Communication Strategies for Behavior Change on Social Media

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Agenda

• ”The Battle of the Narrative”
  • Similar problems faced by national security and public health practitioners
  • The case of the Zika virus

• Effective Communication on Social Media: Statistics, stories, or gist in the Disneyland measles outbreak?
  • Fuzzy Trace Theory

• Future Directions: Synergies between survey methods and social media
Narratives and National Security

• U.S. Military doctrine emphasizes the importance of targeted and tailored communications

• FM 3-24 “Insurgencies and Countering Insurgencies”
  • “The root causes of an insurgency are real or perceived grievances that insurgents use to mobilize a population in support of an insurgency...As conditions change, insurgent leaders create different narratives to mobilize a population.” (p. 4-3)
The "Battle of the Narrative"

- JDN 2-13: "For enduring interventions, there can be a continuing struggle to define the national and international debate/discussion on terms favorable to one side, causing a clash between the competing narratives of the actors involved. This is often what is referred to as the "battle of the narrative." A key component of the narrative is establishing the reasons for and desired outcomes of the conflict, in terms understandable to relevant publics." pp. ix-x

- "Social media enables the rapid transmission of information and misinformation to domestic and international publics and communities of interest" p II-13
Opportunities and challenges of Web 2.0 for vaccination decisions

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• Narratives have inherent advantages over other communication formats...[and] include all of the key elements of memorable messages: They are easy to understand, concrete, credible ... and highly emotional. These qualities make this type of information compelling...” (p. 3730)
Role of social media in vaccination narratives

- 80% of Internet users seek health information online (Kata, 2012)
- 16% seek vaccination information online (Kata, 2012)
- Social media is a hotbed of anti-vaccination activity (entire special issue, Vaccine, 2012)
- More people now get their news from social media (Pew Center, 2015)
  - 30% of the U.S. population gets news from Facebook
  - 61% of millennials get the majority of their news from social media
- 71% of all online U.S. adults are on Facebook (Pew Center, 2014)
- Facebook posts represent 81% of all article shares (Becker, 2015)

Organized Anti-Vaxx Campaigns

- As in national security contexts, anti-vaccination social media campaigns are generally well-organized and manipulate facts to fit an existing narrative.
- "REPORT from Physicians in the Crop-Sprayed Villages regarding Dengue-Zika, microcephaly, and mass-spraying with chemical poisons"

Monsanto does not make or use pyriproxyfen
Pyriproxyfen doesn’t cause microcephaly
Spurious Correlation: Mosquitos & larvicide

Pseudoscientific Claims about Zika

• 85% of users previously tweeted about vaccines in 2015
• At least 57% of users previously tweeted an anti-vaccine message

Pseudoscientific claim: ”DTaP Vaccine Causes Microcephaly”

• “GMO Mosquitos are the cause of the zika virus.”
• “#Zika may help accelerate Sterilization in the US, and with the use of GMO Mosquitoes sterility will be delivered to you, #Depopulation#NATO”
• 0.1 babies had zika, 100% had DTAP given to mother during pregnancy? Wonder which caused this?
• Factors: Those pregnant women were #Vaxxed=dtap, GMO mozzies released, pesticides put in drinking water so blame #Zika

Brazilians not buying Zika excuse for babies with shrunken brains

Over 4,000 babies have now been born in Brazil with shrunken brains since November 1 2015. Brazil normally gets approximately 150 cases of this type of birth defect per year, which means that if this all happened in less than a three month time window, abnormal births of this type have increased by approximately 13,000 percent. HERE IS A KEY REPORT.
Why are these claims compelling?
Fuzzy Trace Theory

• Effective health messages help readers retain the meaning in memory and facilitate availability of the knowledge at the time of behavior implementation

• Two types of memory:
  • Verbatim: precise details
  • Gist memories: basic meaning.

• Decisions tend to be based on gist memories – or the basic meaning – not verbatim facts.

• According to this theory, therefore, websites that produce more coherent and meaningful gist will be more influential (even if they are not factually accurate!).
  • Ex: Child got vaccinated -> child developed autism. Therefore, vaccines cause autism
  • In fact, symptoms of autism appear around the same time as vaccination schedule

Study setting: Disneyland measles outbreak

• Began December 2014 at Disneyland in California
• Led to 111 cases in seven states (as well as Canada and Mexico)
• Cases began among unvaccinated people
• Called attention to the issue of herd immunity
• Led to proposals to curtail vaccine refusal through legislative means

Statistics, Stories…. or gist?

• Ongoing debate: Does including a story lead to more effective communications than presenting “just the facts” (i.e., statistical data)?
  • Hesitance to include stories because of concerns of appearing biased

• Fuzzy Trace Theory (Reyna, 2012)
  • Verbatim representation (statistical details)
    • “Measles can lead to pneumonia, deafness, lifelong brain damage, and even death, and almost 1/3 of children with measles have to be hospitalized”
  • Gist: Communicates bottom-line meaning
    • “Taking any risk that your child could get the measles and suffer serious complications isn’t worth it. Vaccination is the best way to protect your child”
  • Stories are effective because they communicate a gist.
    • Also cue motivationally relevant moral and social principles

Analysis of measles media coverage

- Measured shares on Facebook
- Used M-Turk to categorize article content:
  1) statistics about viruses
  2) statistics about vaccine
  3) "gist", or bottom line meaning
  - Positive or negative summary opinion about endorsing or opposing vaccination

What led to article shares:

- Results are consistent with Fuzzy Trace Theory
  - Significant effects of gist and verbatim, but NOT stories
- Stories are effective to the extent that they communicate gist
- Among articles with gists shared at least once (n=257) Articles expressing positive opinions about those endorsing vaccination AND those opposing vaccination were 57.8 times more likely to be shared

Future directions: Demographics of existing methods

- Many surveys rely upon random digit dialing of landline telephones to gather data. This oversamples:
  - Rural
  - White
  - Older adults
- Circumventing these limitations means intentionally oversampling minorities
  - Surveys may be less representative
- This problem will get worse

Social media: A new data source

- Social media like Twitter complement survey data
- Quickly and easily collected
- Enables massive statistical analysis
- Available in real-time
- Oversamples:
  - Younger adults
  - Minorities
  - Urban residents

Scientific value: Hypothesis testing

• Social media and survey data complement one another, in terms of:
  • Demographics, clock speed, immediacy analytic rigor

• We aim to develop, for social media, the research norms and practices that characterize high quality survey research
  • We can test hypotheses rapidly with very large samples

• Currently examining the social media response to proposed of emergency-use authorization of H1N1 vaccine
  • Contrast with survey data, e.g.: Quinn et al (2009)
    • Acceptance varies with socio-demographic factors moderated by trust in government

Conclusions

• National security and public health practitioners face similar challenges from narratives on social media
  • Online organized misinformation and/or disinformation campaigns can undermine public health and national security

• In partnership with our collaborators, we are developing new techniques to assess how compelling and influential messages might be
  • Based on empirically validated theory: Fuzzy Trace Theory
  • Complementary to existing survey techniques

• Future directions: Better understanding the drivers of coherent gist communications in online messages
  • How these vary across sociodemographic groups (e.g., different interpretations of emergency use authorization versus standard vaccination)