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School of Medicine

HPV Uptake Communication in the Social Media Environment

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Agenda

Background: Using social media for environmental scanning and communication research

Phase 1: Social media-based **focus groups** for surveillance on HPV vaccination in rural areas

Phase 2: Leveraging social media and crowdsourcing platforms for **message-testing experiments**

Phase 3: **Social media campaigns** for HPV uptake communication in rural areas

Future directions and questions

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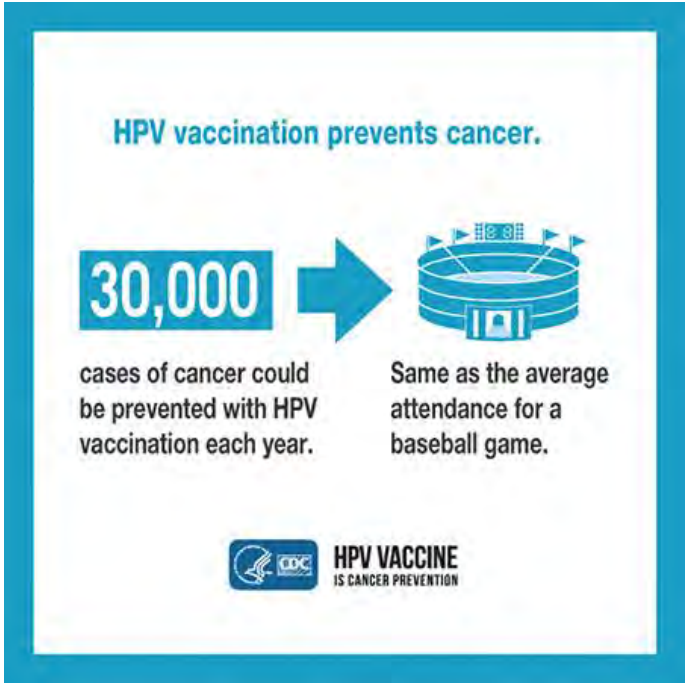
Phase 1. Virtual focus groups for surveillance on HPV vaccination in rural areas

Each year…

- 79 million Americans are infected with HPV
- 30,700 develop HPV-related cancers
- Incidence rate is increasing, fastest among men
- HPV causes as many deaths as measles did in the pre-vaccine era



Sources: CDC; NH DHHS

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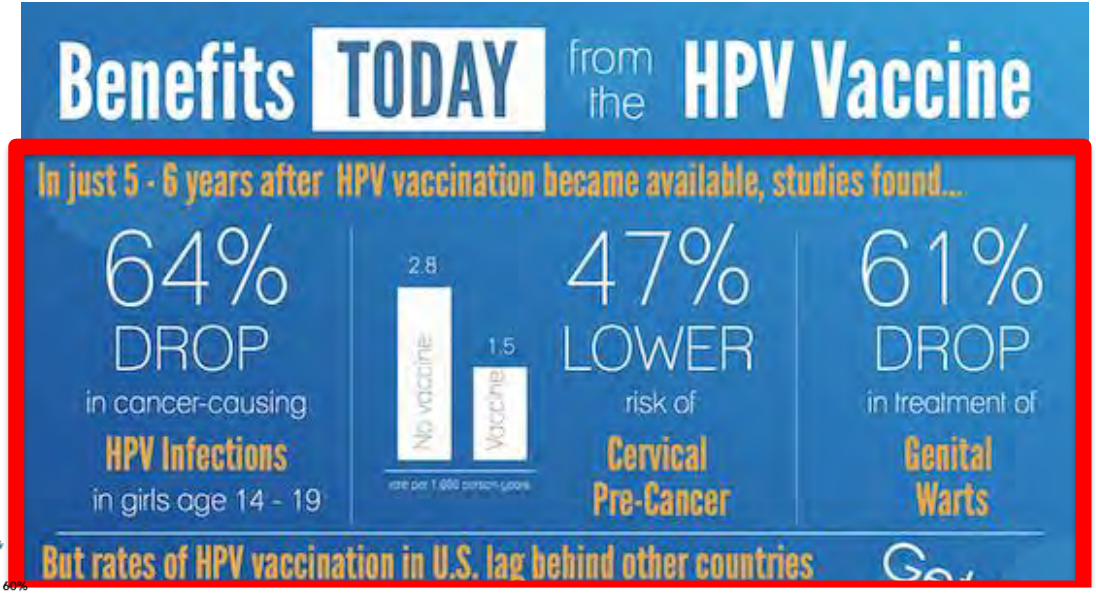
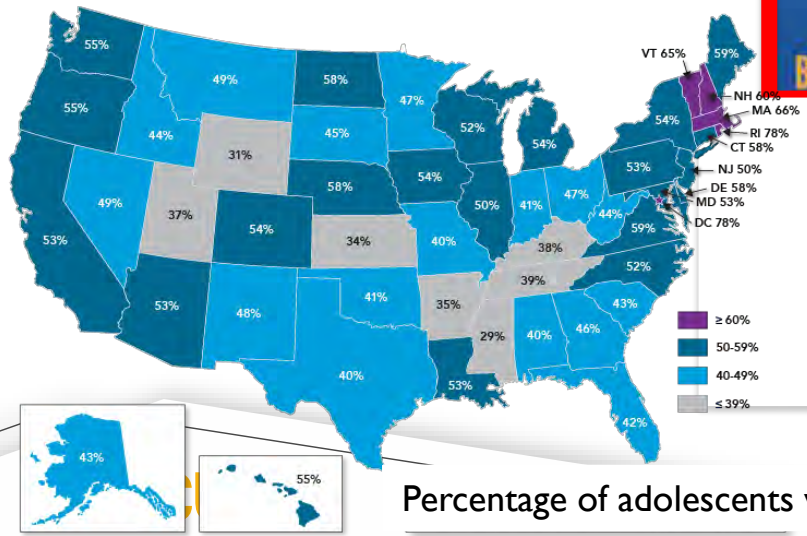
The current HPV vaccine prevents up to 93% of cancer cases caused by HPV.

Yet, rates of HPV vaccination in U.S. lag behind other countries; No state had reached the Healthy People 2020 goal of full vaccination of 80% of adolescents aged 13~15 years.





https://www.cdc.gov/hpv/infographics/vacc-coverage.jpg
National Immunization Survey – Teen, 2013; Stokley et al., 2014

Percentage of adolescents who are current with their HPV vaccinations by state.

- HPV vaccination rates among certain populations, such as adolescents in rural areas are not as high as other adolescent vaccines.
- Parents who decline the vaccine maintain myths and negative/ambivalent attitudes toward HPV vaccination.

Anti-Vaxxer

The HPV Vaccine:
Why Parents Really Choose to Refuse

Join us as we expose one of the most controversial topics in healthcare today.

VACCINES

You can be sure that this $30 billion a year industry affects you, your children, and the rest of our society.

GARDASIL FULLY EXPOSED

REST IN PEACE, SHAZEL ZAMAN

DESPITE THOUSANDS OF CRIPPLING ADVERSE REACTIONS AND DEATHS, INFANTS ARE NEXT

The Washington Post
Democracy Dies in Darkness

Health

Teen who defied anti-vax mom says she got false information from one source: Facebook

MYTHS

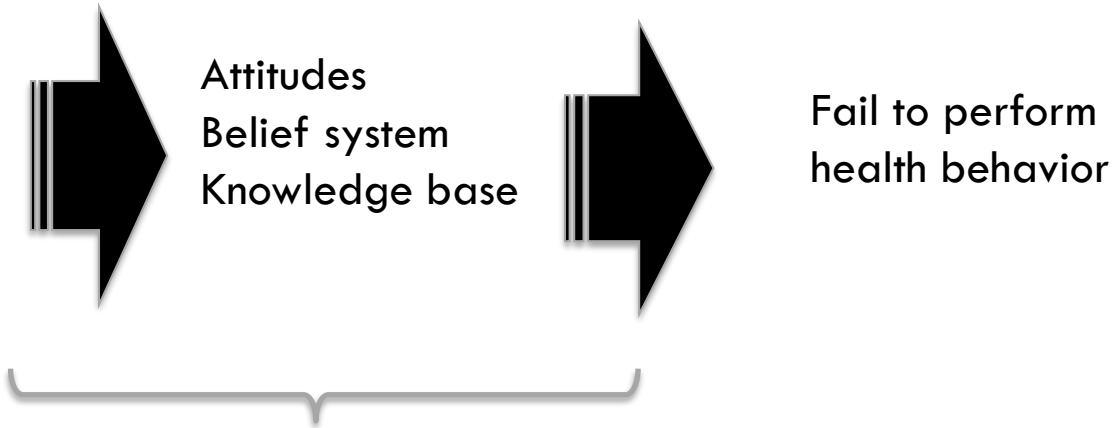
Public Health Threats

Information Pollution

- Communication noise

- Exposure to misinformation

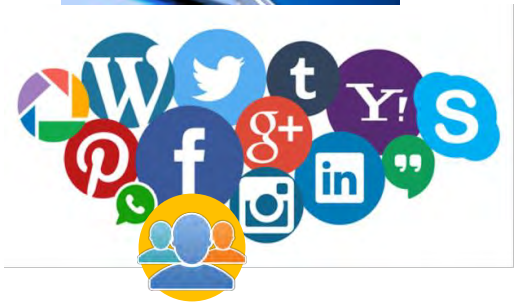
- Repeated exposure over time



Psychological factors : Barriers

Identify psychological factors why parents in rural areas have or have not vaccinated their children against HPV.

