E-Mail and Body Language Predict Risk-taking Attitude

Jiachen Sun\textsuperscript{1,2}

1. MIT Center for Collective Intelligence, MA, USA
2. Sun Yat-sen University, Guangdong, China

jiachen@mit.edu.cn
it is of huge importance for society to investigate what triggers such risky behavior.
To what extent can one’s behavior/language reveal his/her attitude of risk taking?
Framework of Risk-taking Attitude

DOSPERT TEST (Weber, 2002)

Social Network (through Email Archives)
- Structure measure
- Tribe features
- Emotionality
- FFI test

Body-Signals (through Happimter)
- Body movement
- Physiology
- Mood state

Risk-taking attitude
- Financial
- Ethical
- Health
- Social
- Recreation

Risk-Taking Prediction
MIT-Presentation
E-mail communication network analysis

- **SNA** (social network analysis)
  - Content Analysis
  - **NEO FFI model**
  - **Structure metric**
    - Position
    - Contribution *(Peter, 2018)*
    - Dynamic *(Peter, 2018)*
  - **Sentiment analysis**
  - **Tribefinder**
  - **Emotion**
    - Happy
    - Sad
    - Fear
    - Anger
  - **Tribe feature** *(Peter, 2018)*
    - Alternative Realities
    - Personality
    - Recreation
    - Ideology
    - Lifestyle
  - **Personality characteristic**
    - Extraversion
    - Openness
    - Agreeableness
    - Conscientiousness
    - Neuroticism

Risk-Taking Prediction
Correlation between Risk-taking Attitude among 5 Domains

(a) Risk-taking
   (original score from DOPSERT test)

- Financial
- Ethical
- Recreational
- Health
- Social

(b) Risk-awareness
   (difference between risk-taking and risk-perception)

- Financial
- Ethical
- Recreational
- Health
- Social

Ethical and social risk-awareness are negatively correlated!

* p<0.1  ** p<0.05  *** p<0.001
## Prediction Results (selected)

### (Case I) Email Network Analysis

<table>
<thead>
<tr>
<th>Independent var.</th>
<th>Predictors</th>
<th>Adj. R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation-taking</td>
<td>Contribution index (-4.66***), Alert ART (-0.09***), <em>Alternative Realities</em>-tree huggers (7.40***),</td>
<td>0.83</td>
</tr>
<tr>
<td>Ethical-taking</td>
<td><em>Lifestyle-Yolo</em> (-7.33**), <em>Personality</em>-journalist (17.72***),</td>
<td>0.55</td>
</tr>
<tr>
<td>Recreation-awareness</td>
<td>Reach-2 (-0.03***), <em>Personality</em>-politician (-14.54***), <em>Ideology</em>-liberalism (15.46**),</td>
<td>0.92</td>
</tr>
</tbody>
</table>

### (Case II) Body Signal Analysis

<table>
<thead>
<tr>
<th>Independent var.</th>
<th>Predictors</th>
<th>Adj. R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial-awareness</td>
<td>Acceleration std. (-2.86**), pleasant (-5.32**)</td>
<td>0.77</td>
</tr>
<tr>
<td>Recreation-taking</td>
<td>Heartrate std. (-0.64**)</td>
<td>0.55</td>
</tr>
<tr>
<td>Recreation-awareness</td>
<td>Heartrate std. (-1.23***)</td>
<td>0.57</td>
</tr>
<tr>
<td>Social-taking</td>
<td>Acceleration std. (-0.61*)</td>
<td>0.59</td>
</tr>
</tbody>
</table>
Significant Predictor

- **Tribe Features**
  - **lifestyle-Yolo**
  - **lifestyle-sedentary**
  - **recreation-arts**
  - **personality-politician**
  - **personality-journalist**
  - **ideology-liberalism**
  - **ideology-complainer**
  - **alternative-realities**
  - **alternative-realities-spiritualism**

- **Emotionality**
  - **average emotionality**
  - **emotion-happy**
  - **emotion-fear**
  - **emotion-sad**

- **Risk-taking**
  - **General**
  - **Ethical**
  - **Financial**
  - **Health**
  - **Recreational**
  - **Social**

- **Risk-awareness**
  - **General**
  - **Ethical**
  - **Financial**
  - **Health**
  - **Recreational**
  - **Social**

- **Network Structure**
  - degree centrality
  - contribution index
  - oscillation
  - betweenness
  - oscillation
  - reach
  - alter

- **FFI Personality**
  - FFI-extraversion
  - FFI-consentement
  - FFI-openness

- **Body Sensors**
  - varmag
  - avgacc-x
  - avgacc-y
  - varsgcy
  - varmag-2
  - pleasant
Conclusion

• Reveal the relationship between individuals’ attitude toward risk over several domains and ‘honest signals’ extracted from E-Mail and body sensors.

• Provide evidence that how people interact with each other and how they express themselves in daily life can be strong predictors of their attitude toward risk-taking.

Limitation

• A small number of participants (N ~ 20)

• The risk-preference is merely measured through self-reported questionnaires
  • Consider gaming tasks (e.g. ultimatum game)