Can Digital Face Morphs Influence Attitudes and Online Behaviors?

EYAL PEER, SONAM SAMAT, AND ALESSANDRO ACQUISTI, SOUPS 2018
Visceral targeting
Increasingly, marketers target consumers with customized offers (targeted advertising) by matching consumers to specific products or services.

However, explicit forms of targeting are perceived as invasive or creepy (McDonald & Cranor, 2010). Consumers may even avoid ads they perceive as intrusive (White et. al., 2008).

But what if individuals' personal information was used in undetectable manners to customize the ad itself, and influence behavior?
Facebook Manipulated User News Feeds To Create Emotional Responses

TWEET THIS

Facebook conducted a massive psychological experiment on 689,003 users, manipulating their news feed to assess the effects on their emotions.

The short version is, Facebook has the ability to make you feel good or bad, just by tweaking your news feed.

How Cambridge Analytica Mined Data for Voter Influence

Why soliciting personal data with misinformation is a big deal.

Pamela B. Rutledge Ph.D., M.B.A.
Positively Media

If we look back on the use of social media analytics in Obama’s elections, we might well ask, how is what the Trump campaign tried to do with the research firm Cambridge Analytica any different? Is this about Cambridge Analytica’s violation of Facebook policy or is this a bigger deal than that?

In January 2013, I wrote about how President Obama effectively used social media in the 2008 and 2012 presidential campaigns, comparing his team’s social media savvy to Kennedy’s ability to use television. Where Kennedy had a lot of innate talents such as charisma and good hair that allowed him to project well across the lens onto the TV screens at home, Obama’s team put social psychology to work using social media. In 2016, Trump’s people turned to data.

The Facebook ads Russians targeted at different groups

By Dan Keating, Kevin Schaal and Leslie Shapiro
Nov. 1, 2017

Between June 2015 and August 2017, millions of Americans were exposed to Facebook ads and posts generated by Russian operatives who sought to influence and exploit divisions in American society on hot-button issues. A report released during the House Intelligence Committee hearing on Russians using Facebook’s advertiser tools, as well as free people in their interests, political leanings, location, age and...
Research Agenda

- **Broad**: Can personal information about individuals be used in a subtle and implicit (visceral) fashion for customized, covert influence?

- **Specific**: Can digital self face morphs influence consumer behavior?
Why would self face morphs work?

- Face morphs: Images digitally created by combining facial pictures of different individuals
  - Self face morphs: morph created with a person’s own face
- Self face morphs are trusted more (DeBruine, 2002)
- Self face morphs seem more attractive (DeBruine, 2004)
- More prosocial towards self-morph than identical twin-morph (Bressan & Zucchi, 2009)
From attitudes... to behaviors

- Familiar people are more persuasive (Bornstein et al., 1987; Weisbuch et al., 2003)
- Perceived trustworthiness increases purchase intentions (Priester & Petty, 2003)
- Perceived attractiveness increases purchase intentions (Snyder & Rothbart, 1971; Horai et al., 1974)

Self face morphs >> Attitudes (e.g. trust)

>> Behaviors (e.g. purchases)
Our Approach

1) Collect **publicly available** facial images (e.g., from online social networks), and

2) Use them in self face morphs to covertly influence attitudes and **behaviors**
Studies

1) Study 1: Can self face morphs impact hiring/service purchase intentions?

2) Study 2: Can self face morphs impact self-disclosure?

3) Study 3: Large-scale replication study

Spoiler Alert: Why did we end up with a replication study?
Experimental Design: Overview

Phase I
• Collected participants’ photos

Stimuli Creation
• Created face morphs

Phase II
• Used face morphs to advertise a product/service, captured multiple DVs
Phase 1 (Studies 1 & 2)

~10K MTurk Ps asked to provide link to FB profile

41% provided links

20% had usable public pictures
Stimuli creation (example)

60%

40%

“What makes grand prix headphones better than any other headphones is the use of ground-breaking technology packed with incredible comfort, giving you the best audio experience ever!”
Study 1: Can self-morphs impact hiring/purchase of services?

- Online experiment with MTurk male participants (N = 188)
- Morphs based on publicly available Facebook photos
- Focus: Choosing and hiring a private music instructor online
- Primary DV: Hiring/service purchase intentions
- Secondary DVs: Other measures traditionally captured in face morph studies (e.g. perceived trustworthiness)
Study 1: Design

- Participants asked to imagine looking to hire an instructor to learn how to play an instrument of their choosing
- Shown two images of private instructors found in online searches
- Instructors reported to have similar experience and rates
- Participants asked to indicate which instructor they would personally choose to hire
- One of the instructors’ images was a self-morph (self photo + randomly selected stock photo), while the other was a morph of two unfamiliar persons (other participant’s photo + randomly selected stock photo)
### Study 1: Results

49% chose to hire the self-morph vs. 51% for the other ($p = 0.84$)