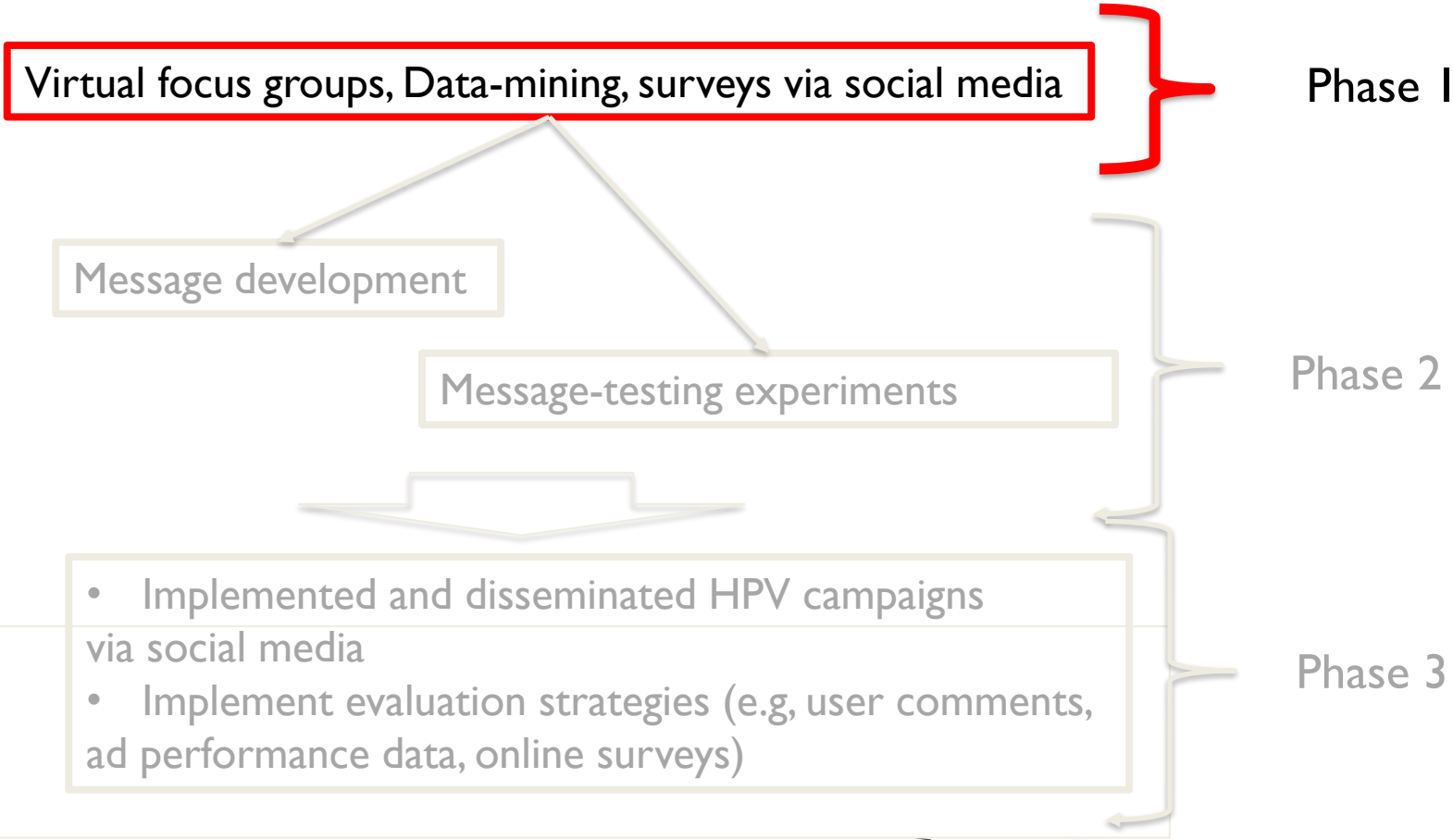
Harnessing social technology

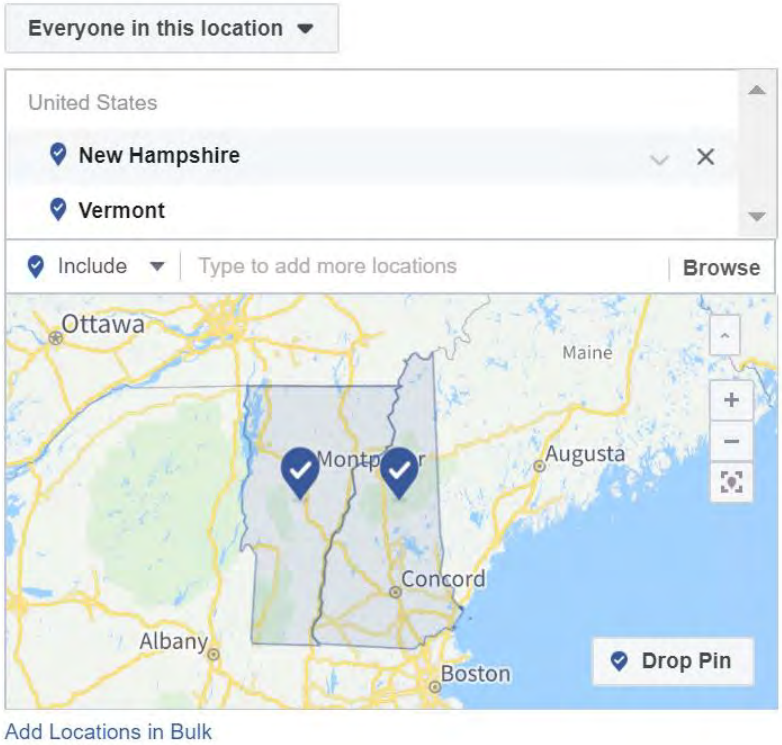


- ❑ Reach (e.g., underserved populations, geographically distant individuals)
- ❑ User engagement and interactive communication
- ❑ Social support
- ❑ Cost-effective
- ❑ Naturally occurring communication
- ❑ Scalability (intervention content, methods, and outcomes)

Kim et al., JMIR 2017

Methods:
Multiphase sequential designs of translational communication research



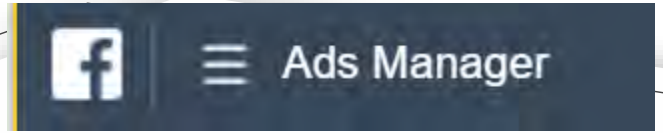


Two rural states, NH/VT.

➔ Feasible?

1,535,688 adult population in NH/VT

United States Census Bureau (2018)



Focus group questions on Facebook

- 6 sets of questions in a structured format
- Consistent format across virtual focus groups
- Disseminated focus group postings via rural and urban areas using zip codes on Facebook
- Data-mined user comments for thematic analyses

