Engaging Hesitant Parents with an HPV Vaccination App

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Factorial Randomized Controlled Trial of a Parental Self-Persuasion App for Adolescent HPV Vaccination.
Under Review.
Disclosures & Acknowledgments

This study was supported by funding from the National Cancer Institute (R01 CA178414, SPRINT program) and Lyda Hill Foundation.

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Why Focus on HPV Vaccine Hesitancy?

Provider recommend vaccine
Elicit & address parental concerns

Informed, Motivated Parent/Patient
Prepared, Proactive Provider

Enable Informed Decision-Making
Increase Parent Intention & Motivation
Adolescent HPV Vaccination during visit

Context / Environment:
Community Norms, Social Media

Dube, MacDonald, The Vaccine Book, 2016.
Mechanisms – Why are intervention components effective?

- **Self-persuasion strategy**: directing individuals to generate their own arguments for a health behavior
  
  - Effective and engaging way to deliver personally relevant messages & may also prime parent to discuss vaccine with provider
  
  - Past studies asked participants to write their arguments; can you achieve same intervention effect when participants verbalize arguments in an app?

- **Mechanism**: cognitive processing or choice of argument topic?

**Test self persuasion mechanism with a 2x2 factorial trial design**
Health System:
10 neighborhood pediatric clinics
11 school-based clinics

2009: adopted Epic electronic health record

Participates in Vaccines for Children Program

Patient population:
~14,000 adolescents

Racially/Ethnically Diverse
(60% Hispanic, 30% Black)

84% Medicaid, S-CHIP insurance
Trial of Project Voice App

Task A: Watch Educational Video (4 min)

Randomize

#1: Choice, Verbalize
- Task B: Choose Topics (1 min)
- Task C: Generate Answers to Questions (8 min)
- Task D: Summarize Top 3 Reasons (3 min)
- Task E: Listen to 3 Peer Generated Arguments (3 min)

#2: Choice, Listen
- Task B: Choose Topics (1 min)
- Task C: Generate Answers to Questions (8 min)
- Task D: Summarize Top 3 Reasons (3 min)
- Task E: Listen to 3 Peer Generated Arguments (3 min)

#3: No Choice, Verbalize
- Task C: Generate Answers to Questions (8 min)
- Task D: Summarize Top 3 Reasons (3 min)
- Task E: Listen to 3 Peer Generated Arguments (3 min)

#4: No Choice, Listen
- Task C: Generate Answers to Questions (8 min)
- Task D: Summarize Top 3 Reasons (3 min)
- Task E: Listen to 3 Peer Generated Arguments (3 min)

Task F: Report Vaccination Intentions & Decision Stage (1 min)
Trial of Project Voice App

Task A: Watch Educational Video (4 min)

Report Decision Stage

Randomize

#1: Choice, Verbalize

Task B: Choose Topics (1 min)

Task C: Generate Answers to Questions (8 min)

Task D: Summarize Top 3 Reasons (3 min)

Task E: Listen to 3 Peer Generated Arguments (3 min)

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Task D: Summarize Top 3 Reasons (3 min)

Task E: Listen to 3 Peer Generated Arguments (3 min)

#3: No Choice, Verbalize

#4: No Choice, Listen

#3: No Choice, Verbalize

#4: No Choice, Listen

How can getting the HPV vaccine for your daughter (Dee) be important to her future partner or spouse?
Trial of Project Voice App

- **Task A**: Watch Educational Video (4 min)
- **Report Decision Stage**
  - Randomize

1. **#1**: Choice, Verbalize
   - **Task B**: Choose Topics (1 min)
   - **Task C**: Generate Answers to Questions (8 min)
   - **Task D**: Summarize Top 3 Reasons (3 min)

2. **#2**: Choice, Listen
   - **Task B**: Choose Topics (1 min)
   - **Task C**: Generate Answers to Questions (8 min)
   - **Task D**: Summarize Top 3 Reasons (3 min)

3. **#3**: No Choice, Verbalize
   - **Task E**: Listen to 3 Peer Generated Arguments (3 min)

4. **#4**: No Choice, Listen
   - **Task E**: Listen to 3 Peer Generated Arguments (3 min)

- **Task F**: Report Vaccination Intentions & Decision Stage (1 min)

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I don't know the HPV vaccine has been available for so long and that so many kids have gotten it. It eases my mind to know the vaccine was carefully tested. I am glad there are no serious side effects—no long-term problems. It won't make her start having relations at an early age or affect my daughter's ability to have her own children. This information helps me feel safe about getting her the vaccine.
Assessed for Eligibility – EMR review
All Adolescent Patients
(12/22/16 - 7/26/18)
(N = 5234)
Excluded (n = 3320)
· Child outside age range (n = 470)
· Received 1+ HPV vaccine doses (n = 1279)
· Sibling enrolled (n = 76)
· Primary language not English or Spanish (n = 1)
· Not current patient (no appt 18 mo. after cohort entry/ not a patient in eligible clinics) (n = 1494)