<table>
<thead>
<tr>
<th>DV</th>
<th>Mean (SD)</th>
<th>Other</th>
<th>Self</th>
<th>t</th>
<th>p</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trustworthy</td>
<td></td>
<td>5.07(1)</td>
<td>5.01(1.1)</td>
<td>-0.47</td>
<td>0.64</td>
<td>-0.09</td>
</tr>
<tr>
<td>Attractive</td>
<td></td>
<td>5.44(1)</td>
<td>5.35(1.1)</td>
<td>-0.93</td>
<td>0.36</td>
<td>-0.17</td>
</tr>
<tr>
<td>Knowledgeable</td>
<td></td>
<td>4.32(1.3)</td>
<td>4.55(1.2)</td>
<td>1.74</td>
<td>0.09</td>
<td>0.32</td>
</tr>
<tr>
<td>Like</td>
<td></td>
<td>4.81(1)</td>
<td>4.70(1)</td>
<td>-1.12</td>
<td>0.27</td>
<td>-0.21</td>
</tr>
<tr>
<td>Identify</td>
<td></td>
<td>4.12(1.3)</td>
<td>4.14(1.3)</td>
<td>0.18</td>
<td>0.86</td>
<td>0.03</td>
</tr>
<tr>
<td>Similar</td>
<td></td>
<td>4.28(1.2)</td>
<td>4.19(1.3)</td>
<td>-0.65</td>
<td>0.52</td>
<td>-0.12</td>
</tr>
<tr>
<td>Overall judgments*</td>
<td></td>
<td>4.66 (0.8)</td>
<td>4.67 (0.8)</td>
<td>-0.21</td>
<td>0.83</td>
<td>-0.04</td>
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</tbody>
</table>
Study 2: Can self-morphs impact self-disclosure?

- Online experiment with female MTurk participants (N = 310)
- Morphs based on publicly available Facebook photos
- Focus: Willingness to disclose personal and sensitive information to a therapist presented as self-morph or control morph
- Primary DV: Affirmative Admission Rate (AAR) (John, Acquisti, and Loewenstein 2014)
- Secondary DVs: Other measures traditionally captured in face morph studies (e.g., perceived trustworthiness)
Study 2: Results

No statistically significant differences in AAR between self vs. other conditions  (M = 2.91 vs. 3.08, p = 0.346)

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<tr>
<th>DV</th>
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<th>p</th>
<th>Cohen's d</th>
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<tbody>
<tr>
<td>Trustworthy</td>
<td>5.29(1.1)</td>
<td>5.25(1.2)</td>
<td>0.30</td>
<td>0.76</td>
<td>0.03</td>
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<tr>
<td>Attractive</td>
<td>5.27(1.2)</td>
<td>5.28(1.1)</td>
<td>-0.10</td>
<td>0.92</td>
<td>-0.01</td>
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<tr>
<td>Knowledgeable</td>
<td>4.81(1.2)</td>
<td>4.69(1.1)</td>
<td>0.89</td>
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</tr>
<tr>
<td>Like</td>
<td>5.28(1.2)</td>
<td>5.11(1.1)</td>
<td>1.31</td>
<td>0.19</td>
<td>0.15</td>
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<tr>
<td>Good</td>
<td>5.22(1.2)</td>
<td>5.04(1.3)</td>
<td>1.29</td>
<td>0.20</td>
<td>0.15</td>
</tr>
<tr>
<td>Identify</td>
<td>4.10(1.4)</td>
<td>4.10(1.4)</td>
<td>-0.05</td>
<td>0.96</td>
<td>-0.01</td>
</tr>
<tr>
<td>Similar</td>
<td>4.20(1.3)</td>
<td>4.10(1.4)</td>
<td>0.61</td>
<td>0.54</td>
<td>0.07</td>
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<tr>
<td>Overall judgments*</td>
<td>4.88 (0.9)</td>
<td>4.80 (0.9)</td>
<td>0.77</td>
<td>0.44</td>
<td>0.09</td>
</tr>
</tbody>
</table>
Study 3: Large Scale Replication

- Lab experiment
  - Participants recruited via CBDR experiments list and CMU Data Truck
- Male and female participants (N = 495)
- Morphs based on high quality lab photos
- Focus: Replication (“Study on images”)
- DVs: Perceived trustworthiness (and other measures traditionally captured in morph studies)
Study 3: Results

No statistically significant differences between self vs. other conditions

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<tr>
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<tr>
<td>Trustworthy</td>
<td>4.46 (1.2)</td>
<td>4.59 (1.2)</td>
<td>1.202</td>
<td>0.23</td>
<td>0.11</td>
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<tr>
<td>Attractive</td>
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<td>4.22 (1.4)</td>
<td>0.457</td>
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<td>0.04</td>
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<tr>
<td>Knowledgeable</td>
<td>4.40 (1.0)</td>
<td>4.46 (1)</td>
<td>0.650</td>
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<td>0.06</td>
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<tr>
<td>Like</td>
<td>3.96 (1.2)</td>
<td>4.17 (1.3)</td>
<td>1.972</td>
<td><strong>0.05</strong></td>
<td><strong>0.18</strong></td>
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<tr>
<td>Identify</td>
<td>3.16 (1.4)</td>
<td>3.26 (1.5)</td>
<td>0.804</td>
<td>0.42</td>
<td>0.07</td>
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<tr>
<td>Similar</td>
<td>3.41 (1.5)</td>
<td>3.51 (1.4)</td>
<td>0.835</td>
<td>0.41</td>
<td>0.08</td>
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<tr>
<td>Overall judgments*</td>
<td>3.92 (1.0)</td>
<td>4.03 (1.0)</td>
<td>1.279</td>
<td>0.20</td>
<td>0.12</td>
</tr>
</tbody>
</table>
Why failed replication?

Gender effects?
Quality of images?
Morphing procedure?
Sample size?
Choice of DVs?
Findings (and Implications)

Self face morphs did not seem to affect attitudes or behaviors in our studies

Research implication: Face morphs effects currently reported in the literature may be quite sensitive to experimental conditions, and possibly not robust

Policy implication: Nevertheless, this research attempts to bring a potential form of visceral nudge to the attention of policy makers and the public

Open question: Can the industry, with more resources and stronger incentives, find ways to use these (or other related) forms of visceral influence to secretly affect individuals’ behavior?
Sometimes child abuse is only visible to the child suffering it.

If somebody hurts you, phone us and we’ll help you.
Thank you! Questions?

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