

# **CSC2552: Review 3, Paper 1**

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496 words

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## Paper 1

This paper, by Bakshy, Rosenn, et. al. is a *controlled digital field experiment* whose main research question is to determine the causal relationship of social signals in information diffusion by analysing Facebook data over the course of seven weeks. The main result of this paper is the revelation that users exposed to friend's posts are more likely to spread information sooner than when not exposed and these users are also more affected overall by multiple weak friends than by a few stronger ties.

The main weakness of this paper is its weak evidence for *external validity*. Indeed, only 54% of US adults were on Facebook at the time of the study and the sample selected, while random, is drawn from a pool of younger social media users. There is little evidence to suggest these information diffusion statistics will remain constant over time and across all generations. To make matters worse, *digital field experiments* cannot examine past response behaviour to the input stimuli, so there is no approach to benchmark how well the study generalises to previous years. An alternative to this approach would have been to have a complimentary *observational* study, but this comes with its own disadvantages. Fortunately, subsequent publications in this academic field have also picked up on this limitation and a paper was later published attempting to generalise the results of this study [1]. In [1], the advertisement impact of social cues was demonstrated to follow similar dynamics as those presented in this paper. Another notable weakness is the selective removal of URLs that “may not reflect ordinary user’s purposeful intentions”. Indeed, the manual filtering of such URLs could be a source of systematic error and details of how this was implemented were omitted. Dirty data is a common shortfall of using *digital* rather than *analogue* experiments.

Conversely, a significant strength of this paper is its highly ethical methodology. Indeed, a more effective but less ethical approach would have been the fabrication and insertion of a story into news feeds as this would have allowed the elimination of the variable of discovery via external sources. This compromise seems to have been well tackled as the approach used did not result in drastically diminished conclusions, due to the leveraging of statistical tools and benchmark data comparisons [2].

The implications of this paper are critical in the modern day as it offers a quantitative description of information diffusion probability given social exposure on Facebook. Although the authors cautiously interpret their results, the final conclusions are useful as they could inspire novel advertisement, education and news diffusion methods on social media. Something else that could have been done in this paper would be the use of the *Armada strategy* [3] where experiments are broken down into multiple smaller complementary sub-experiments rather than one larger approach that attempts to be all-encompassing. This is a common limitation of the *partner-with-the-powerful* approach of experimental design, used here by the University of Michigan and Facebook.

[1] Bakshy, E., Eckles, D., Yan, R., & Rosenn, I. (2012). Social influence in social advertising. Proceedings of the 13th ACM Conference on Electronic Commerce - EC '12.doi:10.1145/2229012.2229027

[2] M. S. Granovetter. The strength of weak ties. Am. J. Sociol., 78(6):1360-1380, May 1973.

[3] Salganik, M. J. (2017). Bit by bit: social research in the digital age. Princeton University Press.