The Role of Cognitive Defense Strategies, Age, and Motivation in Children’s Privacy Protection

Craig Andrews, Marquette University
Kristen Walker, California State University Northridge
Jeremy Kees, Villanova University
Incessant Online Activity

• 95% of teens have access to a smartphone
  • 45% reporting that they are online “almost constantly” (Pew Research Center 2018)

• Children and teens increasing online
  • Youth aged 5-15 spend around 15 hours/week
  • overtaking time spent watching traditional TV (Ofcom 2016)

• Pre-schoolers, aged 3-4, spend 8+ hours/week online
  • Some parents admit they struggle with the allure of screens and are increasingly distracted by their devices (Pew Research Center 2018)
Capturing Children’s Attention?

How do we encourage children to protect their information online?
Research Questions…

• Are children, teens, and parents protecting themselves online?
• Are there ways to empower children and teens regarding their online safety knowledge and behaviors?
• Is it better to have children learn online safety themselves or have parents enforce privacy?
Do children and teens place ‘conditions’ when they exchange information online?

Are they **passive** or **active** in protecting their information?

Can they be motivated to restrict sharing access?
Cognitive Defense Strategies, Age Groups & Motivation

• **Motivation to Restrict Online Information (in general)**

• **Enhancing Ability: Cognitive Defense Strategies to Improve Privacy Knowledge** (Brucks et al. 1988)
  - Educational Video: “Be a Smart Cookie” Video Clip
  - Quiz with Feedback: “Tips for Online Safety”

Accounted for ability differences in 7 item T/F quiz with feedback
Study Framework

Stages of Cognitive Development
- Ages 6-7 limited
- Ages 8-12 cued
- Ages 13-15 strategic

Improving Privacy Knowledge
- Cognitive Defense Strategy VIDEO
- Cognitive Defense Strategy QUIZ
- Cognitive Defense Strategy NONE

Watch YouTube Video

Parent Choice of Video

Motivation to Restrict (Active Privacy Protection)
- Share Video w/restriction
- Share Video w/out restriction

PRIVACYCON
Study Predictions

H1: The quiz (with feedback) cognitive defense strategy should lead to favorable beliefs about online safety, importance for restricting YouTube (YT) video watched, and willingness to restrict sharing access (than the other cognitive defense cue strategies)

H2: Children/teens with a higher motivation to restrict access/sharing (in general) favorable beliefs about online safety, importance for restricting YouTube (YT) video watched, and willingness to restrict sharing access (than those with lower motivation to restrict sharing access in general)

H3: The strategic (years 13-15) age group should have favorable beliefs about online safety, importance for restricting YouTube (YT) video watched, and willingness to restrict sharing access (than limited or cued)
Method

Data Collection
• Expert firm in online surveys and with experience with children/teens (IRB approval)
• Double consent procedure (parents then children/teens) for ages 6-15

3 x 3 between-subjects design
• cognitive defense strategy (none, quiz with feedback, educational video)
• age difference category (limited, cued, strategic)
• high/low motivation to restrict online information (in general) (median split on 3-item, 7-point scale, \( \alpha = .90 \); [18 treatment cond.]

Main Study (after pretests) 513 children/teens
Read Quiz or Watch Video (or none)
Answered questions about online information opinions/beliefs
Watch a video online (parent’s choice)

Key dependent measures
• Online safety beliefs (5-item, 7-point scale \( \alpha = .85 \))
• Importance of restricting YT video watched (single item, 7-point scale)
• Willingness to share YT video watched (single item, 7-point scale)
• (If yes) with whom (single item, 7-point scale)

Manipulation checks, as well as demographic information collected
Effects of Cognitive Defense Strategy on Online Safety Beliefs

Quiz > Video and Control; p < .05

Effects of Cognitive Defense Strategy on Importance of Restricting the YouTube Video

Quiz > Control; p < .05
Online Safety Beliefs & Importance of Restricting YouTube Video Watched