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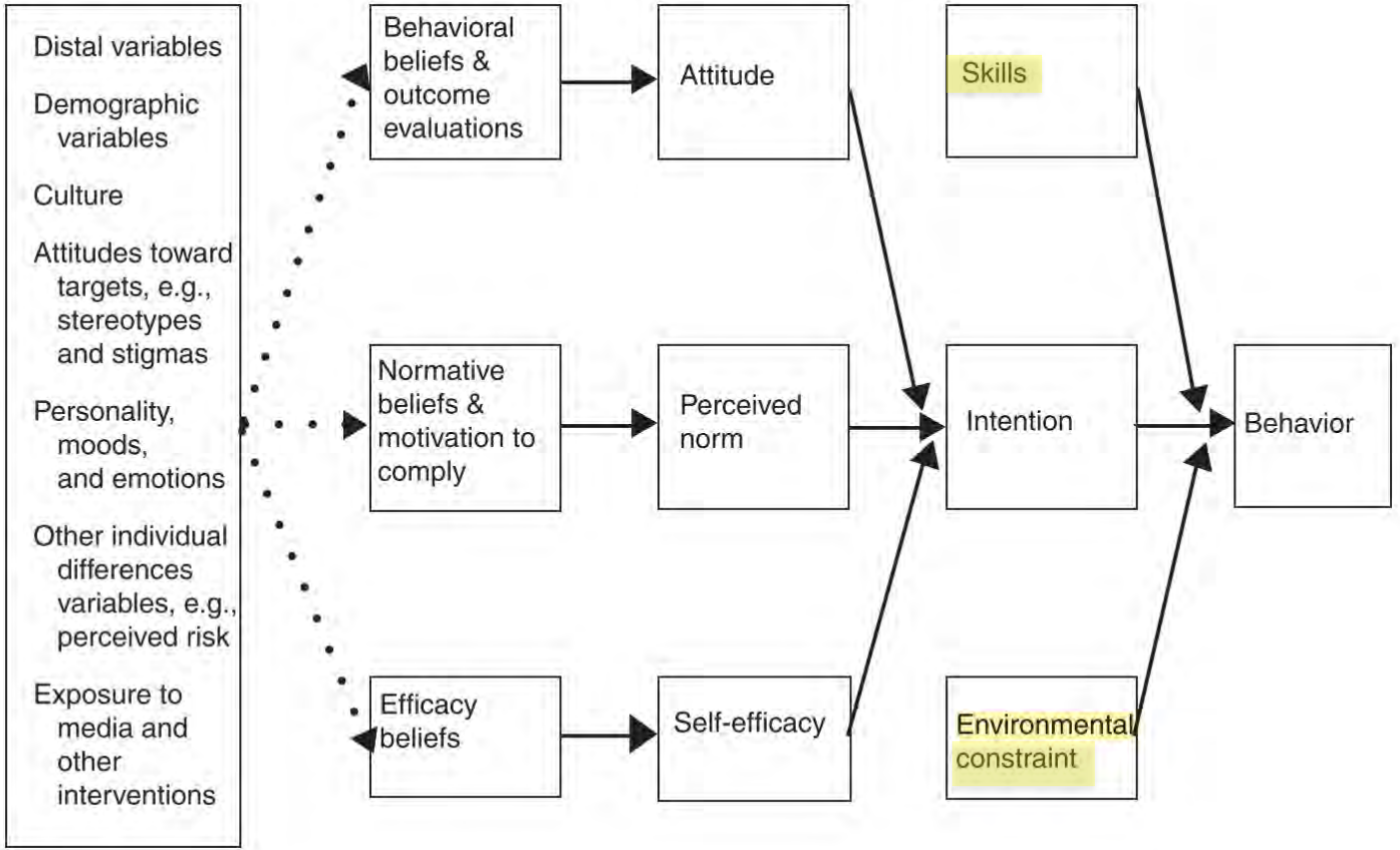
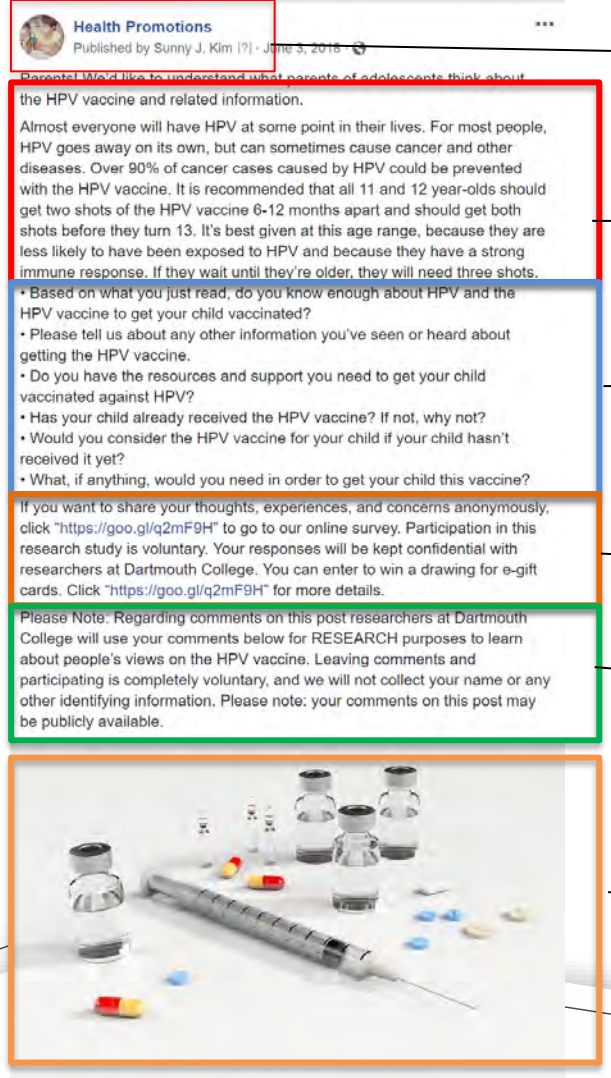
An integrative model of behavioral prediction



Fishbein and Yzer 2006



Neutral source

Greetings
& Background information

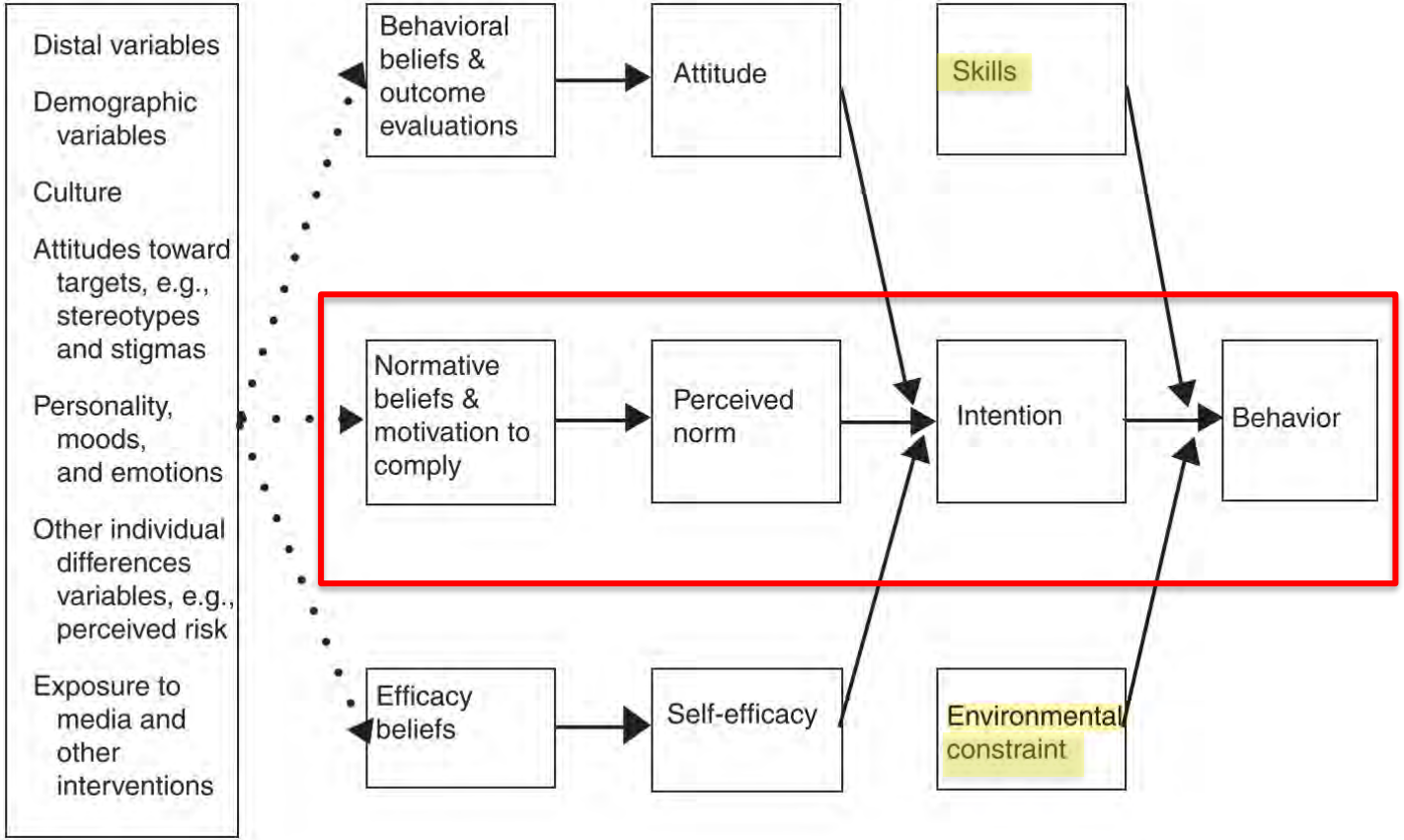
Questions driven by the model

Ending statement. Embedded survey

Disclaimer (observational study on social media).

Message-congruent image

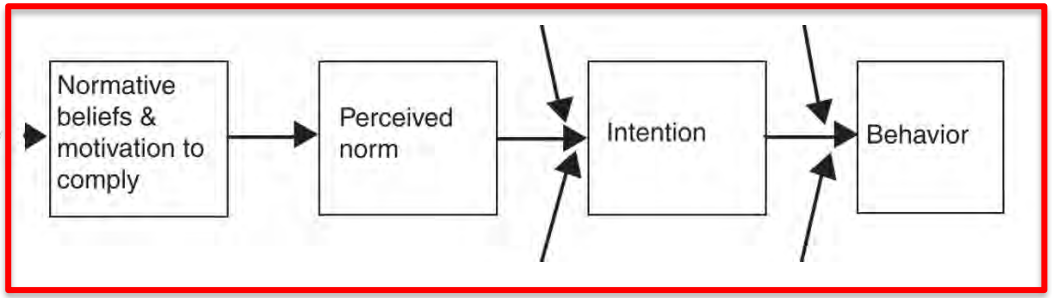
An integrative model of behavioral prediction



