

Psychological factors in rumor propagation after the Great East Japan Earthquake

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Sendai, March 17, 2015

Summary of Rumor Psychology

❖ Prasad (1935) in *British Journal of Psychology*

- found that in the past 1,000 years the same types of rumors related to earthquakes appear again and again in different locations.

❖ Rumor studies have revealed psychological factors that affect rumor spreading behavior

- Anxiety, Accuracy, Importance (Anthony, 1973; DiFonzo & Bordia, 2000; Rosnow, 1991; Walker & Beckele, 1987)

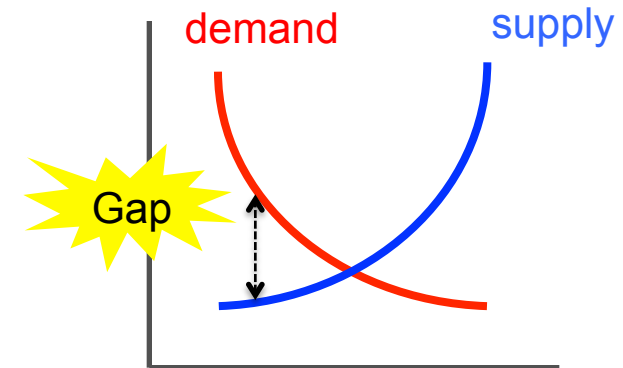
❖ Nevertheless, false rumors still circulate

- 2008: Sichuan earthquake – the Internet (Sun, Jin, & Gao, 2009)
- 2010: Haiti and Chile earthquakes – social media (Mendora & Poblete, 2010; Oh, Kwon, & Rao, 2010)
- 2011: Great East Japan Earthquake

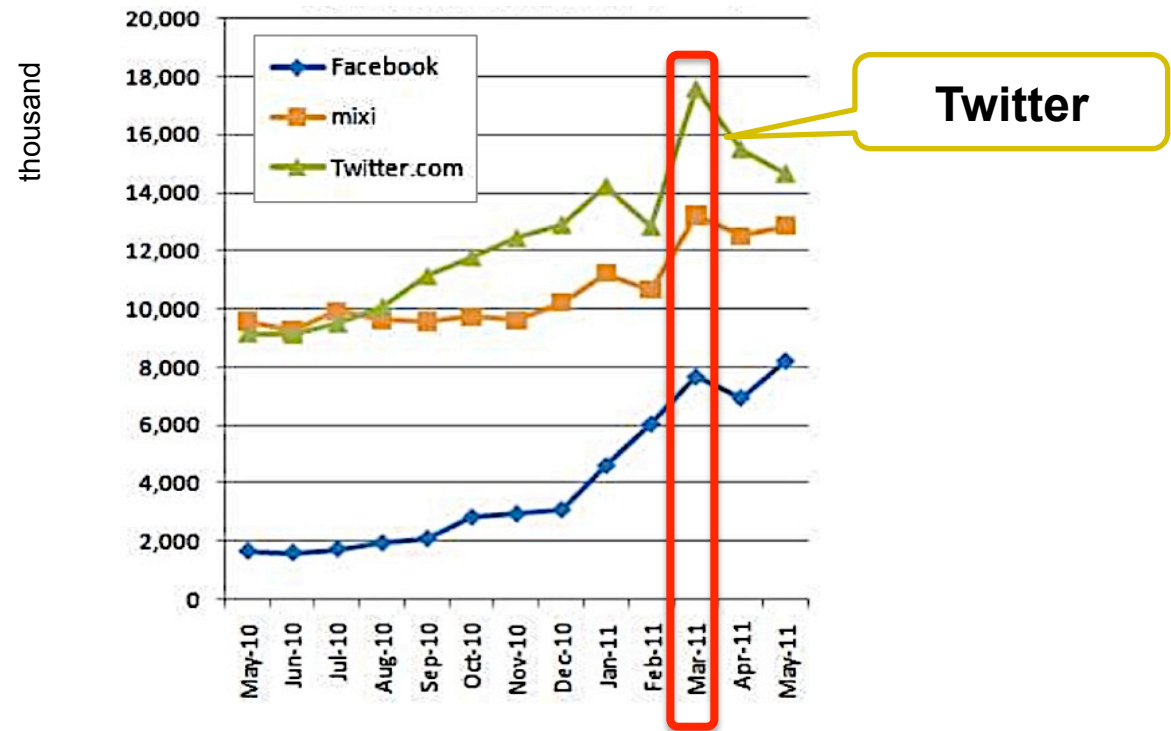
Mechanism of Rumor Occurrence

❖ Mikami (1986)

