Attitude and Social Distance Effects

Shelby Wilcox\textsuperscript{1}, Richard Huskey\textsuperscript{2}, Dave C. DeAndrea\textsuperscript{3}

\textsuperscript{1}Department of Communication, Michigan State University
\textsuperscript{2}Department of Communication, University California-Davis
\textsuperscript{3}School of Communication, Ohio State University
Twitter: @ShelbyWilcox, @RichardHuskey
Thinking about Message Engagement

Capella et al. (2015) argue that prominent information and virality online are a function of (a) engagement and (b) retransmission

Exposure $\rightarrow$ Engagement $\rightarrow$ Retransmission
Thinking about Message Engagement

Capella et al. (2015) argue that prominent information and virality online are a function of (a) engagement and (b) retransmission.
Increasing E-cigarette Use
Effects of Attitudes on Message Processing

Elaboration Likelihood Model (ELM):
• Motivation and ability affect message processing (Petty & Cacioppo, 1986)
• Pro- or counter-attitudinal content shapes motivation (Petty & Cacioppo, 1986)
Effects of Attitudes on Message Processing

Counter-attitudinal messages

• Result in unfavorable thoughts and message resistance, counterarguing (Clark, Wegener & Fabrigar, 2008)

• Increases processing time and elaboration (Clark, Wegener, & Fabrigar, 2008; Edwards & Smith, 1996)
Effects of Attitudes on Message Processing

H1: Individuals will spend more time processing information from counter-attitudinal messages compared to pro-attitudinal messages
Effects of Attitudes on Message Processing

H2: Individuals will recall more information from counter-attitudinal messages compared to pro-attitudinal messages
Effects of Source on Message Processing

Likability, similarity, and credibility, of source which affect message processing and persuasiveness (Eagly & Chaiken, 1993; Petty, Wegener, & White, 1998)
Effects of Source on Message Processing

Social distance - “a subjective perception or experience of difference from the self to other persons” (Magee & Smith, 2014, pg. 2)

Construal Level Theory (CLT; Trope & Liberman, 2008)
- Suggests we evaluate the world in terms of what we know
- We form mental representations to predict and speculate about the world
Effects of Source on Message Processing

Higher personal relevance = increased motivation to engage with messages = greater message processing

We select and engage with messages from sources we evaluate to be most like us (Song, Cho, & Benefield, 2018)
Effects of Source on Message Processing

H3: Individuals will spend more time processing messages from socially close message senders compared to socially distant message senders
Effects of Source on Message Processing

H4: Individuals will recall more information from socially close message senders compared to socially distant message senders
Interaction effects on Message Processing

Conflicting information between content or sender increases processing motivation (Lim, 2016; Ziegler & Diehl, 2001; Ziegler, Diehl, & Ruther, 2002)

Counter-attitudinal messages from socially distant sources increases discounting, decreases reactance (Maglio, Trope, & Liberman, 2013)
Interaction effects on Message Processing

H5: Processing time will be longest for counter-attitudinal messages from socially close senders and shortest for pro-attitudinal messages from socially close senders.
Interaction effects on Message Processing

H6: Recall will be highest for counter-attitudinal messages from socially close senders and lowest for pro-attitudinal messages from socially close senders
Interaction effects on Message Processing

![Graph showing the relationship between social distance and message processing time/recall. The graph includes two lines: one for Counter and one for Pro, with the Pro line showing an increase in processing time/recall as social distance increases from close to distant.](image-url)
Methods

Pre-test Stimuli
Mturk study

$n = 196$

Messages adapted from CDC/JUUL, matched on lexical complexity, word count

- 5 pro and 5 anti e-cig messages on perceived argument strength
- 5 socially close and 5 distant sources on credibility and likability
# Methods

