Effective vaccine communication during the disneyland measles outbreak

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Abstract

- Vaccine refusal rates have increased in recent years, highlighting the need for effective risk communication, especially over social media.
- **Fuzzy-trace theory** predicts that individuals encode bottom-line meaning (**"gist"**) and statistical information ("verbatim") in parallel and those articles expressing a clear gist will be most compelling.
- Team coded news articles (n = 4581) collected during the 2014−2015 Disneyland measles for content including statistics, stories, or bottom-line gists regarding vaccines and vaccine-preventable illnesses.
- The most widely shared articles expressed bottom-line gists, although articles containing statistics were also more likely to be shared than articles lacking statistics. Stories had limited impact on Facebook shares.

Introduction

- Fear of vaccination has increased the rate of vaccine refusal in recent years. Herd immunity may not be achieved, exposing vulnerable groups to several infectious diseases.
- The recent Disneyland measles outbreak brought national attention to this growing problem.
- The outbreak, which started in December 2014, led to 111 cases in seven states, Canada, and Mexico. This is not an isolated example; failure to adhere to vaccination schedules is increasing, even among educated populations
- Despite the effectiveness of vaccines, there remain areas with low uptake rates, reflecting the importance of vaccine risk communication

Material and Methods

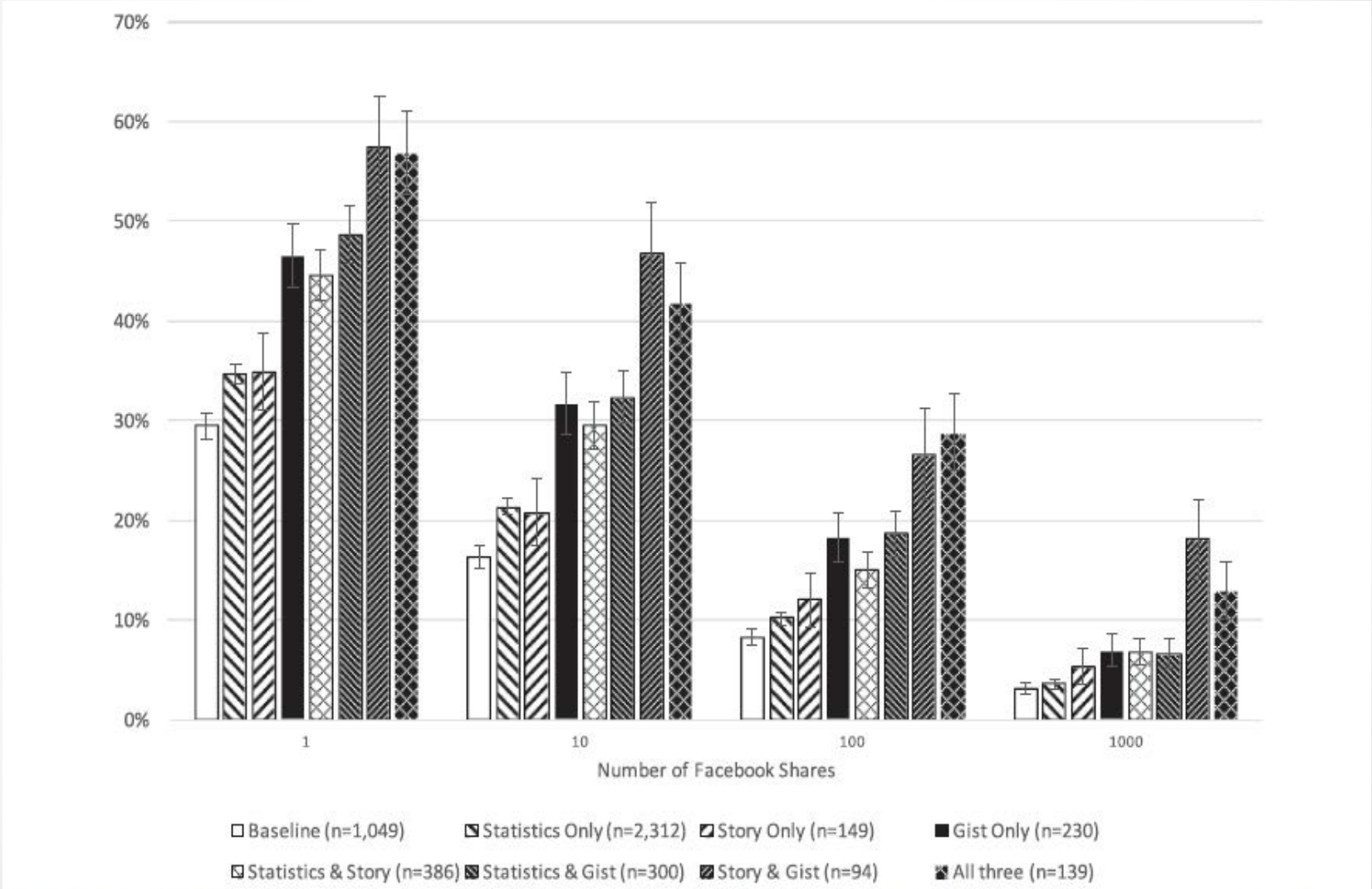

Fig. 1. Proportion of articles shared at least one, 10, 100, and 1000 times on Facebook. Baseline articles contain neither gists, statistics, nor stories. Error bars reflect one standard error.