- Rumors occur and spread, because people try to interpret ambiguous situations in an emergent situation
- When an earthquake occurs...
 - shaking is perceived
 - peacetime definition of “situation” collapses
 - ambiguous situations occur
 - additional info is sought to understand the situation
- Information shortages creates a gap between supply and demand
- Rumors occur to fill the gap



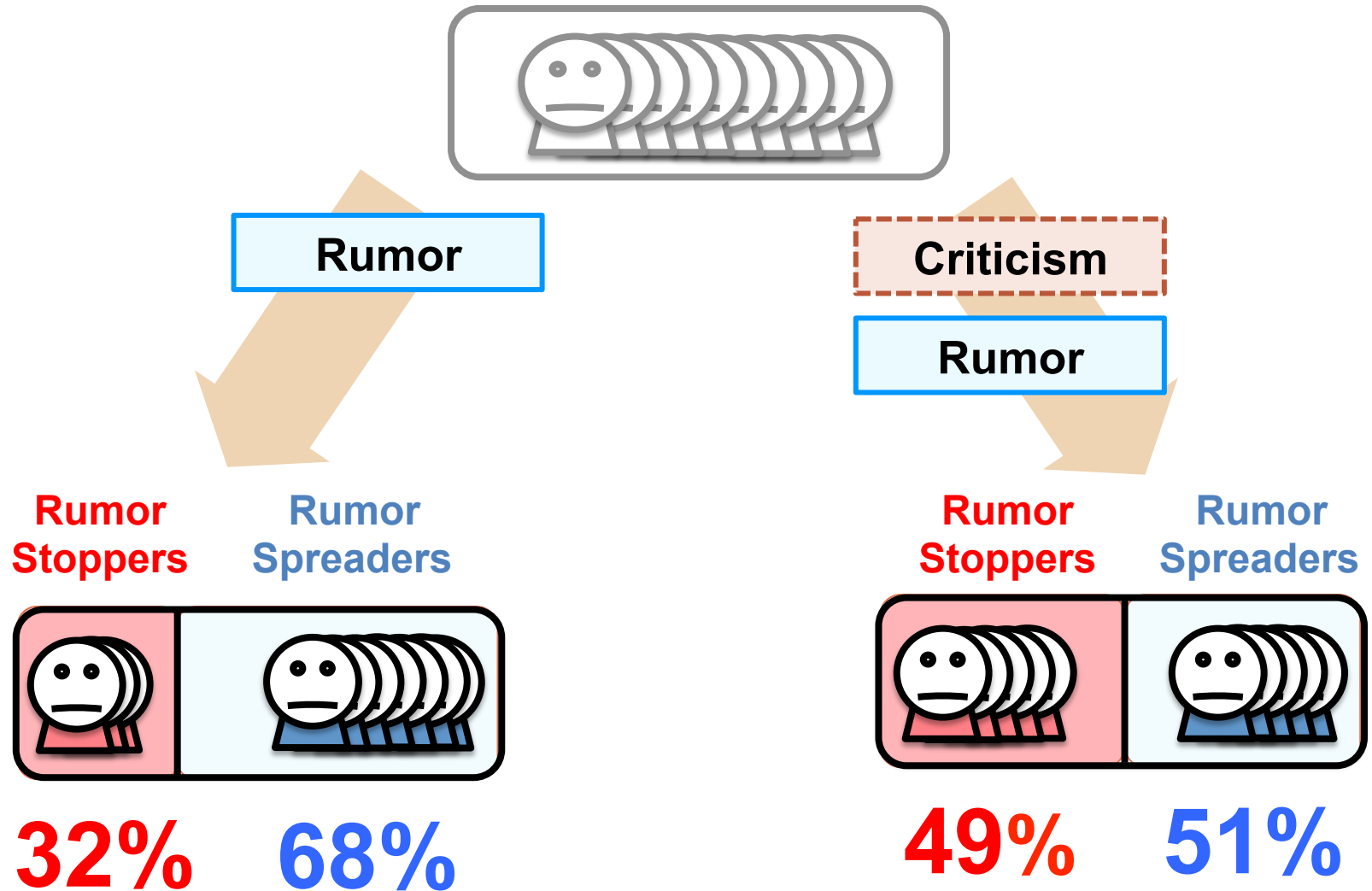
Problems Caused by Social Media



The number of social media users in Japan
(http://www.netratings.co.jp/nielsen_wire/jp/2011/06/28/sns_201105.pdf)

- ❖ The number of social media users increased after the earthquake.
 - Social media played an important role in sharing information and coordinating disaster response.

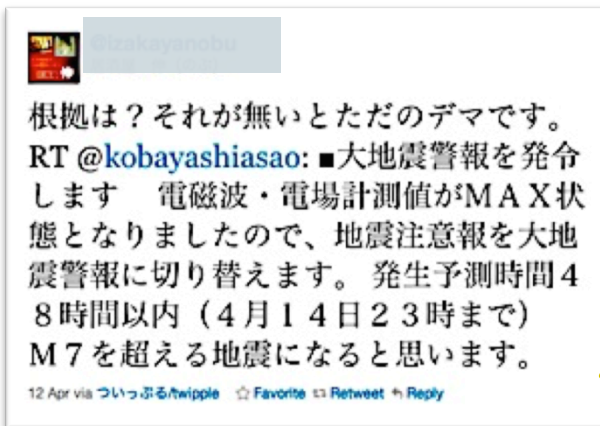
Order matters...



Tanaka, Y., Sakamoto, Y., & Matsuka, T. (2013). Toward a Social-Technological System that Inactivates False Rumors through the Critical Thinking of Crowds. In Proceedings of the 46th Hawaii International Conference on System Sciences, IEEE, pp. 649–658.

