

HEALTH INTERVENTION OPPORTUNITIES USING SOCIAL MEDIA ANALYTICS AND BEHAVIORAL SCIENCE THEORY

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BEHAVIOR AND HEALTH

- Behavior plays key role in death and disease (Danaei et al, 2009) of individuals and others
 - Tobacco
 - Diet
 - Exercise
 - Sexual behavior
 - Avoidable injuries

BEHAVIOR CHANGE INTERVENTIONS

- Require clear understanding of behavior and how to influence it (Glanz & Bishop, 2010)
- When effective, interventions that target behavior help
 - Maintain or improve health
 - Reduce risk of disease
 - Manage disease and health-related conditions

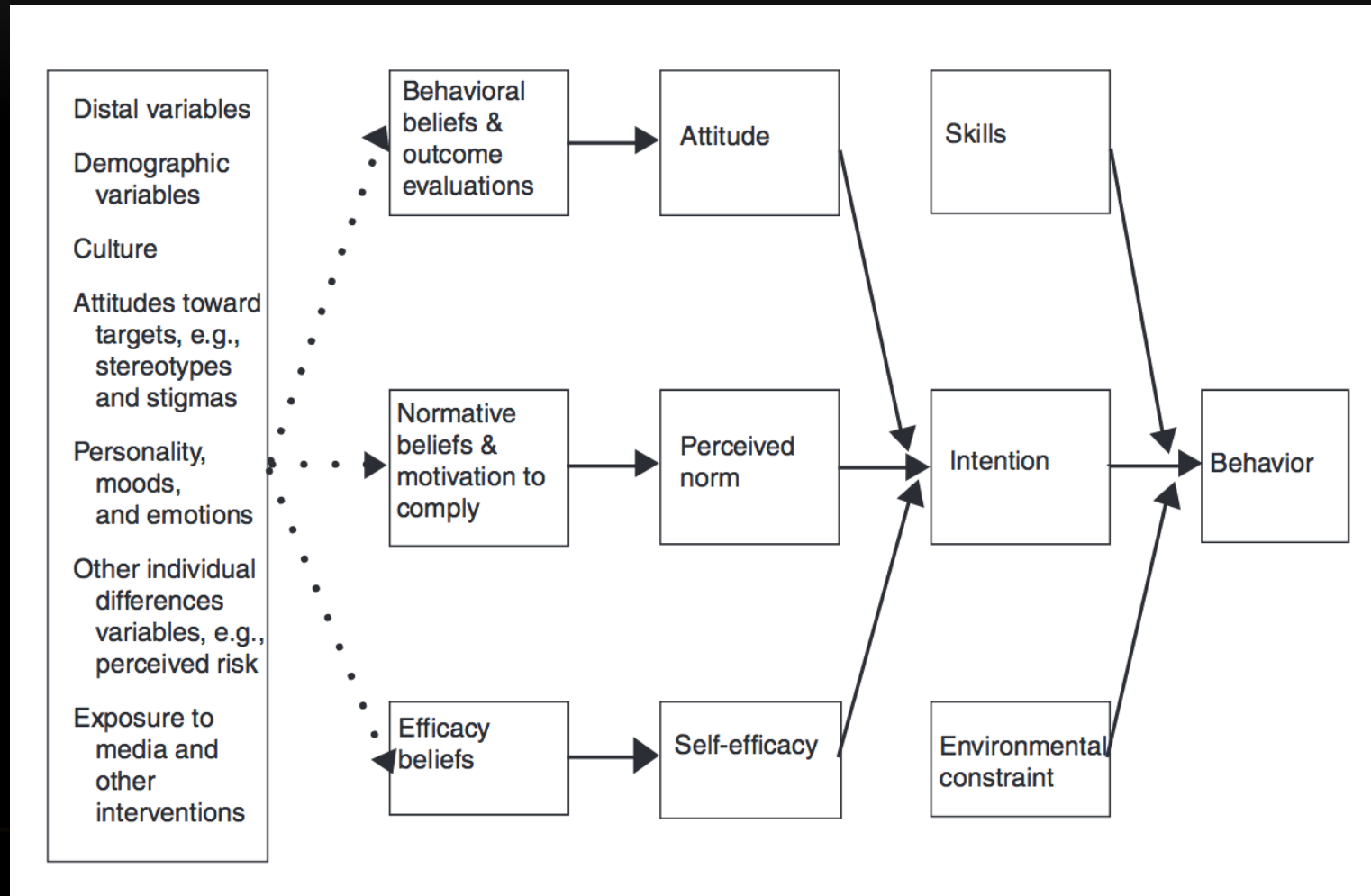
INTERVENTIONS AND SOCIAL MEDIA

- Increasingly popular platform for intervention (Hamm et al, 2013) with several benefits (Moorhead, 2013)
 - Cost-effective approach for promoting user interaction
 - Peer-to-peer support
 - Access to health interventions

BEHAVIORAL SCIENCE THEORY

- Research area drawing from across several disciplines (e.g., communication, health, sociology, psychology, marketing, and economics)
- Empirical evidence in support of using behavioral science theory to improve intervention effectiveness (Glanz & Bishop, 2010)
- Use in tandem with social media analytics relatively unexplored

REASONED-ACTION APPROACH



(adapted from Fishbein & Ajzen, 2010)

REASONED-ACTION APPROACH AND SOCIAL MEDIA ANALYTICS

- Identify and target strongest determinant of intention
 - Pro vs. anti social media messages
 - Sort according to attitudinal, normative, or efficacy components
 - Plot social media messages in geospatial context
 - Compare with existing data on current rates of disease outbreaks
 - Examine nature and density of social media messages and if they correspond with geographical areas with higher rates of disease

