Paper presented at the 96th annual meeting of the Western Psychological Association, Long Beach, CA, April 2016.
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A Replication of the Search Engine Manipulation Effect (SEME), Plus Methods for Suppressing the Effect

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Abstract: A recent series of experiments published in the *Proceedings of the National Academy of Sciences USA* (PNAS) demonstrated that biasing the order of election-related search engine results can (a) shift the preferences of undecided voters by 20% or more, (b) produce shifts as high as 80% in some demographic groups, and (c) be masked so that people show no awareness of the manipulation. We labeled this phenomenon the Search Engine Manipulation Effect (SEME), and it appears to be one of the largest behavioral effects ever discovered. SEME's power appears to derive from both order effects (due to the ranked-list format of search engine result pages) and operant conditioning (due to the frequent reinforcement of selecting high-ranking search results in daily routine searches). Given that many elections are won by small margins, we concluded that a single search engine company may currently be determining the outcomes of upwards of 25% of the world's national elections. In three follow-up experiments with a total of 3,600 participants in 39 countries, we have now replicated SEME with a new election, and we also tested ways of suppressing it. In the replication experiment, voting preferences shifted by 39.0%, a number almost identical to the shift we found in the PNAS study in a comparable experiment. Alerting users to the bias in their search results reduced the shift to 22.1%, and more aggressive bias alerts reduced it to 13.8%. Participants' browsing behavior was also significantly altered by the alerts, with more clicks and more time going to lower-ranked search results. Although bias alerts were effective in suppressing SEME, the only way we have found to suppress SEME completely is by alternating search results – in effect, implementing an equal-time rule for presenting election-related search results. Such a rule could be implemented voluntarily by search engine companies or required by legislation or regulation. We speculate that SEME might be impacting a wide range of decision making, not just voting, in which case the search engine as we know it today might need to be strictly regulated.