Fishbein and Yzer 2006

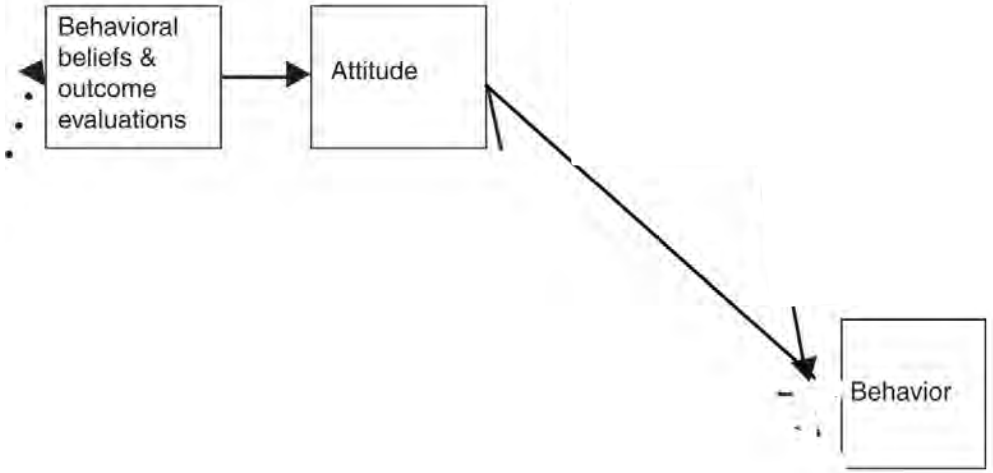
1. Normative beliefs and motivation to comply → perceived norm → behavioral intention → Behavior

- Do you believe that boys AND girls in this age range should get the vaccine? Would you be motivated in following this recommendation?
- Do you believe that the age range of 11-12 is appropriate?

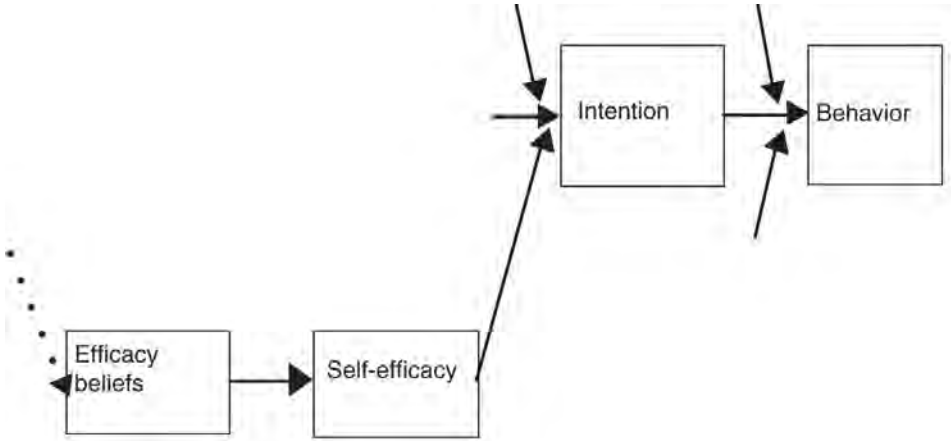


2. Behavioral beliefs and outcome evaluations/**response efficacy** belief → attitudes→ BI

- Do you believe HPV vaccine will protect your children against genital warts and cervical cancer?
- Do you believe the HPV vaccine is safe, beneficial, and important for children ages between 9 and 15? Or, do you have the opposite opinions about the HPV vaccine?

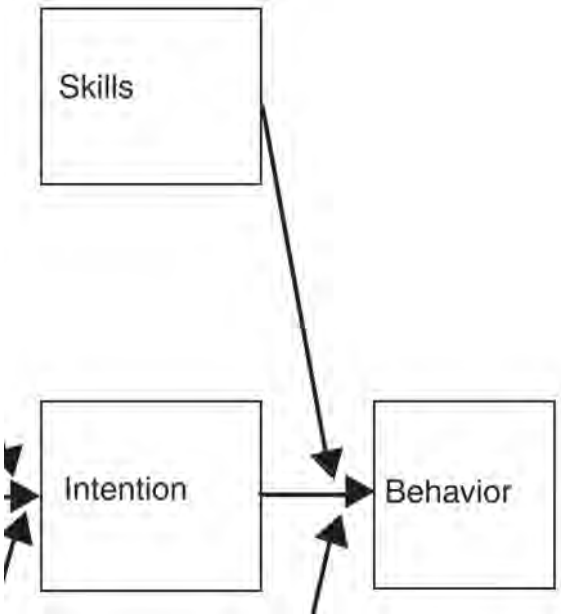


3. self-efficacy → behavioral intention



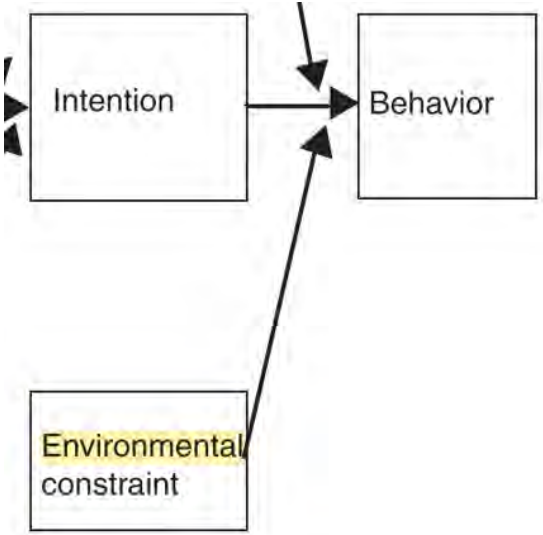
- As a parent, how challenging would it be for you to meet this recommendation?
- How confident are you that you have the ability to meet this recommendation?

4. Skills /lack of knowledge/ lack of exposure to recommendation



- 90% of people have HPV at some point in their lives. Although most people clear the virus without ever knowing they have it, the virus can persist in the cells and some types of HPV can, usually over decades, cause cancer.
- The HPV vaccine protects against nearly 90% of cervical cancers, and it provides protection against most of the genital cancers in men caused by HPV infection. The HPV vaccine also works effectively when given at a younger age. Children aged 11 and under only need two HPV vaccines instead of 3 doses.
- **Do you have enough knowledge about the HPV infection and the HPV vaccine? Have you read or seen any information about the importance of receiving HPV vaccines? Please share if you think you have enough knowledge, access to the information, and support to accomplish the recommended doses of the HPV vaccine for your child. If not, please share what skills, knowledge, resources you would like to have.**

5. Environmental constraint/Perceived barriers (access to care),



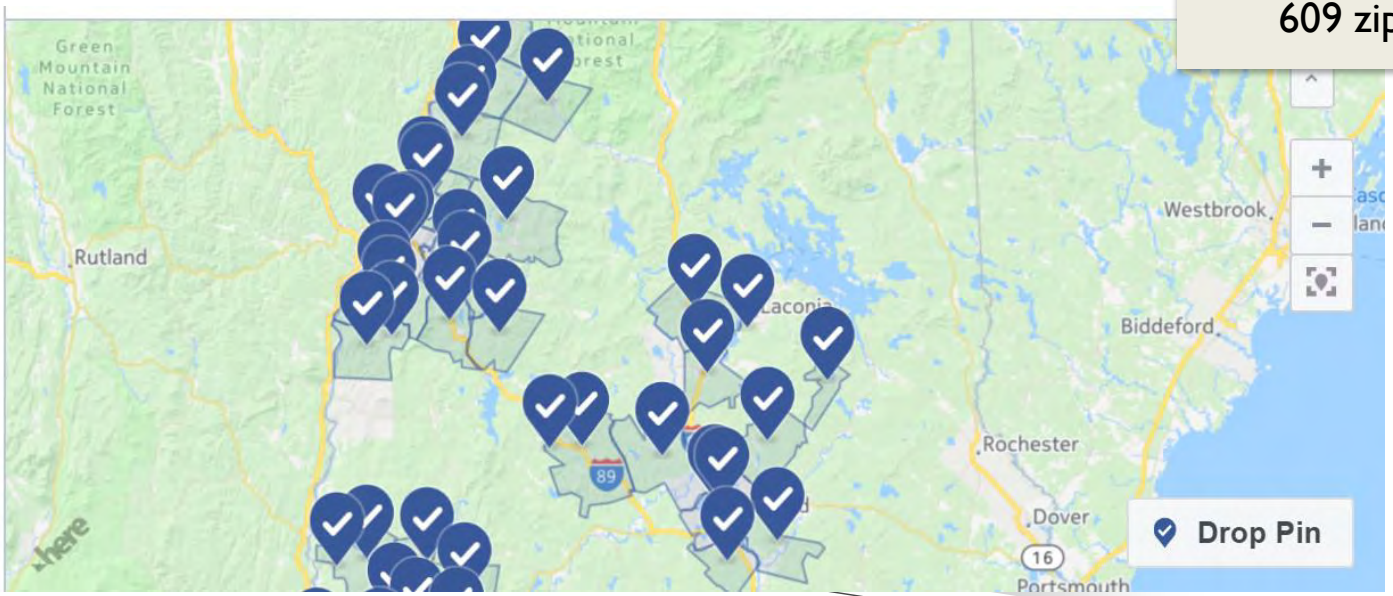
- E.g., Are there any obstacles or constraints that are preventing you from successfully giving the HPV vaccines for your child? If there are any things that make it difficult for you to get your child vaccinated, please let us hear. Share your concerns, barriers, and any difficult situations that made it hard for you to achieve the recommended doses for your child.