ATTITUDINAL CONTENT



Roger Miller

@RogInVA

 Follow

New evidence every day to prove that
[#vaccineswork](#) ...

11:18 AM - 1 Jul 2016



ATTITUDINAL CONTENT



David Ashlin
@BioWonk

 Follow

Opponents of [#vaccines](#) won't admit how dangerous are the diseases. [#vaccineswork](#)

Dr. Richard Pan @DrPanMD

A physician describes his patient's death from [#diphtheria](#). [#VaccinesWork](#)
[#EveryChildNeeds](#)
"I have seen deaths..... fb.me/2mM9NAQNo

RETWEETS

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5:18 AM - 27 Jun 2016



NORMATIVE CONTENT



Orin Levine

@OrinLevine

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Yeah for dads who make [#vaccineswork](#)



BID Initiative @BIDInitiative

A father brings his son to the children's clinic for immunizations at Linda Clinic in Livingstone, Zambia.

RETWEETS

6

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9:53 PM - 26 Jul 2016



6



3



NORMATIVE CONTENT



Rhona Applebaum

@RhonaA_PhD

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"Measles...highly contagious & preventable...eradicated in US in 2000" But when folks don't vaccinate 🙄 #vaccineswork



Arizona now has largest measles outbreak in U.S.

Health officials in Arizona attribute the largest current measles outbreak in the United States in part to the refusal of some workers at a federal immigration detention center to get vacci...

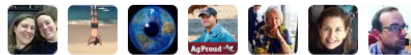
latimes.com

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8:29 PM - 9 Jul 2016



EFFICACY CONTENT



Andrea Westby

@AndreaWestbyMD

 Follow

Some helpful tips here. Important info to know bc [#vaccineswork](#) - don't not give them bc worried about pain!