Critical Thinking of Crowds

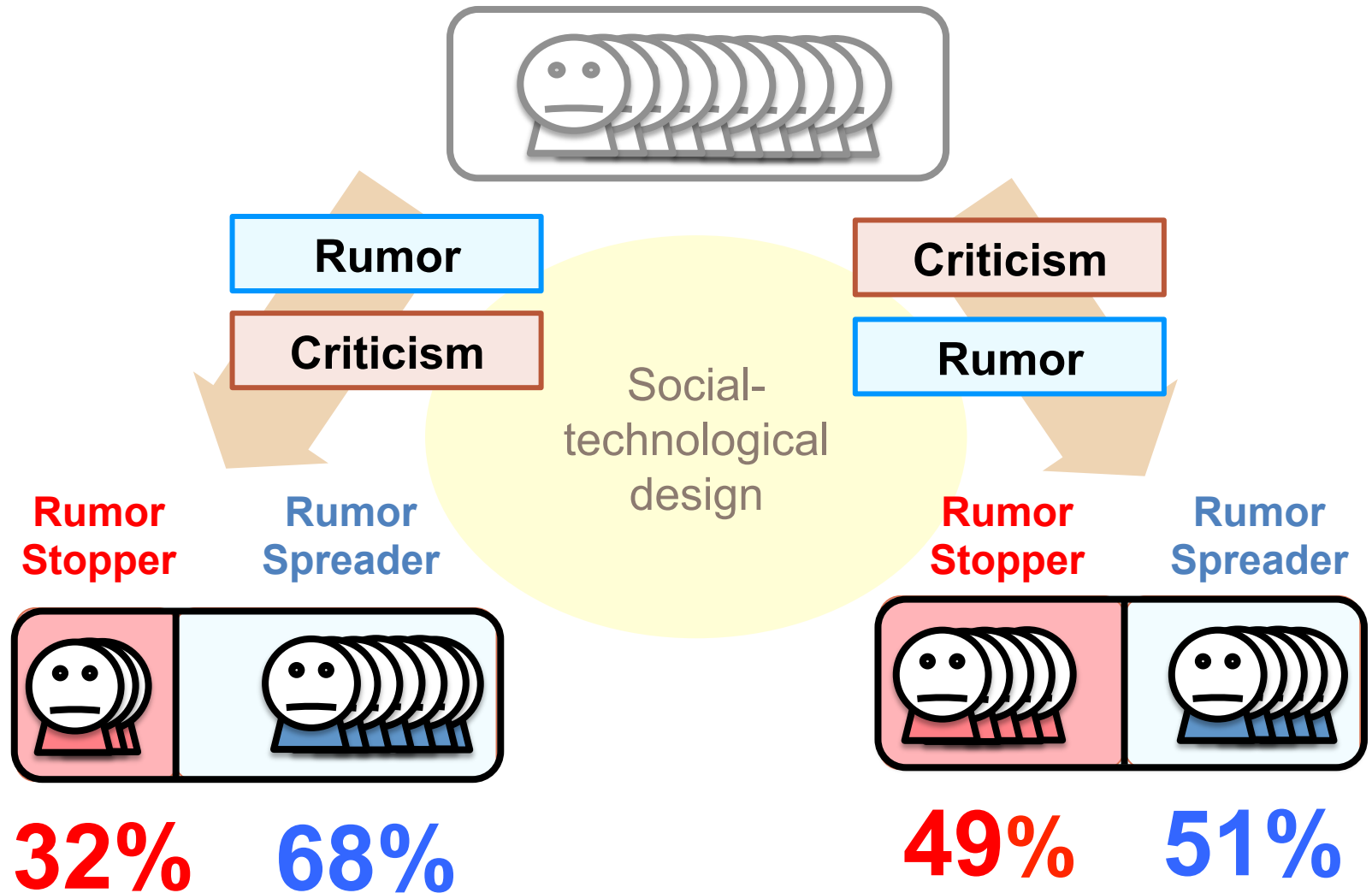
- ❖ Many people tried to stop the spread of false rumors by criticizing the rumor tweets.
 - Not only the government officials and experts but also many laypeople posted criticism tweets.



Where is the evidence? Without it, this tweet is just a rumor.

RT@kobayashiasao: A big earthquake warning has been announced. The earthquake will hit within 48 hours. It will be over M7.

Order matters...



Exposure to criticisms increased the proportion of rumor-stopping responses

