

An Investigation of the Factors Predicting Participation in Social Media Challenge

Amro Khasawneh¹, Shraddhaa Narasimha², Kapil Chalil Madathil², Heidi Zinzow², & Patrick Rosopa²

¹Johns Hopkins University, ²Clemson University

INTRODUCTION AND BACKGROUND

Online or social media challenges are ubiquitous phenomena and can be found on many social media platforms including YouTube, Instagram, Facebook, and WhatsApp (Rosenthal, Cha, & Clark, 2018). The activities involved in online challenges can vary from fun to fatal (Mahadevaiah & Nayak, 2018; Khasawneh, Chalil Madathil, Dixon, Wisniewski, Zinzow, & Roth, 2019; Roth, Abraham, Zinzow, Wisniewski, Khasawneh, & Chalil Madathil, 2020) and they can generally be classified into two categories: (a) minimal harm challenges, which in some cases support a philanthropic cause such as the Amyotrophic Lateral Sclerosis (ALS) Ice Bucket Challenge (IBC) (Song, 2014) or (b) harmful challenges, which entail self-injurious behavior such as the Cinnamon Challenge (CC) (Grant-Alfieri, Schaechter, & Lipshultz, 2013).

Although the ALS IBC has faced criticism (e.g., safety concerns and waste of water), it is the most successful and influential fund-raising event to date (Song, 2014). In addition to raising more than \$115 million for ALS research (The ALS Association, 2019), it is also credited for increasing public awareness about the disease (The ALS Association, 2019). In contrast, CC involves swallowing a teaspoon of ground cinnamon without drinking any liquid for sixty seconds. This can cause pulmonary inflammation, allergic and irritant reactions, and in even more serious situations, hypersensitivity-induced asthma attacks, which can be fatal (Grant-Alfieri et al., 2013). However, none of these potentially fatal consequences have stopped adolescents and young adults from participating in CC. As of 2013, there are more than 51,100 public YouTube clips of someone accepting this challenge, with some videos garnering more than 19 million views globally (Grant-Alfieri et al., 2013).

In this study, we applied the Integrated Behavioral Model (IBM) (Montano & Kasprzyk, 2015) and investigated its generalizability to these online behaviors. It is important to reassess this and other existing behavioral theories in relation to online behaviors because what may be true about traditional human behaviors may not apply to virtual ones (Gearhart & Zhang, 2015; Khasawneh, Chalil Madathil, Dixon, Wiśniewski, Zinzow, & Roth, 2020).

IBM suggests that the intention to perform a behavior is driven by three factors: attitude, perceived norms, and personal agency regarding behavior (Fishbein, Ajzen, Albarracin, & Hornik, 2007; Khasawneh, 2019). The purpose of this study is to use IBM quantitatively to enhance our understanding of how each belief contributes to adolescents' and young adults' willingness to participate in online challenges and discern which beliefs are more influential than others.

METHODS

We developed a survey that included measures of the constructs in the IBM. The survey included three main sections—a demographic section, a section related to participation in the CC, and a section related to participating in the ALS IBC. The demographic section included questions about the participant's age, gender, race/ethnicity, education, Internet usage, and social media challenge participation. The second and third sections included the following theoretical constructs related to the CC and the ALS IBC.

The items for these constructs were developed using the strategy suggested by Glanz, Rimer, & Viswanath (2008). The survey was pilot tested using a sample of 20 participants. The results of the pilot testing were used to delete the questions that had little to no variance (Montano & Kasprzyk, 2015) and to improve the clarity of the remaining questions. Internal consistency reliability for each scale was assessed using Cronbach's alpha.

We used Qualtrics Research Suite to deploy the surveys to the participants. We included adolescents and young adults who participated in either the CC or the ALS IBC (not both) or no participation in any social media challenge. A total of 471 participants completed the study. Approximately one third of the respondents had participated in the CC only, one third in the ALS IBC only, and the remaining had not participated in any social media challenge.

A binomial logistic regression analysis was performed to predict CC participation first with 6 predictors: experiential attitude, instrumental attitude, injunctive norm, descriptive norm, perceived control, and self-efficacy. People who had participated in the CC and did not participate in any challenge were included in this model ($N = 316$). A second binomial logistic regression model was used to predict ALS IBC participation using similar predictors assessing the participants' perception of the ALS IBC. People who had participated in the ALS IBC and those who did not participate in any challenge were included in the second model.

RESULTS

A test of the full model predicting CC participation with all predictors against a constant-only model was statistically significant, $\chi^2 (11, N = 316) = 221.75, p < .001$. Independent removal of five of six predictors significantly harmed the model fit, specifically experiential attitude ($\Delta\chi^2 = 3.95, p < .05$), instrumental attitude ($\Delta\chi^2 = 11.50, p < .001$), injunctive norm ($\Delta\chi^2 = 30.43, p < .001$), descriptive norm ($\Delta\chi^2 = 6.62, p < .05$), perceived control ($\Delta\chi^2 = 3.85, p < .05$).

