

Enhancing Privacy through the Visual Design of Privacy Notices: Exploring the Interplay of Curiosity, Control and Affect

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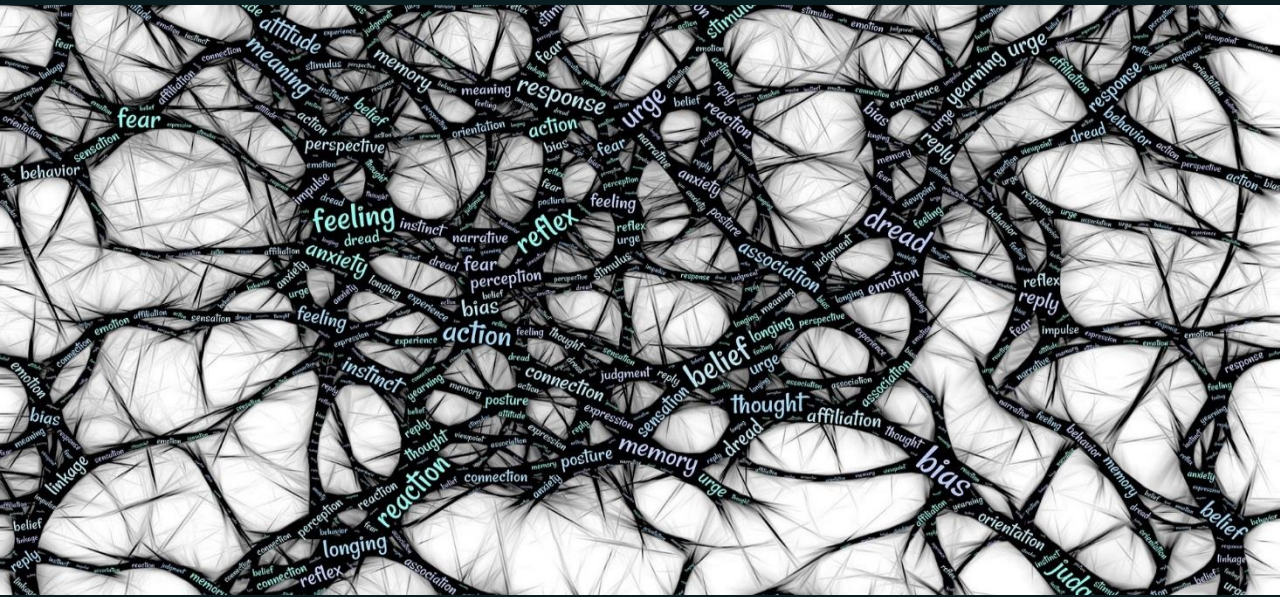
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Problem

Privacy Notice

- Must be acknowledged
- Provide no choice
- Difficult to understand
- Lengthy



People & Decisions

- Behavioral outcomes influenced by many factors (e.g., individual characteristics, privacy concerns, beliefs; external factors – exposure to stimuli)

Research questions

About visual design (framing and control) and its influence on:

- a) Affective state (positive vs negative)
- b) Privacy comprehension
- c) Intention to disclose information

About psychological factors:

- a) Curiosity and its effect on comprehension
- b) Affective state and its role in the attitude-behavior relationship

Method

- Online experiment with 620 participants
- Between-subject design
 - Independent variables:
 - Manipulated: framing, control; Curiosity.
 - Dependent variables:
 - Affect (valence), disclosure, comprehension
 - Covariates
 - Concerns, trust, time spent on the policy page

Positive framing, no control

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Negative framing, control

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- Statistical analysis
 - Univariate analysis of covariance (comprehension)
 - Multivariate analysis of covariance (disclosure and valence)
 - Mediation & moderated mediation (the role of affect on the relationship between trust, concerns and disclosure)

Results: visual design

Control

- **Valence** significantly differed between control groups, $F(1, 608)=5.8, p=.01, \eta_p^2<.01$
- **Interaction effect:** valence higher among participants provided control and scoring higher in curiosity, $F(1, 608)=7.2, p<.01, \eta_p^2<.01$
- Ability to change settings increases **comprehension**, $F(1, 306)=11.1, p<.01, \eta_p^2=.02$
- Ability to change settings influences **intention to disclose**, $F(1, 306)=12.7, p<.01, \eta_p^2=.04$

- Framing did not affect participants
- Time is important! (largest effect size)

Results: psychological factors

- **Curiosity** has a significant influence on privacy comprehension, $F(1, 608)=8.5, p<0.01, \eta_p^2=.01$
- Significant role of **covariates**: privacy concerns, trust implying that stable factors are better predictors of behavioral outcomes

Moderated-mediation:

- **Privacy concerns** mediate the relationship between trust and information disclosure, $b=.97, t(618)=8.06, p<0.01, CI[.06, .20]$
- **Valence** moderates the relationship between trust and concerns (scores on valence lower than 2.71 result in more negative relationship between trust and concerns)

Summary

We learned that:

- **Affording control** perceived positively – potential for usability
- **Valence** moderates attitudes – affecting disclosure
- **Privacy UIs: enhance curiosity and extend engagement time** to improve comprehension

Limitations & Future work

- Effect sizes
- Use methods different than self-reports to measure affect (e.g., EEG)
- Test different contexts



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Thank you



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