<table>
<thead>
<tr>
<th>Source</th>
<th>Tweet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pro e-cig</strong></td>
<td>My e-cig means the world to me. It gives me total freedom and lessens feeling embarrassed needing to take so many smoke breaks. I love the sleek design of e-cigs and the latest advances in technology like small pods.</td>
</tr>
<tr>
<td><strong>Distant</strong></td>
<td></td>
</tr>
<tr>
<td>Christopher Peake</td>
<td></td>
</tr>
<tr>
<td>@GoPortland</td>
<td></td>
</tr>
<tr>
<td>2:42 PM - 10 Jan 2019</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>Tweet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anti e-cig</strong></td>
<td>E-cigs are a problem. Some think that e-cigs should be banned. Using them increases the rate that old smokers will become addicted to nicotine for a second time. E-cig users might start using more tobacco products like real cigs.</td>
</tr>
<tr>
<td><strong>Close</strong></td>
<td></td>
</tr>
<tr>
<td>Ryan Manning</td>
<td></td>
</tr>
<tr>
<td>@ChicBeast49</td>
<td></td>
</tr>
<tr>
<td>5:22 PM - 10 Jan 2019</td>
<td></td>
</tr>
</tbody>
</table>
Methods

Main experiment
Online SONA pool study
\( n = 159 \)

Design:
2 (pro vs counter) x 2 (close vs distant) repeated measures

DV's:
Processing time (time spent on page in ms)
Covariate non-health messages for baseline response time (ms)
Behavioral recall measures (A' and B”)
• A’ = how well participants distinguish between targets and foils
• B” = threshold for participants to indicate they remember the information
Methods

Processing time
Recorded on Qualtrics

Time on page collected in milliseconds from when page loaded to when participants pressed the space bar

Before each message, participants were reminded to “Read the tweet completely” and “Press the spacebar to move on”
Methods

Signal Detection Task

Participants viewed 32 10-word segment message clips,
• 16 messages from study (targets)
• 16 messages from messages not shown (foils)

8 seconds to read 10-word segment clip and respond

Using both e-cigs and regular cigs is common among youth

Yes (I have seen this before)  No (I have not seen this before)
Methods

Procedure:
1. View non-health messages for baseline response times
2. View 1 health message at a time
   • Complete counterargument scale in between each message
   • Report perceived social distance
3. Signal detection task (see below example)

Using both e-cigs and regular cigs is common among youth

Yes (I have seen this before)  No (I have not seen this before)

4. Report e-cig habits
Predicted Interaction

![Graph showing predicted interaction with social distance]

- Processing time/recall
- Close vs. Distant
- Counter vs. Pro
Results

Processing Times for Messages by Attitude and Social Distance

<table>
<thead>
<tr>
<th>Measures</th>
<th>Low distance, Pro-attitudinal</th>
<th>Low distance, Counter-attitudinal</th>
<th>High distance, Pro-attitudinal</th>
<th>High distance, Counter-attitudinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response time (sec)</td>
<td>9.507 (3.228)</td>
<td>9.274 (3.200)</td>
<td>9.771 (4.048)</td>
<td>8.854 (3.702)</td>
</tr>
</tbody>
</table>
Results

Attitudes affected processing time**: $F(1, 157) = 10.190$, Wilks’ $\lambda = .939$, $p = 0.002$

*H1: spend more time processing information from counter-attitudinal messages (reject)*

Distance did not affect processing time: $F(1, 157) = 0.219$, Wilks’ $\lambda = .999$, $p = 0.64$

*H3: spend more time processing messages from socially close message senders (reject)*

Significant interaction*: $F(1, 157) = 4.067$, Wilks’ $\lambda = .975$, $p = 0.045$

*H5: Processing time will be longest for counter-attitudinal messages from socially close senders and shortest for pro-attitudinal messages (reject)*

*significant at .05 level, **significant at .01 level
Results

A' for Messages by Attitude and Social Distance

<table>
<thead>
<tr>
<th>Measures</th>
<th>Low distance, Pro-attitudinal</th>
<th>Low distance, Counter-attitudinal</th>
<th>High distance, Pro-attitudinal</th>
<th>High distance, Counter-attitudinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>A'</td>
<td>0.775 (.203)</td>
<td>0.775 (.211)</td>
<td>0.746 (.207)</td>
<td>0.722 (.224)</td>
</tr>
</tbody>
</table>
Results