Audience geo-targeting

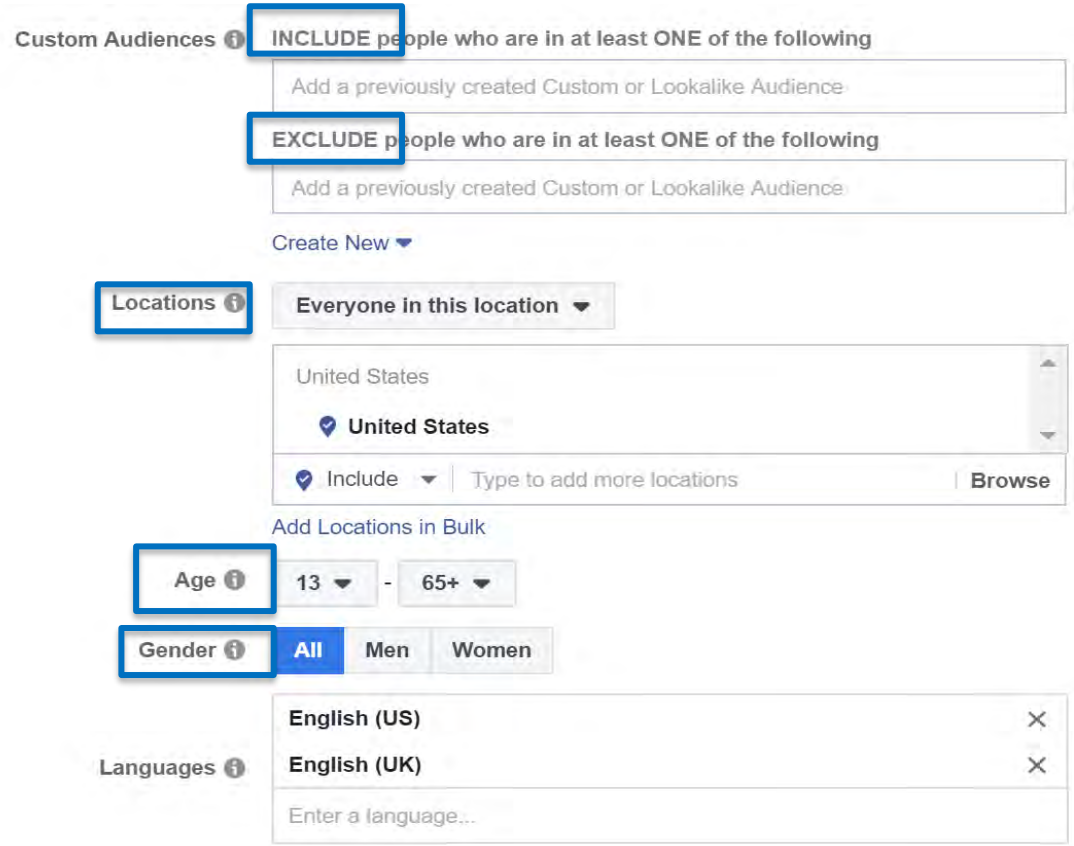
Geo-targeting by zip code levels on Facebook Ads Manager

NH = 297 zip codes
VT = 312 zip codes

609 zip codes in NH/VT



Audience Targeting by geographic & demographic characteristics



Data monitoring

- Anti-vaxxers
- Not relevant to the topic
- Swear, attack, trolls
- No intervention but observation
- 6 different Facebook Ads in a random order over time

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Data analysis

- Thematic analyses
  - 327 user comments
  - Coding scheme: 23 pre-defined coding schemes concerning barriers and facilitators for HPV vaccination
- Linguistic analysis
  - 12,622 words from focus groups

5 most salient themes from virtual focus groups

- Theme 1: Safety/Side Effects/Risk/Ingredient Concerns and Long-Term or Major Adverse Events (of HPV Vaccine)
- Theme 2: Distrust of the System
- Theme 3: Effectiveness Concerns/HPV Vaccine Doesn't Work
- Theme 4: Connected to Sexual Activity
- Theme 5: Mis-States Facts

Discussion and limitations

- To collectively inform communication strategies for public health campaigns.
- Social media platforms were effective in engaging parents in hard-to-reach areas for discussions on HPV vaccination.

- Important to monitor focus groups in real time (e.g., trolls, spiral of silence)
- Geo-targeting but no validation on locations

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Phase 2: Messages Testing Experiment for HPV social media campaign

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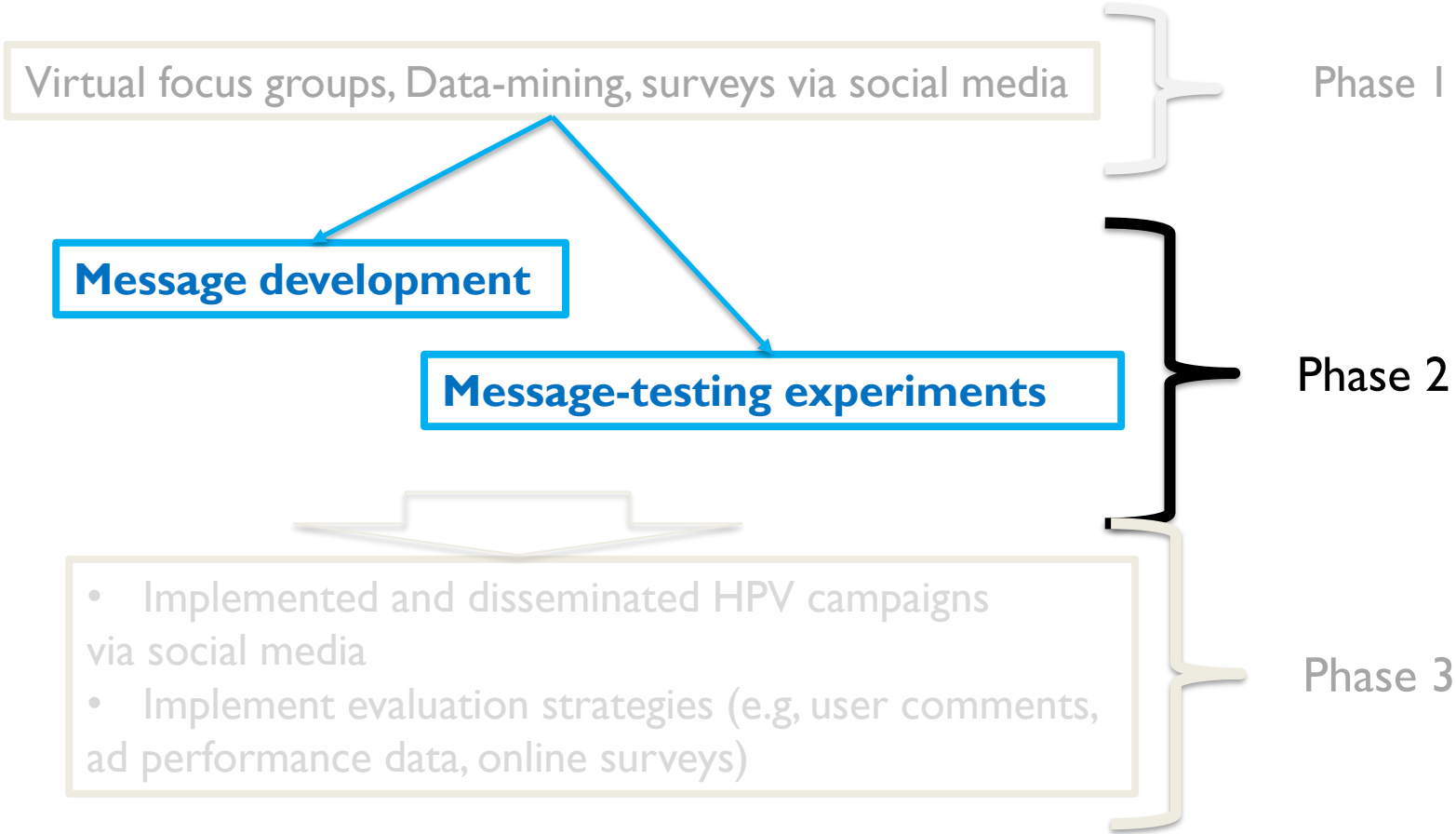
Methodological approach:
Multiphase sequential designs of translational communication research

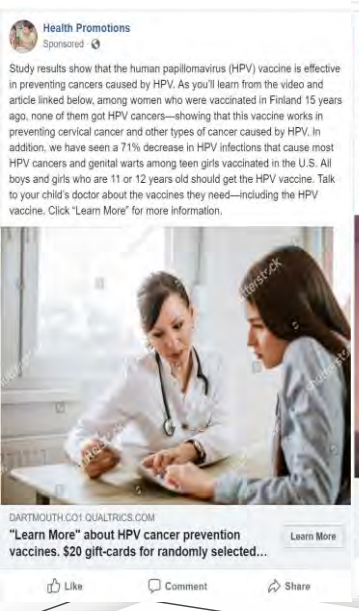


Principles applied in the message development

- Developed 5~6 messages for each theme from focus groups
- Persuasion tactics:
  - Emotional appeal, rational appeal, concordance between image and text; neutral source; recency effect in promoting target statement
- Controlled for the length of messages
- Used neutral source
- Simulated social media environments within the message-testing experiment