Assessed for Eligibility – Baseline Survey
(N = 1944)
Excluded (n = 1753)
· No contact (n = 844)
· Not interested/Refused (n = 362)
· Decided for or against vaccine (n = 432)
· Incomplete baseline survey (n = 17)
· Did not attend study appointment (n = 98)

Randomized in blocks, stratified by child’s sex
(n = 161)

Allocated in blocks, stratified by child’s sex
(n = 161)

Allocated to #1 Choice, Verbalize
(n = 40)
Allocated to #2 Choice, Listen
(n = 37)
Allocated to #3 No Choice, Verbalize
(n = 46)
Allocated to #4 No Choice, Listen
(n = 38)

Analyzed H1, intention: (n = 40)
Analyzed H2, decision stage (n = 29)
Excluded: decided yes after video (n = 11)

Analyzed H1, intention: (n = 37)
Analyzed H2, decision stage (n = 25)
Excluded: decided yes after video (n = 12)

Analyzed H1, intention: (n = 46)
Analyzed H2, decision stage (n = 28)
Excluded: decided yes after video (n = 18)

Analyzed H1, intention: (n = 38)
Analyzed H2, decision stage (n = 26)
Excluded: decided yes after video (n = 12)
Effect of Self Persuasion App Conditions on HPV Decision Stage

Viewed 4 min Educational video
N = 161
77% Hispanic, 22% Black;
59% male child; 68% public insurance

52 Decided to vaccinate after video
32%

Randomize to Self Persuasion Condition

#1: Choice, Verbalize
10/29 decided
34%
Odds Ratio = 4.3 (1.0, 18.3)

#2: Choice, Listen
6/25 decided
24%

#3: No Choice, Verbalize
10/28 decided
36%
Odds Ratio = 4.2 (1.0, 17.6)

#4: No Choice, Listen
3/26 decided
11%
Multivariable Test of Self Persuasion App Condition on HPV Vaccination Intentions

<table>
<thead>
<tr>
<th>Multivariable Model*</th>
<th>Intention Score N (Mean, SD)</th>
<th>Estimate</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1- Choice, Verbalize</td>
<td>29 (4.25, 0.60)</td>
<td>0.60</td>
<td>0.002</td>
</tr>
<tr>
<td>#2- Choice, Listen</td>
<td>25 (3.92, 0.80)</td>
<td>0.27</td>
<td>0.188</td>
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<tr>
<td>#3- No Choice, Verbalize</td>
<td>28 (4.19, 0.58)</td>
<td>0.51</td>
<td>0.008</td>
</tr>
<tr>
<td>#4- No Choice, Listen</td>
<td>26 (3.54, 0.94)</td>
<td>Ref</td>
<td></td>
</tr>
</tbody>
</table>

* Model controlled for baseline intention score, parent language, child sex, child age group, clinic, and time of recruitment into the trial.

Conclusion: Optimal app version requires parents to verbalize their reasons for getting the HPV vaccine

P = 0.002 if G #1& 3 combined.
Self Persuasion App Effect on Actual Vaccination Behavior?

- **Secondary outcome:** HPV Dose 1 within 6 months of app exposure
- Logistic regression model – not significant
- **Caveat:** Parents were exposed to app during research study appointment (vs. right before teen’s clinic visit); parents were given handout about walk-in immunization hours

When is the best time to distribute app?
Induce concerns about side effects?

The iPad said, “The vaccine doesn’t –” Let's say, it didn’t say those words, they’re my words. The vaccine doesn’t sterilize my son. Just saying. But I said, “Why are they saying that?” So it made me think. Is there a possibility the vaccine could cause that on people?

Trust App?

What they said about the side effects...was too short...they said that it was the same as the measles shot... fever or ... sensation of fainting... So, if that's the case, if what they're saying is true, then, I mean, I would say that solved my problems. Yes – if that's what they say, like what the experts are saying ... I think that there's no problem.

What is the best sequence of interventions to address vaccine hesitancy and build trust?
Next Step: Designing Implementation & Evaluation Plan

Conducted interviews with national & local stakeholders

**Goal:** Reach parents outside of clinical setting, before visit

Create sustainable business model for app distribution
Looking Forward (2.0 version)

- Updated app for multiple platforms (iOS, Android, Web)
- Video available at www.lookingforward.org
- Added action planning & clinic finder
- Enabled reporting of vaccine concerns
- Created marketing materials

The human papillomavirus (HPV) vaccine prevents cancers and genital warts caused by HPV. It is recommended for children aged 9-12. If your child has not already gotten the HPV vaccine, ask about it at today’s visit.

You can learn more about the HPV vaccine by using the Looking Forward app on a clinic tablet or computer today. Your info is completely anonymous.

Get the information you need about the HPV vaccine, and protect your child’s health!

Attention Parents:

To use Looking Forward, pick up a tablet from the front desk.

Your Voice and Thoughts about Your Child & HPV Vaccination

Lyda Hill Foundation
Thank you. Questions?

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