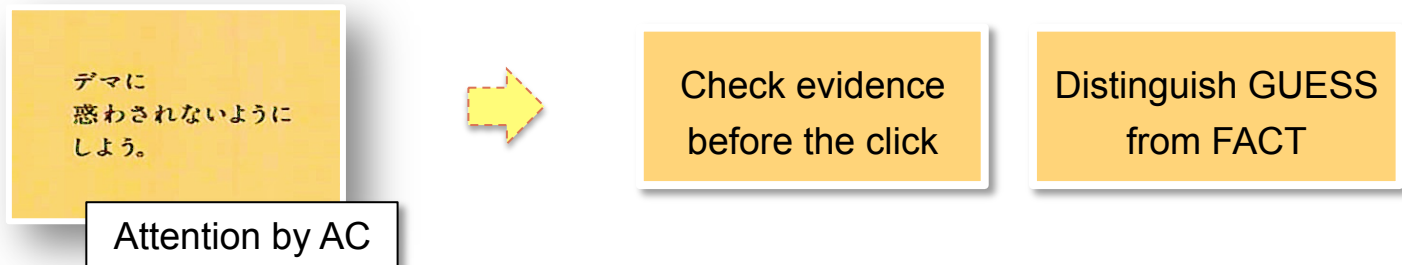
Practical Implication

❖ *Rumor will never disappear...*

- To understand ambiguous situations
- Rumors look accurate, important, and rise anxiety

❖ *However, we can minimize the negative impacts...*

- Design a social-technological environment has the potential to inactivate false information.
 - Exposure to criticisms increased the proportion of rumor-stopping responses
- Design attentions based on understanding psychological reasons.



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