Effects of Age Category on Online Safety Beliefs

13-15 yrs. > 8-12 years old and 6-7 years old; p < .05
### Means (and SDs): Effects of Cognitive Defense Strategy (CDS), Age (A), and Motivation (M) on Online Safety Beliefs and Importance of Restricting YT Video

<table>
<thead>
<tr>
<th></th>
<th>Online Safety Beliefs</th>
<th>Importance Restricting YT Video</th>
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<tbody>
<tr>
<td><strong>Cognitive Defense</strong></td>
<td></td>
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<tr>
<td>Control (a)</td>
<td>5.46 (1.26)&lt;sup&gt;b,c&lt;/sup&gt;</td>
<td>4.93 (1.69)&lt;sup&gt;b,c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ed. Video (b)</td>
<td>5.84 (1.03)&lt;sup&gt;a,c&lt;/sup&gt;</td>
<td>5.52 (1.41)&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Quiz (c)</td>
<td>6.21 (0.94)&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>5.53 (1.51)&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td><strong>Age Category</strong></td>
<td></td>
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<tr>
<td>6-7 yrs. (a)</td>
<td>5.61 (1.23)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.64 (2.16)</td>
</tr>
<tr>
<td>8-12 yrs. (b)</td>
<td>5.75 (1.21)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.68 (2.02)</td>
</tr>
<tr>
<td>13-15 yrs. (c)</td>
<td>6.01 (0.97)&lt;sup&gt;a,b&lt;/sup&gt;</td>
<td>4.90 (2.07)</td>
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<tr>
<td><strong>Motivation</strong></td>
<td></td>
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<tr>
<td>Low (a)</td>
<td>5.31 (1.08)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.30 (1.81)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>High (b)</td>
<td>6.29 (1.02)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.20 (2.24)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
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Note: Comparisons made down column. Significance ($p \leq .05$ or better) for SNK contrasts by predictions.
Decisions Willingness to Share YT Video/to Whom

\( \chi^2 \) and Logistic Regression Results

- Willingness to Share the YT Video watched?
- *If* Willing to Share, is it *with Everyone*?
• $\chi^2(2) = 6.92; p<.05$

• Control > ed. video; [OR] =2.02, p<.05; [95% CI: 1.15-3.55]

• Control > quiz; [OR] = 1.76, p<.05; [95% CI: 1.02-3.08]
Effects of Age Category on Willingness to Share the YouTube Video

- $\chi^2(2) = 4.32; p = .12$
- 8-12 yrs. > 13-15 yrs.; [OR] = 1.72, p<.05; [95% CI: 0.99-2.89]
Effects of Cognitive Defense Strategy on Willingness to Share the YouTube Video with Everyone

- $\chi^2 (2) = 4.16; \ p=.12$
- Quiz > ed. video; $B = .677; \ [OR] = 1.89$, $p<.05; \ [95\% \ CI:1.02-3.49]$
Effects of Age Category on Willingness to Share the YouTube Video with Everyone

- $\chi^2 (2) = 4.32; p=.12$
- 13-15 yrs. > 6-7 yrs.; $B = .647; [\text{OR}] = 1.91$, $p<.05; [95\% \text{ CI}: 1.10-3.31]$
• $\chi^2(1) = 7.52; p<.05$

• High motivation > low motivation; $B = .617; [OR] = 0.54, p<.05; [95\% CI: 0.35-0.77]$
Discussion and Policy Implications

- **Online Safety Beliefs/Knowledge**
  Quiz w/ Feedback; Strategic Age Group (13-15); and those w/ High Motivation to Restrict were best

- **Decisions to Restrict Sharing YT Video**
  Educational Video (72%) and Strategic Age Group (13-15; 72%) were best – but still high

- **If Willing to Share YT Video, is it with Everyone?**
  Of those willing, older youth (13-15; 47%) and more motivated youth (46%) highest: overconfidence of some?

- **If Perceive Parental Restrictions**
  ➤ more positive online safety beliefs, greater importance of restricting YT video. Parents can have an influence!

- **Policy Implications**
  *Nudge* industry/companies, encourage a national privacy campaign
  ~FDA’s The Real Cost
Thank you!