



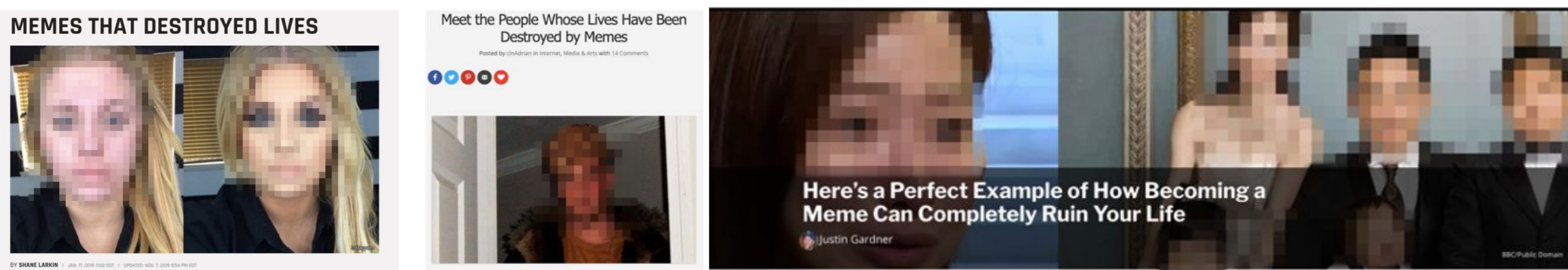
# Socio-Technical Strategies for Enhancing Privacy in Photo Sharing

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## 1. Overview

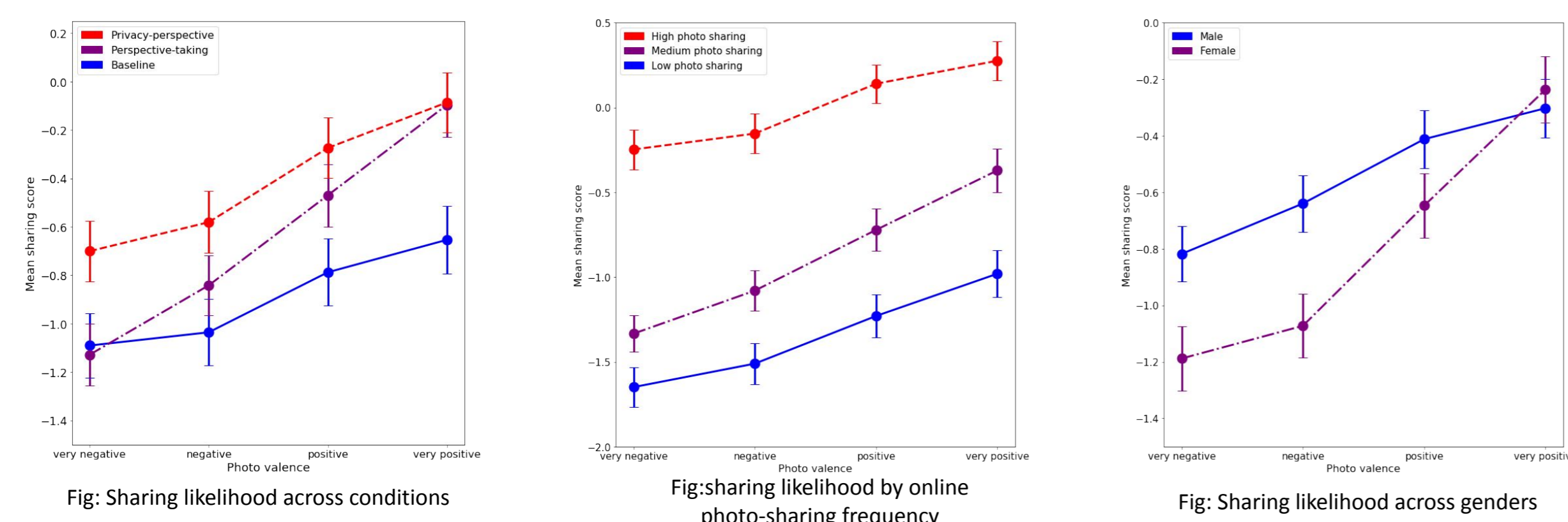
- **Photo sharing** is a major mode of communication
  - Photo **memes**: photos with captions, replicated and modified, some going **viral**
- Photo memes can often result in **privacy violations**
  - spread to **unintended audiences**
  - embarrassing photos shared **without permission**
- Can we **influence** people to **reconsider their photo sharing** decisions for improved privacy?