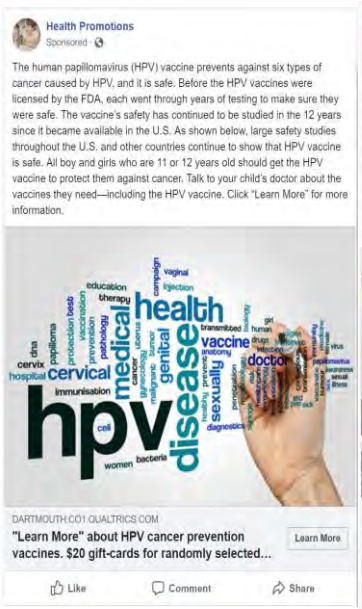
Examples of stimulus materials

Theme 1: Countering 'Side Effects/Risk/Ingredient Concerns'

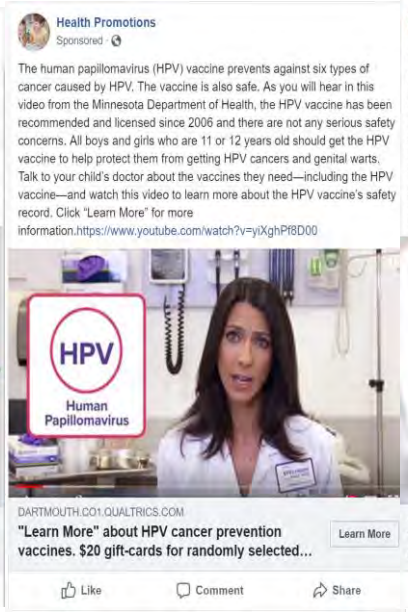


Theme 2: Countering 'Distrust of the System'

Theme 3: Countering 'Effectiveness Concerns'



Theme 4: Countering 'Connection to Sexual Activity'



Theme 5: Countering 'Misinformation'

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Message testing experiments:
- **Kim & Hancock 2016, CR**
- **Kim & Niederdeppe 2014 JoHC**

Social media & Crowdsourcing for recruitment & screening

amazon mechanical turk

facebook

Pre-test survey measures:
- Demographic information,
- Environmental Factors
- Prior knowledge
- Issue involvement
- Attitudes toward HPV vaccine
- HPV vaccination status

Randomization / Message exposure

HPV message testing experiment

Themes
1
2
3
4
5

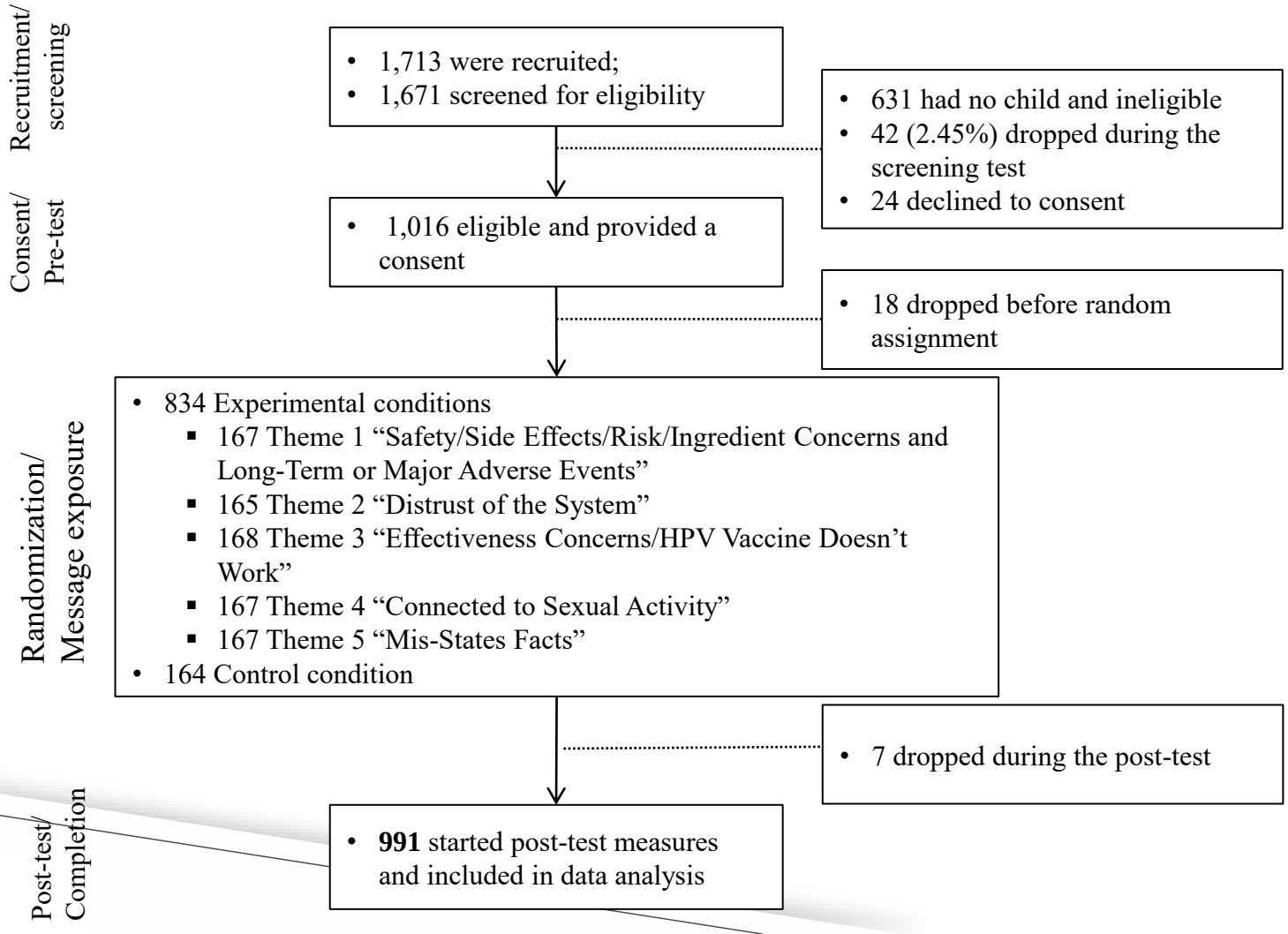
Th1. Message 1.
Th1. Message 2.
Th1. Message 5

>30 people for each

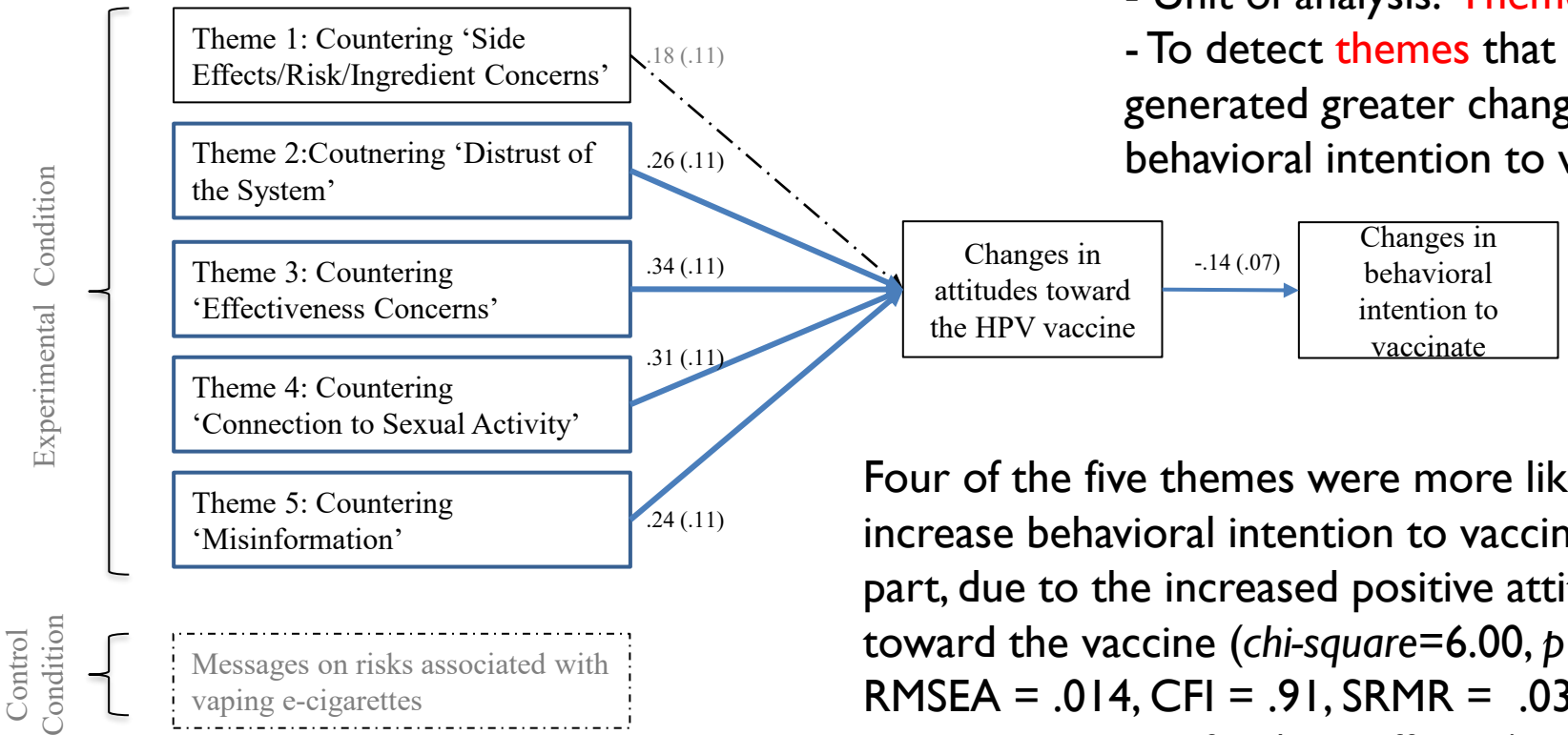
Control
Control: Message 1.
Control. Message 2.
Control. Message 6