For ALS IBC participation, the predictors, as a set, reliably distinguished between people who had participated in the ALS IBC and those who had not, $\chi^2 (11, N = 318) = 151.05, p < .001$. Independent removal of three of six predictors significantly harmed the model fit, specifically

experiential attitude ($\Delta\chi^2 = 20.37$, $p < .001$), instrumental attitude ($\Delta\chi^2 = 3.97$, $p < .05$) and descriptive norm ($\Delta\chi^2 = 9.61$, $p < .05$).

DISCUSSION

We found the attitude and perceived norm sub-constructs to be strong predictors of CC participation. The relation between instrumental attitude, injunctive norm, and descriptive norm and probability of participating in the CC is proportional. The positive relationship between the instrumental attitude and probability of participation indicates that the more the people perceive enjoyment and rewards involved in the CC, the more they were willing to engage in the challenge. This shows that those people thought the challenge was easy with minimal harmful consequences.

Unlike CC participation, only the experiential attitude and descriptive norm significantly predicted ALS IBC participation. In other words, adolescents and young adults primarily participated in this challenge for two reasons, enjoyment and because of the large number of people completing the ALS IBC, they felt either obligated to participate or that it was normative to do so (Bobo, 2007; Cohen, 2003; Khasawneh et al. 2020). We believe the other factors were not significant due to the positive nature of the challenge. For example, even people who did not participate in the challenge generally rated it as easy to perform and believed that they were capable of doing it.

This study identified the factors that lead adolescents and young adults to participate in online challenges. Findings from this study can be used to develop interventions to reduce the spread of harmful challenges on the internet or enhance fund raising campaigns. Future work could study the impact of these factors in controlled settings by developing interventions and examining their effects on people's willingness to participate in social media challenges.

ACKNOWLEDGMENTS

This work was supported by a grant from the United States National Science Foundation, Division of Information and Intelligent Systems, Cyber-Human Systems program under grant #1832904.

REFERENCES

- Bobo, J. W. (2007). Following the trend: Alabama abandons the duty to retreat and encourages citizens to stand their ground. *Cumb. L. Rev.*, 38, 339.
- Fishbein, M., Ajzen, I., Albarracin, D., & Hornik, R. (2007). A reasoned action approach: Some issues, questions, and clarifications. *Prediction and Change of Health Behavior: Applying the Reasoned Action Approach*, 281–295.
- Gearhart, S., & Zhang, W. (2015). "Was it something I said?" "No, it was something you posted!" A study of the spiral of silence theory in social media contexts. *Cyberpsychology, Behavior and Social Networking*, 18(4), 208–213.
- Glanz, K., Rimer, B. K., & Viswanath, K. (2008). *Health Behavior and Health Education: Theory, Research, and Practice*. John Wiley & Sons.
- Grant-Alfieri, A., Schaechter, J., & Lipshultz, S. E. (2013). Ingesting and aspirating dry cinnamon by children and adolescents: the "cinnamon challenge." *Pediatrics*, 131(5), 833–835.
- Khasawneh, A. (2019). "Systems Engineering Approaches to Minimize the Viral Spread of Social Media Challenges." *All Dissertations*. 2526. https://tigerprints.clemson.edu/all_dissertations/2526
- Khasawneh, A., Chalil Madathil, K., Dixon, E., Wisniewski, P., Zinzow, H., & Roth, R. (2019, November). Examining the Self-Harm and Suicide

- Contagion Effects of the Blue Whale Challenge on YouTube and Twitter: Qualitative Study. *JMIR Ment Health*, 7(6):e15973
- Khasawneh, A., Chalil Madathil, K., Dixon, E., Wisniewski, P., Zinzow, H., & Roth, R. (2019, November). An Investigation on the Portrayal of Blue Whale Challenge on YouTube and Twitter. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 63, No. 1, pp. 887–888). Sage CA: Los Angeles, CA: SAGE Publications.
- Montano, D. E., & Kasprzyk, D. (2015). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. *Health Behavior: Theory, Research and Practice*, 70(4), 231.
- Rosenthal, S. R., Cha, Y., & Clark, M. A. (2018). The Internet Addiction Test in a Young Adult US Population. *Cyberpsychology, Behavior and Social Networking*, 21(10), 661–666.
- Roth, R., Abraham, J., Zinzow, H., Wisniewski, P., Khasawneh, A., & Chalil Madathil, K. (2020). Evaluating News Media Reports on the 'Blue Whale Challenge' for Adherence to Suicide Prevention Safe Messaging Guidelines. *Proceedings of the ACM on Human-Computer Interaction*, 4(CSCW1), 1–27.
- Song, P. (2014). The Ice Bucket Challenge: The public sector should get ready to promptly promote the sustained development of a system of medical care for and research into rare diseases. *Intractable & Rare Diseases Research*, 3(3), 94–96.
- The ALS Association. (2020). ALSA.org. <http://www.alsa.org/fight-als/ice-bucket-challenge-spending.html>
- Triandis, H. C. (1980). Reflections on Trends in Cross-Cultural Research. *Journal of Cross-Cultural Psychology*, 11(1), 35–58.