- We've taken **first steps** towards addressing this problem:
  1. How **privacy nudges** can backfire
  2. How **individual humor styles** can affect sharing behaviors
  3. How visual attention can affect **decision-making**
  4. How parents share photos of their children

## 2. Paradox: When privacy nudges backfire

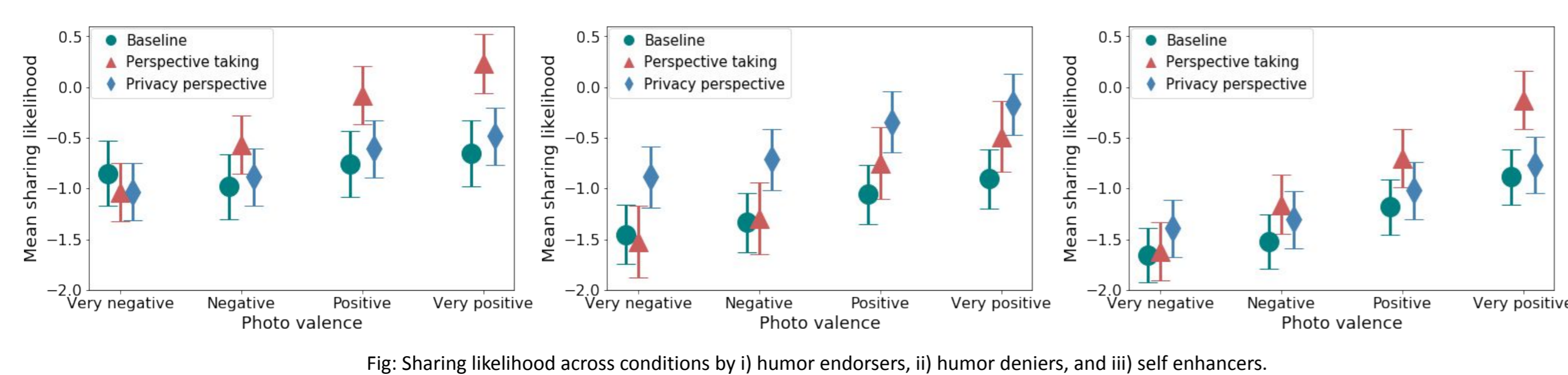
- Online experiment with 379 participants, 98 real-world memes
- **Goal**: How do **perspective-taking** and **privacy nudges** affect sharing decisions?
  - Perspective-taking: 'If this was a photo of you...'
  - Privacy: 'Taking into account the privacy of the person in the photo...'
- **Sharing likelihood**
  - '... how likely are you to share this photo on social media?'
- Photo '**valence**'
  - very negative, negative, positive, very positive
- **Finding**: Participants were *more likely* to share (negative and positive) memes when nudged to consider others' privacy.
- **Implication**: Privacy nudges may not always work, and can indeed backfire



Mary Jean Amon, Rakibul Hasan, Kurt Hugenberg, Bennett I. Bertenthal, and Apu Kapadia, "Influencing Photo Sharing Decisions on Social Media: A Case of Paradoxical Findings," IEEE Symposium on Security & Privacy (2020)

## 3. Privacy nudges and humor style

- Online experiment (N=437) with the same experimental design as above
- **Goal**: How does one's '**humor style**'— a psychological trait relating to the use of humor for self-entertainment or building social connection [a] — affect their photo-sharing behaviors and reaction to privacy nudges
- Participants were clustered based on their humor style:
  - i) Humor **endorsers** (n=176)
  - ii) Humor **deniers** (n=113)
  - iii) Self **enhancers** (n=148)
- **Finding**: Considering others' perspectives leads to *more* photo sharing, especially of positive photos for Ps who endorse or use humor for self-enhancement
- **Implication**: Privacy nudges are more likely to backfire when funny photos are consistent with one's humor style



Rakibul Hasan, Bennett I. Bertenthal, Kurt Hugenberg, and Apu Kapadia, "Your Photo is so Funny that I don't Mind Violating Your Privacy by Sharing it: Effects of Individual Humor Styles on Online Photo-sharing Behaviors", ACM CHI 2021  
[a] Martin et al. Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire.

## 4. Eye Tracking: Studying Visual Attention

- Eye-tracking study with 59 participants and 40 memes
- **Goal**: To what extent does **visual attention** predict the likelihood that someone will share a meme?
- Does greater attention to meme text lead to less concern with privacy?
- Does attending to the image lead to more humanizing of photo subject?

