Do positive emotions lead to ‘lazy thinking’ in an emergency?: A study of the triple disasters in Japan

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Outline

- Background
- Our study
  - Data collection
  - Data Analysis
  - Discussion
  - Conclusion
The triple disasters in Japan (2011) [Earthquake]
The triple disasters in Japan (2011) [Tsunami]
The triple disasters in Japan (2011) [Fukushima Nuclear accident]
Casualties
(National Police Agency, November 10, 2015)

- 18,460 people
  (who died or are missing)
Massive Tsunami: How people behaved at the time (NHK, 2013)

• **Context**
  • Miyagi Pref. (Yuriage town)
  • 2:46 pm – Earthquake
  • 3:55 pm – Tsunami

• **Study**
  • Survivors (n=600) interviewed
  • 700 out of 5600 residents failed to escape.
Map of the distribution of casualties (NHK, 2013)

- Blue-household with no casualty
- Yellow-household with some casualties
- Red-household with no survivors
Map of people’s behaviour in Yuriage (NHK, 2013)
## The Role of Emotions (Fredrickson, 2001)

<table>
<thead>
<tr>
<th>People with</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>positive emotions</strong></td>
<td><strong>negative emotions</strong></td>
</tr>
<tr>
<td>are more likely to look for</td>
<td>are more likely to narrow</td>
</tr>
<tr>
<td>opportunities and</td>
<td>their focus to the potential threat</td>
</tr>
<tr>
<td>to try new experiences</td>
<td>have a restricted sense of options</td>
</tr>
<tr>
<td>have a broader sense of options</td>
<td>have a restricted sense of options</td>
</tr>
</tbody>
</table>
Negative Aspects of Positive Emotions
(Aspinwall, 1998; Forgeard & Seligman, 2012; Norem & Chang, 2002)

- Positive emotions can make people lazy thinkers, unaware of potentially useful negative information.

- People with positive emotions can:
  - fail to take a precautionary approach
  - underestimate risks
  - overestimate their likelihood of achieving desired outcomes.
Rationale

Few studies on the relationship between people’s emotions and:

• the number of options they came up with when they faced the triple disasters in Japan.

• their decision-making to stay or evacuate their area during the disasters.
Research Questions

• To what extent did the participants’ emotions lead to ‘lazy thinking’ in terms of the number of options they had in mind during the triple disasters in Japan?

• To what extent did their emotions predict their decision to stay or evacuate?
Instrument

- On-line Questionnaire
  - Positive & Negative Emotions (10 items each)
  - Options
  - Decision to stay or evacuate
  - Demographic data
On-line survey (using Questant)

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

e.g.

1. I thought that I would be safe without evacuating.
2. I thought that the damage from the disasters would spread to my area.
Options (20 in total)

e.g.

- Stay at my own house no matter what happens.
- Observe the behaviour of other people around me and decide whether to evacuate.
- Evacuate on my own, if necessary.
- Evacuate as a whole family.
- Evacuate within my prefecture.
- Evacuate outside my prefecture.
Participants (Gender)

- Male: 90 (28%)
- Female: 232 (72%)
Participants (Age)

- 136 (42.2%)
- 63 (19.6%)
- 25 (7.8%)
- 72 (22.4%)
- 22 (6.8%)
- 4 (1.2%)

n size

- 20s
- 30s
- 40s
- 50s
- 60s
- 70s and over
Reliability (Items for emotions)

- Positive emotions ($\alpha = .916$)
- Negative emotions ($\alpha = .877$)
## Factor analysis

<table>
<thead>
<tr>
<th>Factor Correlation Matrix</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>Positive emotions</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distrust towards authority</td>
<td></td>
<td>-.52</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>A sense of crisis</td>
<td></td>
<td>.36</td>
<td>.37</td>
<td>1.00</td>
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<tr>
<td>Anxiety</td>
<td></td>
<td>-.24</td>
<td>.11</td>
<td>.17</td>
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</tbody>
</table>
Linear regression

Coefficient (β) = -3.3
$R^2 = .34$, $F(1, 320) = 161.06$, $p < .001$
Decision to Stay or Evacuate

278 (86.3%)

44 (13.7%)

Behaviour

- Stayed
- Evacuated
**Logistic regression**

Coefficient ($\beta$) = 1.9  
Omnibus chi-square = 34.12, df = 4, $p < .0005$

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig</th>
<th>Exp (B)</th>
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<tbody>
<tr>
<td>Positive emotions</td>
<td>1.592</td>
<td>.364</td>
<td>19.140</td>
<td>1</td>
<td>.000</td>
<td>4.915</td>
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<tr>
<td>Distrust towards authority</td>
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<td>.262</td>
<td>.023</td>
<td>1</td>
<td>.880</td>
<td>.961</td>
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<tr>
<td>A sense of crisis</td>
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<td>.361</td>
<td>0.13</td>
<td>1</td>
<td>.909</td>
<td>.960</td>
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<tr>
<td>Anxiety</td>
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<td>.168</td>
<td>.049</td>
<td>1</td>
<td>.826</td>
<td>1.038</td>
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<tr>
<td>Constant</td>
<td>-1.014</td>
<td>.679</td>
<td>2.231</td>
<td>1</td>
<td>.135</td>
<td>.363</td>
</tr>
</tbody>
</table>
Discussion (Research Question 1)

To what extent did the participants’ emotions lead to ‘lazy thinking’ in terms of the number of options they had in mind during the triple disasters in Japan?

• People who felt positive about their situation during the disasters were less likely to seek alternative options. The opposite is true for those felt negative about their situation.

• Positive emotions were more likely to lead to ‘lazy thinking’ during the disasters.
Discussion (Research Question 2)

To what extent did their emotions predict their decision to stay or evacuate?

• People with positive emotions were more likely to have stayed.

• People with negative emotions did not necessarily evacuate just because they felt anxious, worried, or doubtful of authority.
Conclusion

• Positive emotions can lead to ‘lazy thinking’

• Positive emotions – a negative effect by preventing people from taking a precautionary approach

• Negative emotions – a positive effect by helping people find various ways to protect themselves from potential risks

• The impact of positive and negative emotions on people’s thinking and behaviour may vary depending on situations (emergencies vs non-emergencies)