NPR Health News @NPRHealth

Parents Can Help Reduce Pain And Anxiety From Vaccinations n.pr/29NU7RH

RETWEET

1

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1



8:13 AM - 12 Jul 2016



1



1



EFFICACY CONTENT



UnitedPediatrics

@UnitedPediatric

 **Follow**

Don't know if your child is [#uptodate](#) on [#vaccines](#)? We can help. [#vaccineswork](#) [#pediatric](#) [#pediatrician](#)



Amer Acad Pediatrics @AmerAcadPeds

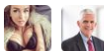
T6 Vaccines are important for children, teens & adults. It's never too late to catch up! [#BandAGEofhonor](#) [#abcDrBchat](#)

RETWEET

1

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8:10 AM - 3 May 2016



REASONED-ACTION APPROACH AND SOCIAL MEDIA ANALYTICS

- Identify and target underlying beliefs of primary determinant of intention
 - Look for patterns in message strategies and argumentation that coincide with geographical areas of higher compliance and less outbreaks
 - Compare to patterns of message strategies and argumentation that consistent with geographical areas of lower compliance and more outbreaks

REASONED-ACTION APPROACH AND SOCIAL MEDIA ANALYTICS

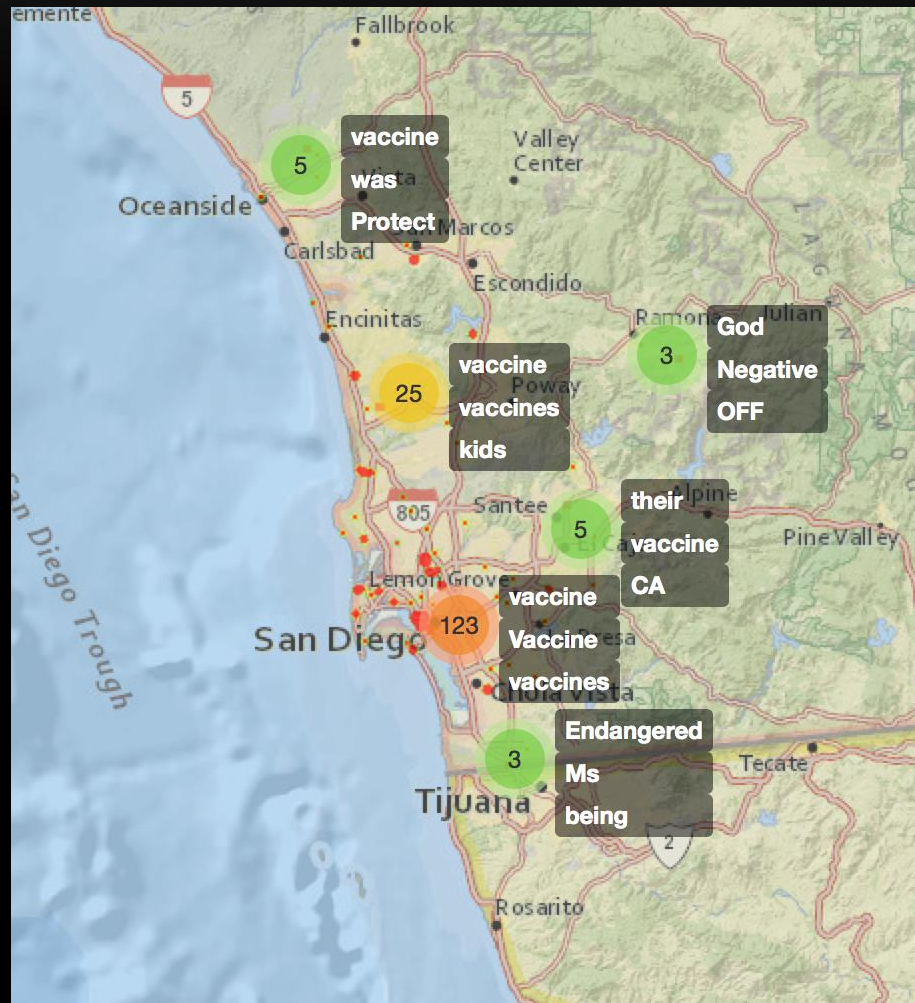
- Deciding whether to intervene or not
 - Change attitude/norms/efficacy?
 - Remove environmental barriers?
 - Launch reinforcement intervention?