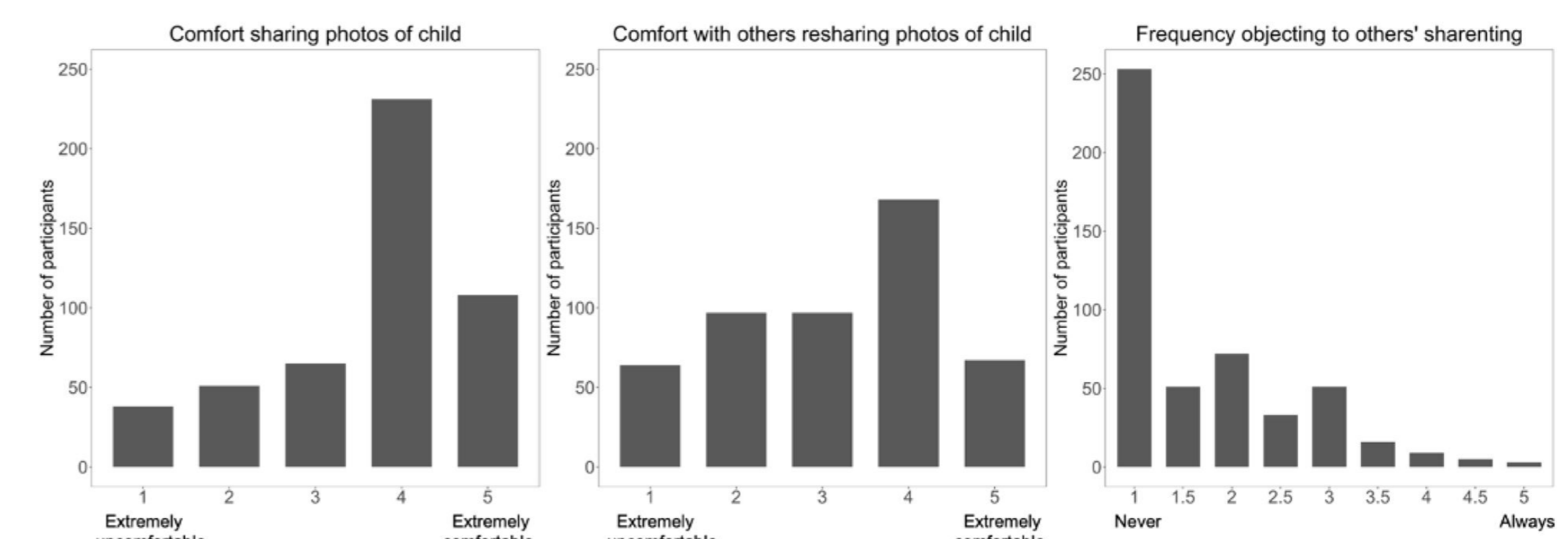


- **Findings**
  - Likelihood of **sharing** correlated with **fixation** duration on **meme text**
  - **Negatively** correlated with **fixation** duration on **image**.
- **Implication**: More visual attention to the text is associated with more cognitive effort to interpret the meme, biasing people towards sharing memes.

Fagan, S.E., Wade, L., Hugenberg, K., Kapadia, A., Bertenthal, B.I., Sharing Photos on Social Media: Visual Attention Affects Real-World Decision Making. Advances in Human Factors in Robots, Unmanned Systems and Cybersecurity. AHFE 2021.

## 5. Children's privacy study

- Online study with 493 parents with one or more children under 10 years old
- **Goal**: Determine attitudes toward **parental sharing** and children's consent to share, as well as characteristics associated with parental sharing
- **Findings**: Parents who frequently share photos of their children on social media tend to have more **permissive parenting styles** and engage their children with social media at younger ages
- These parents also tend to regularly post in larger and more public networks
- Parents do not see parental sharing as much different from regular photo sharing and rarely ask for their young children's input
- **Implications**: Taken together, findings point to potential long-term consequences of parental sharing for children's social media privacy and usage



Mary Jean Amon, Nika Kartvelishvili, Bennett I. Bertenthal, Kurt Hugenberg, and Apu Kapadia, "Sharenting and children's privacy: Parenting style, practices, and perspectives on sharing young children's photos on social media," CSCW 2022

## 6. Future directions

- Nudges that **manipulate visual attention**



- Privacy violations of **marginalized and vulnerable populations**
  - EAGER grant to study inter-group bias in photo sharing
- Creating a **meme observatory**
  - Harvesting and coding commonly shared memes