Results show that participants who rated themselves as more extraverted, more open to new experiences, more altruistic, and less narcissistic had higher Facebook social capital, and therefore greater opinion leadership, which was a significant predictor of participation in the campaign. Additionally, women were found to have more social capital than men, but did not differ in terms of opinion leadership or campaign participation. Older individuals were also more likely to have greater social capital and show more opinion leadership, but were not more likely to participate in the campaign. Furthermore, those with more education

rated their bridging social capital as higher and were also more likely to participate in the campaign, though they did not show more opinion leadership.

The findings from this study corroborate previous research on certain links between social capital and personality variables (Baay, et al., 2014; Grieve & Kemp, 2015; Mo et al., 2014). Individuals that were more extraverted and more open had an increased level of social capital on Facebook. It is likely that these individuals have greater social capital as a result of their tendency to be more sociable and active in their communities as well as being more open to new experiences making them a good source of information (John, Naumann, & Soto, 2008). These findings draw an important link between personality characteristics and Facebook social capital, which corroborates previous findings that suggest traits such as extraversion and openness perform similarly in both online and offline environments (Gosling, et al., 2011).

The results found that individuals who were more altruistic and less narcissistic had greater social capital on Facebook. It is likely that individuals who are more altruistic are perceived as having greater value in terms of what they might share or bring to their network. On the other hand, individuals who are more narcissistic may be seen as having less value to offer the social network given the likelihood that their content will be more focused on their own individual needs.

However, the results did not find support for links between social capital and the personality variables of conscientiousness, agreeableness, or emotional stability. Individuals lower in emotional stability (higher neuroticism) have been found to use Facebook for validation from others (Seidman, 2013) but they tend to be anxious (Moore & McElroy, 2012), and thus stress about how they represent themselves. Therefore, these individuals may not be comfortable establishing themselves as having value within a social network for concern of how others will perceive their attempted contributions to bridge the network. In a similar fashion, conscientious individuals are goal and production-oriented, so any activity they do must have a clear outcome (Devaraj, Easley, & Crant, 2008). More conscientious individuals have been found to use Facebook less frequently than those lower in the trait (Gosling, et al., 2011). Thus, if conscientious individuals were to participate in a social campaign on Facebook, they would likely do so

only if they were completely sure it would lead to a tangible outcome, which is not easily determined.

This study provides empirical evidence for the relationship between bridging social capital and opinion leadership, as previously theorized (Burt, 1999). Individuals who perceive that they have more resources for information in their Facebook network also feel they have more influence within that network. This supports the idea that those with greater bridging social capital are likely the individuals bridging the gaps between sub-networks (Burt, 1999). The results of this study also have implications for the continued assessment of viral pro-social campaigns. Given that Facebook opinion leadership was a significant indicator of participation in the ALS Ice Bucket Challenge, it would stand to reason that this factor would play a role in the participation of similar future campaigns.

This study also uncovers information for organizations or individuals who are trying to recreate the success of the ALS Ice Bucket Challenge. Given that personality characteristics and demographic variables had varying influence on the network characteristics that led to participation, future campaign designers may want to consider how these elements might influence the specific behaviors they would like their audience to express or carry out. For instance, given the differing roles of altruism and narcissism, campaign designers may appeal differently to those who show more altruistic traits on Facebook from those who show more narcissistic traits. Or, they may target opinion leaders (those who bridge multiple networks on Facebook) directly, as they may have the highest social capital, and thus the most influence.

Limitations and Future Research

A limitation of this exploratory analysis was that the predictors of participation were measured retroactively, which thus limits the ability to interpret causal direction between the predictors and the outcome. It is also possible that an individual's personality, social capital, or opinion leadership may have shifted from the time they participated in the campaign and the time in which the data was collected, which may lead to some caution in the interpretation of results. In addition to this limitation, the snowball sampling method may also be limited in its ability to generalize to larger and more diverse populations, as it is possible that the study may have attracted a set of

individuals with certain personality traits within a particular network. It is also important to point out that the use of a snowball sampling technique may have been influenced by the social capital of the individual users and future research should consider alternative sampling techniques as a means of limiting the potential influence this factor may have. Future research should attempt to address these limitations by utilizing a more comprehensive means of sampling.

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Online Connections

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