**Attitudes did not affect A’**: $F(1,157) = 0.877$, Wilks’ $\lambda = .994$, $p = 0.350$

**H2: Recall more information from counter-attitudinal messages (reject)**

**Distance affected A’ *****: $F(1,157) = 15.418$, Wilks’ $\lambda = .991$, $p < 0.001$

**H4: Recall more information from socially close message senders (support)**

**No significant interaction**: $F(1,157) = 0.947$, Wilks’ $\lambda = .994$, $p = 0.332$

**H6: Recall will be highest for counter-attitudinal messages from socially close senders and lowest for pro-attitudinal messages from socially close senders (reject)**

***significant at .001 level
Results

B'' for Messages by Attitude and Social Distance

<table>
<thead>
<tr>
<th>Measures</th>
<th>Low distance, Pro-attitudinal</th>
<th>Low distance, Counter-attitudinal</th>
<th>High distance, Pro-attitudinal</th>
<th>High distance, Counter-attitudinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>B''</td>
<td>-0.366 (.619)</td>
<td>-0.346 (.617)</td>
<td>-0.217 (.583)</td>
<td>-0.178 (.570)</td>
</tr>
</tbody>
</table>

Error bars: +/- 2 SE
Results

Attitudes did not affect B’’: \( F(1, 157) = 0.574, \) Wilks’ \( \lambda = 0.994, p = 0.450 \)

H2: Recall more information from counter-attitudinal messages (reject)

Distance affected B’’’***: \( F(1, 157) = 16.371, \) Wilks’ \( \lambda = 0.906, p < 0.001 \)

H4: Recall more information from socially close message senders (support)

No significant interaction: \( F(1, 157) = 0.057, \) Wilks’ \( \lambda = 1.00, p = 0.812 \)

H6: Recall will be highest for counter-attitudinal messages from socially close senders and lowest for pro-attitudinal messages from socially close senders (reject)

***significant at .001 level
Discussion

Attitudes *weakly* affect processing time from close source
BUT attitudes *strongly* affect processing time from distant source

Attitudes become *more motivationally relevant* when the
source becomes *less motivationally relevant* during message
processing
Discussion

Different from previous findings showing that processing time is higher for counter-attitudinal

• participant’s attitudes towards e-cigarettes were not particularly salient

• we include e-cig users and non e-cig users

• we use non-threatening messages
Discussion

Individuals recalled more from socially close sources compared to socially distant sources

• better at discriminating between new information from old information (A’)
• lower threshold for recalling old information (B”)
Implications

Theoretical:
Counterarguing and processing time are different indicators of motivation

Social closeness of source biases our message processing from source characteristics
• Attitudes are more motivationally relevant in the absence of social distance cues
Implications

Practical:

Health campaigns may benefit from creating accounts that appear similar to the target audience

• We place more importance on socially close others and discount the important of socially distant sources

• Social closeness of source biases our message processing from source characteristics
Looking at Engagement

Exposure → Engagement → Retransmission

Investigating measures of engagement will help us understand what information is more likely to spread, and what information is more likely to affect behavior.
Thank you!

Check out more on OSF: https://osf.io/84dhx/?view_only=369df030060348fa9e358d22f2e0fac8
Slide Appendix
Participants

Main study

– 260 recruited, 40 removed for failure to complete
– n=172 non-smokers, n=48 smokers
– Additional 61 participants removed for processing time analyses, due to failure to collect baseline response times

• E-cig users classified by e-cig use in past 30 days
Non-health stimuli for covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>Tweet</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Brutus Buckeye" /></td>
<td>The trials of yesterday are behind you. A new school day is here. With it come chances. Chances for success, love, and choices. Inspiration is everywhere you look. The chance to be better than you were yesterday is right now.</td>
</tr>
</tbody>
</table>

Matched to health messages based on lexical complexity and word count
Counterarguing measure

1. Did you criticize the message you just saw while you were viewing it?
2. Did you think of points that went against what was being said while you were viewing the message?
3. While viewing the message, were you skeptical of what was being said?”