Post-test survey measures:
- Manipulation checks
- Attitudes toward HPV vaccine
- Behavioral intention to vaccinate their kids against HPV
- Message effectiveness
- Social Economic Status

VCU qualtrics

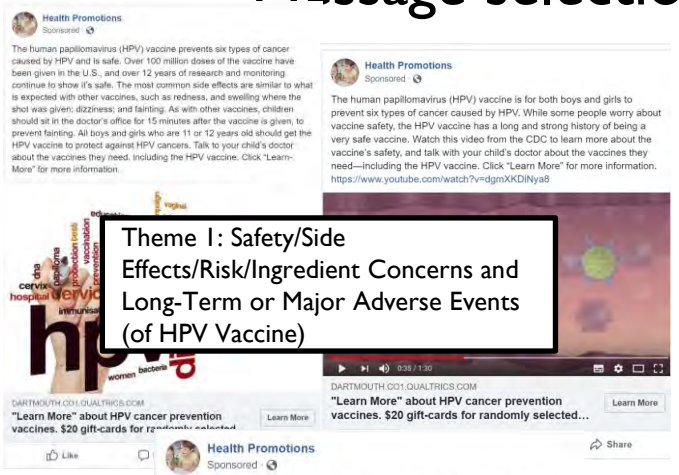

Recruitment/ screening
• 1,713 were recruited;
• 1,671 screened for eligibility
• 631 had no child and ineligible
• 42 (2.45%) dropped during the screening test
• 24 declined to consent
Consent/ Pre-test
• 1,016 eligible and provided a consent
• 18 dropped before random assignment
Randomization/ Message exposure
• 834 Experimental conditions
▪ 167 Theme 1 "Safety/Side Effects/Risk/Ingredient Concerns and Long-Term or Major Adverse Events"
▪ 165 Theme 2 "Distrust of the System"
▪ 168 Theme 3 "Effectiveness Concerns/HPV Vaccine Doesn't Work"
▪ 167 Theme 4 "Connected to Sexual Activity"
▪ 167 Theme 5 "Mis-States Facts"
• 164 Control condition
• 7 dropped during the post-test
Post-test/ Completion
• **991** started post-test measures and included in data analysis

Preliminary path models
- Unit of analysis: Themes
- To detect themes that generated greater changes in behavioral intention to vaccinate

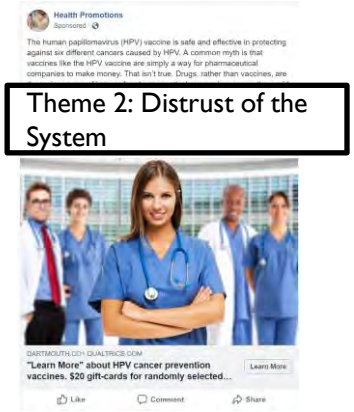


Four of the five themes were more likely to increase behavioral intention to vaccinate, in part, due to the increased positive attitudes toward the vaccine (*chi-square*=6.00, *p* = *ns*, RMSEA = .014, CFI = .91, SRMR = .031). The messages about safety/side effects (Theme 1) did not show this effect.

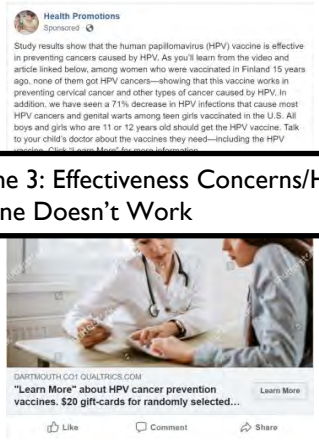
Message selection for social media campaigns



Theme 1: Safety/Side Effects/Risk/Ingredient Concerns and Long-Term or Major Adverse Events (of HPV Vaccine)



Theme 2: Distrust of the System



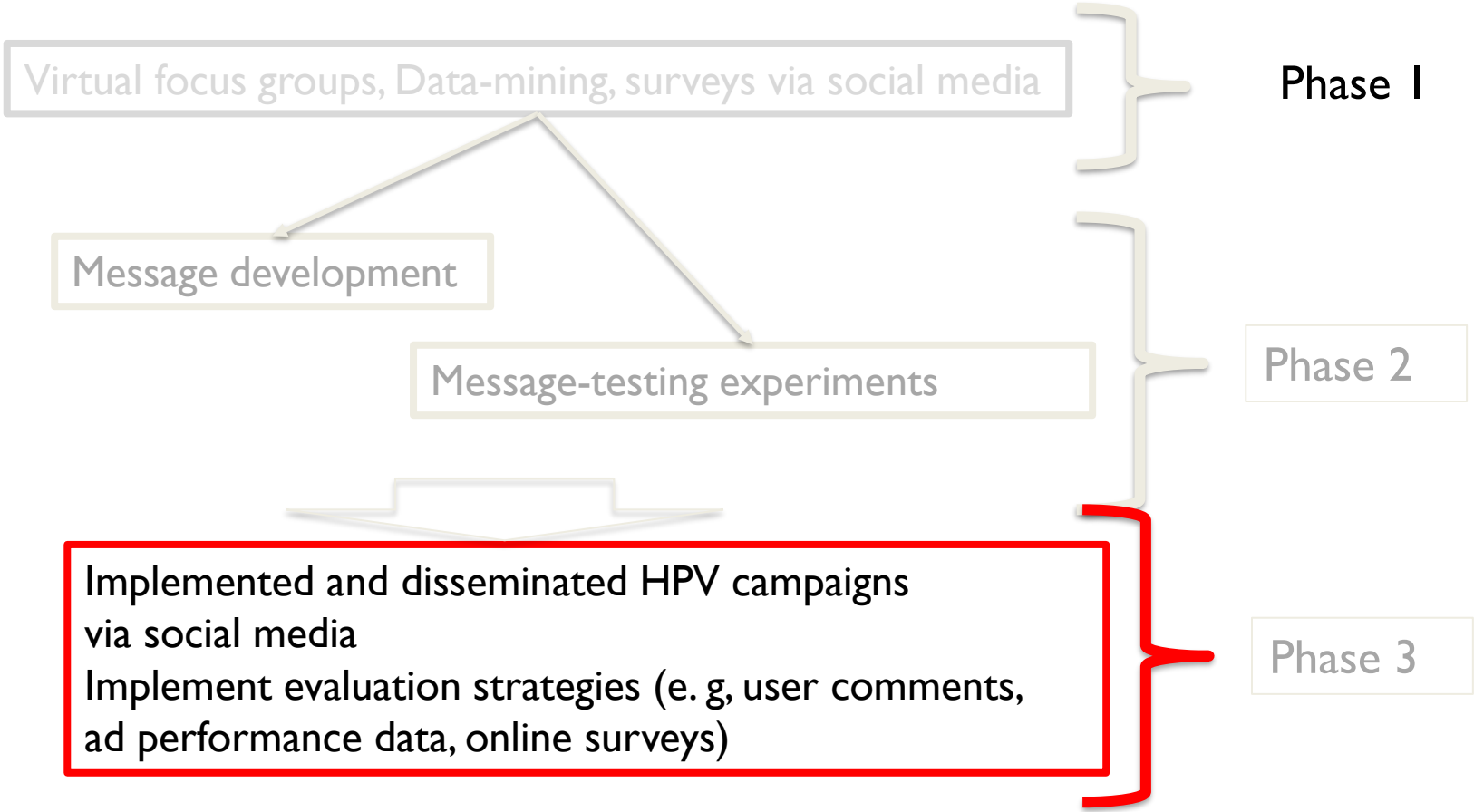
Theme 3: Effectiveness Concerns/HPV Vaccine Doesn't Work

Theme 4: Connected to Sexual Activity

Theme 5: Mis-States Facts

- Message effectiveness scores
- Rank order

Methodological approach:
Multiphase sequential designs of translational communication research



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Phase 3: HPV uptake social media campaign

A *systematic implementation* of selected messages via Facebook ads

- Facebook Ads manager platform offers a rich set of audience targeting features
  - e.g., geographic and personal interests-based targeting
- Rapid prototyping for campaigns
  - Message exposure frequency
  - Health communication delivery over time
- Coordinated campaign timeline schedules