Results

Table 1
Coefficients of logistic regression analysis for whether an article was shared at least once on Facebook ($n = 4580$, df = 10).

	β	SE β	z-value	OR
Length	-5.56×10^{-4}	8.93×10^{-5}	-6.22^{***}	1.00
Readability	-7.23×10^{-4}	1.49×10^{-3}	−0.49	1.00
Image	0.59	0.09	6.91^{***}	1.80
Stories	0.34	0.19	1.82	1.41
Statistics	0.29	0.08	3.48^{***}	1.33
Gist	0.82	0.15	5.36^{***}	2.27
Stories × Statistics	0.05	0.22	0.24	1.05
Stories × Gist	0.25	0.32	0.80	1.29
Statistics × Gist	−0.17	0.20	−0.85	0.85
Stories × Statistics × Gist	−0.35	0.40	−0.89	0.70
(Intercept)	−1.08	0.12	-8.91^{***}	

Note. $^{***} = p < 0.001$. β = logistic regression coefficient; SE β = standard error of β; OR = Odds Ratio.

Discussion

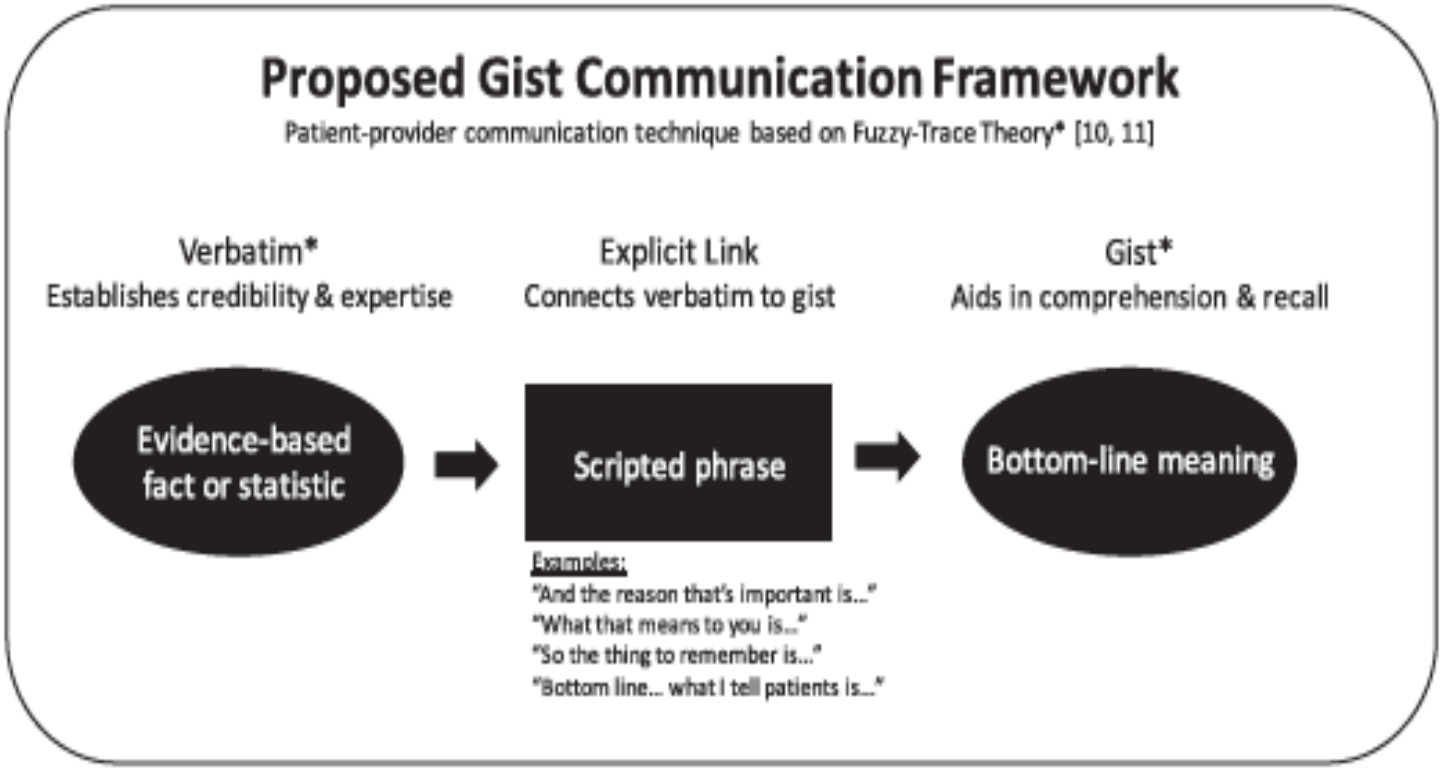

Fig. 2. "Gist Communication Framework" emphasizing the link between evidence based findings and the bottom-line meaning to the patient.

Conclusion

- FTT is an effective framework for understanding medical decision-making.
- Results suggest it can help explain the persuasiveness of social media messages related to vaccination. In addition, stories may not be effective unless they convey a gist.
- Finally, acknowledging the occasional occurrence of adverse vaccine events may increase credibility, inoculating patients with counterarguments.
- Future research should further develop practical tools that may assist healthcare providers and public health communicators in increasing vaccination rates among hesitant patients.

Thank you..
Questions?