INTENTION-BEHAVIOR MATRIX

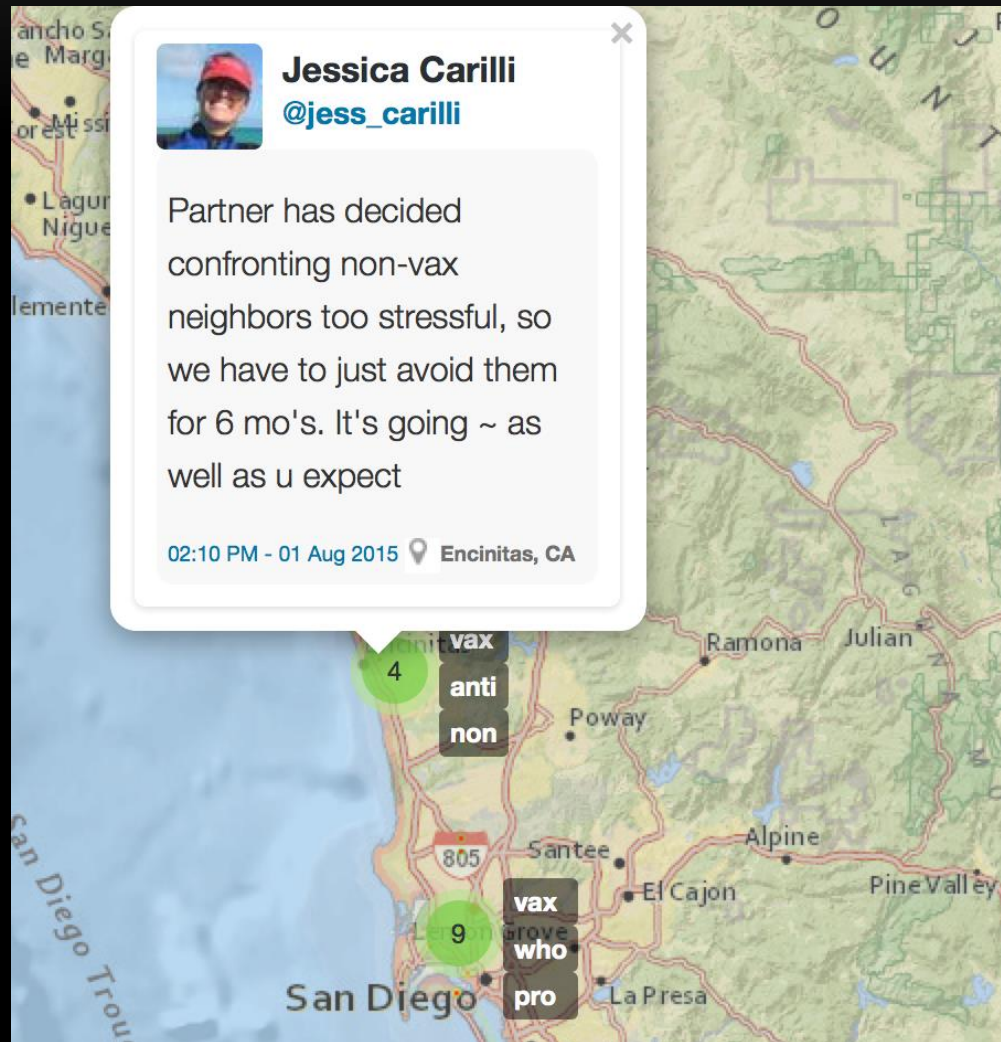
| | Performance of Recommended Behavior | | |
|---|-------------------------------------|--|---|
| Intention to Perform Recommended Behavior | | NO | YES |
| | NO | Change outcome, normative, and self-efficacy beliefs | Change outcome, normative, and self-efficacy beliefs |
| | YES | Improve skills. Reduce/help overcome environmental barriers | No intervention or launch reinforcement intervention to maintain desirable behavior |

(adapted from Fishbein & Cappella, 2006)

REASONED-ACTION APPROACH AND SOCIAL MEDIA ANALYTICS



REASONED-ACTION APPROACH AND SOCIAL MEDIA ANALYTICS



CONCLUSION

- Reasoned-action approach and social media analytics
 - Potential to identify opportunities for intervention and communities at most need
 - More research needed to determine added value over existing methods

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