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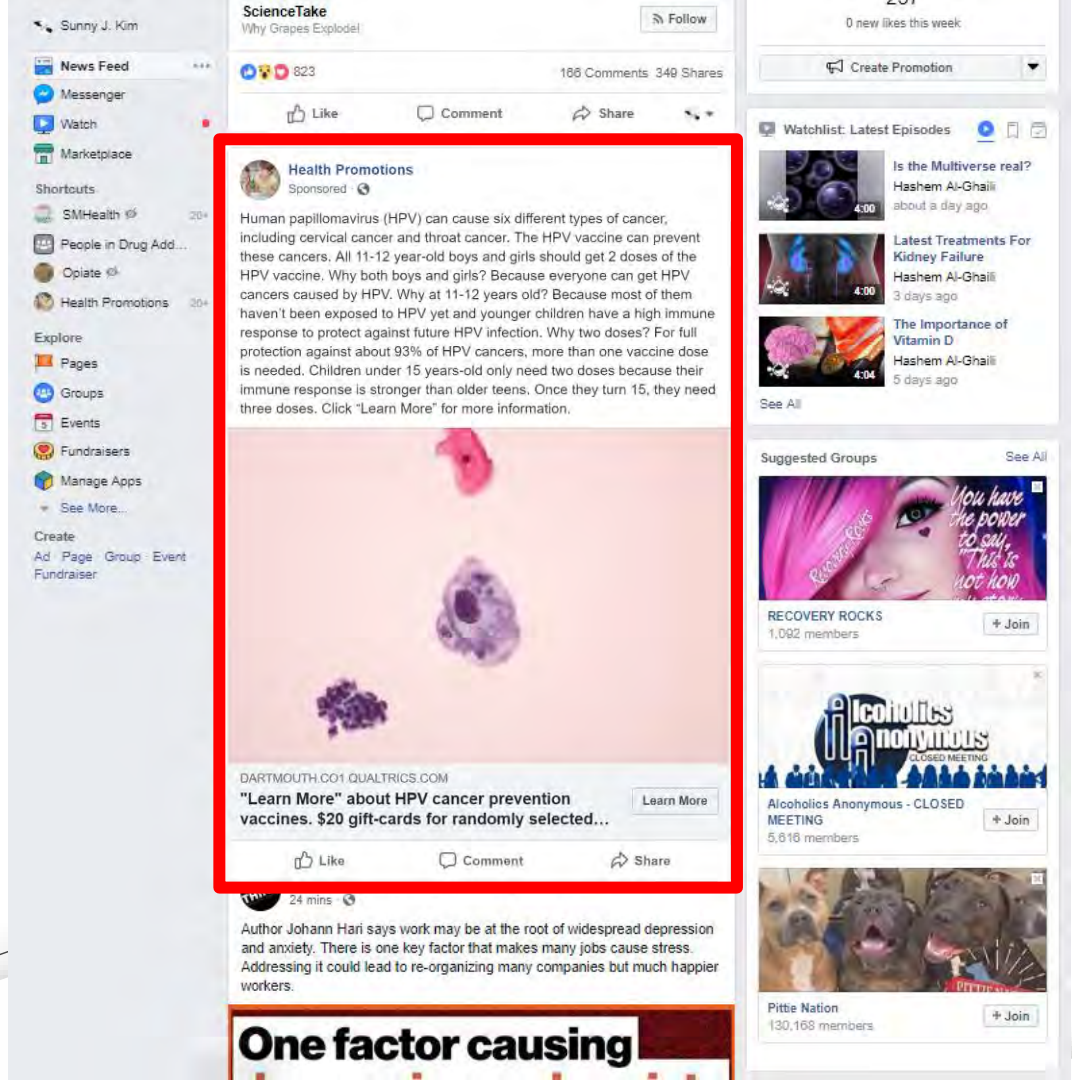


Disseminated pre-tested messages in a random order while controlling for:

- Content (tested messages only, randomized)
- Cost (fixed)
- Days of ads promotion
- Geo-targeting of message exposure (rural vs. urban areas by zip codes)

Sunny J. Kim

- News Feed
- Messenger
- Watch
- Marketplace

Shortcuts

- SMHealth 20+
- People in Drug Add...
- Opiate
- Health Promotions 20+

Explore

- Pages
- Groups
- Events
- Fundraisers
- Manage Apps
- See More...

Create

Ad · Page · Group · Event
Fundraiser

ScienceTake
Why Grapes Explode!
Follow

823 166 Comments 349 Shares

Like Comment Share

Health Promotions
Sponsored

Human papillomavirus (HPV) can cause six different types of cancer, including cervical cancer and throat cancer. The HPV vaccine can prevent these cancers. All 11-12 year-old boys and girls should get 2 doses of the HPV vaccine. Why both boys and girls? Because everyone can get HPV cancers caused by HPV. Why at 11-12 years old? Because most of them haven't been exposed to HPV yet and younger children have a high immune response to protect against future HPV infection. Why two doses? For full protection against about 93% of HPV cancers, more than one vaccine dose is needed. Children under 15 years-old only need two doses because their immune response is stronger than older teens. Once they turn 15, they need three doses. Click "Learn More" for more information.

DARTMOUTH.CO1.QUALTRICS.COM
"Learn More" about HPV cancer prevention vaccines. $20 gift-cards for randomly selected...
Learn More

Like Comment Share

24 mins

Author Johann Hari says work may be at the root of widespread depression and anxiety. There is one key factor that makes many jobs cause stress. Addressing it could lead to re-organizing many companies but much happier workers.

0 new likes this week

Create Promotion

Watchlist: Latest Episodes

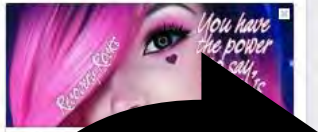
Is the Multiverse real?
Hashem Al-Ghaili
about a day ago

Latest Treatments For Kidney Failure
Hashem Al-Ghaili
3 days ago

The Importance of Vitamin D
Hashem Al-Ghaili
5 days ago

See All

Suggested Groups See All



RECOVE
1,0

Alcoholics Anonymous - CLOSED MEETING
5,616 members
+ Join

Pittie Nation
130,168 members
+ Join

qualtrics

Welcome!
Information Sheet for The Survey

This research project is being conducted by Ardis Olson, MD from the Norris Cotton Cancer Center at Dartmouth and Sunny Kim, PhD from Virginia Commonwealth University. The study is to understand psychological and behavioral effects of messages promoting some pre-teen and teen health topics, including how parents process and respond to those health messages.

You are being asked to take part in a research study about some advertisements because you clicked our ads on social media for this study. We are interested in your thoughts about health-related messages about pre-teen and teen health. Please read this form carefully and ask any questions you may have before taking part in the study.

Background: The purpose of this study is to better understand how people think about different types of health-related messages. This project aims to learn about your psychological reactions and behavioral intentions toward the behavior promoted in the messages.

Procedures: If you agree to participate in this study, we will ask you to read a message carefully. You will first be asked a set of questions to determine if you are eligible for the study; these questions are required but you can stop at any time. If you are eligible, you will be asked to complete a survey. We expect this to take less than 15 minutes. You may choose to not answer any or all of these questions.

Risks and discomforts

an those encountered in day-to-day life and
pating in this research. Please note that the
f Qualtrics, and this software is not affiliated
h University. It has its own privacy and security

INFORMED CONSENT

Ad performance data

Ad feature data

- ❑ Days ad was running
- ❑ Delivery Status
- ❑ Delivery Level
- ❑ Result Type (reach, traffic)
- ❑ Cost per Result
- ❑ Amount Spent

⋮

Ad engagement data

- ❑ Reach
- ❑ Impressions
- ❑ Result Rate
- ❑ Frequency
- ❑ Link Clicks
- ❑ Page Engagement
- ❑ Page Likes
- ❑ Post Engagement
- ❑ Post Reactions
- ❑ Post Shares
- ❑ Unique Link Clicks
- ❑ Clicks All
- ❑ Post Comments

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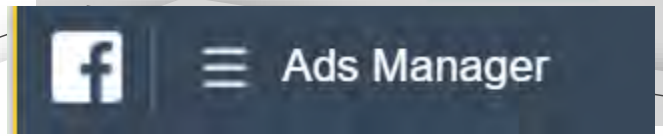


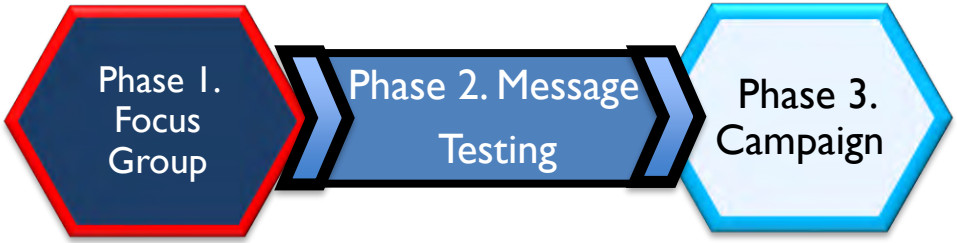
https://www.facebook.com/business/help

Harnessing social technology

Translational research

- ❑ Persuasive technology
- ❑ Health communication
- ❑ Social/health psychology
- ❑ Science of behavior change

Multiphase Sequential Designs



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