Response options range from 1 = No, not at all to 5 = Yes, very much (Silvia, 2006)
Social distance measure

Similarity and interpersonal closeness measure (Livitan, Trope, & Liberman, 2008)

1. How similar the message sender was to themselves
2. How close they felt to the message sender with

Response options being “1 - not at all” to “9 - very much”
### Counterarguing Manipulation Check Output

#### Descriptive Statistics

<table>
<thead>
<tr>
<th>does participant use ecig?</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>3.3566</td>
<td>1.04579</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 1, for pro ecig use, high distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>2.4884</td>
<td>1.03756</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 2, anti ecig use, low distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>2.7190</td>
<td>1.07809</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 3, anti ecig use, high distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>3.6667</td>
<td>.97333</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 4, for pro ecig use, low distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>3.3314</td>
<td>1.09134</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 5, pro ecig use, high distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>2.0455</td>
<td>.98660</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 6, anti ecig use, low distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>1.9864</td>
<td>.98154</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 7, anti ecig use, high distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>3.4690</td>
<td>1.07591</td>
</tr>
<tr>
<td>counterarguing scale for stimuli 8, for pro ecig use, low distance</td>
<td>172</td>
<td>1.00</td>
<td>5.00</td>
<td>3.4690</td>
<td>1.07591</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>172</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Non e-cig user =0, E-cig user =1**
### Counterarguing Manipulation Check Output

#### ONEWAY

<table>
<thead>
<tr>
<th>counterarg_1</th>
<th>counterarg_2</th>
<th>counterarg_3</th>
<th>counterarg_4</th>
<th>counterarg_5</th>
<th>counterarg_6</th>
<th>counterarg_7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### /MISSING ANALYSIS

<table>
<thead>
<tr>
<th>counterarguing scale for stimuli 1, for pro ecig use, high distance</th>
<th>Between Groups</th>
<th>6.591</th>
<th>1</th>
<th>6.591</th>
<th>5.986</th>
<th>.015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within Groups</td>
<td>240.053</td>
<td>218</td>
<td>1.101</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>246.644</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 2, anti ecig use, low distance</td>
<td>Between Groups</td>
<td>7.109</td>
<td>1</td>
<td>7.109</td>
<td>6.663</td>
<td>.010</td>
</tr>
<tr>
<td>Within Groups</td>
<td>232.586</td>
<td>218</td>
<td>1.067</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>239.694</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 3, anti ecig use, high distance</td>
<td>Between Groups</td>
<td>6.617</td>
<td>1</td>
<td>6.617</td>
<td>5.805</td>
<td>.017</td>
</tr>
<tr>
<td>Within Groups</td>
<td>248.492</td>
<td>218</td>
<td>1.140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>255.109</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 4, for pro ecig use, low distance</td>
<td>Between Groups</td>
<td>5.084</td>
<td>1</td>
<td>5.084</td>
<td>5.540</td>
<td>.019</td>
</tr>
<tr>
<td>Within Groups</td>
<td>200.053</td>
<td>218</td>
<td>.918</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>205.137</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 5, pro ecig use, high distance</td>
<td>Between Groups</td>
<td>22.589</td>
<td>1</td>
<td>22.589</td>
<td>20.752</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>237.296</td>
<td>218</td>
<td>1.089</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>259.884</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 6, anti ecig use, low distance</td>
<td>Between Groups</td>
<td>20.504</td>
<td>1</td>
<td>20.504</td>
<td>20.877</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>214.113</td>
<td>218</td>
<td>.982</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>234.618</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 7, anti ecig use, high distance</td>
<td>Between Groups</td>
<td>15.975</td>
<td>1</td>
<td>15.975</td>
<td>16.220</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>214.709</td>
<td>218</td>
<td>.985</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>230.684</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>counter arguing scale for stimuli 8, for pro ecig use, low distance</td>
<td>Between Groups</td>
<td>5.784</td>
<td>1</td>
<td>5.784</td>
<td>5.039</td>
<td>.026</td>
</tr>
<tr>
<td>Within Groups</td>
<td>250.221</td>
<td>218</td>
<td>1.148</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>256.006</td>
<td>219</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>