



# HCI International 2021

24-29 July • Design Approaches and Case Studies - I

## Attention-Based Design and Selective Exposure amid COVID-19 Misinformation Sharing

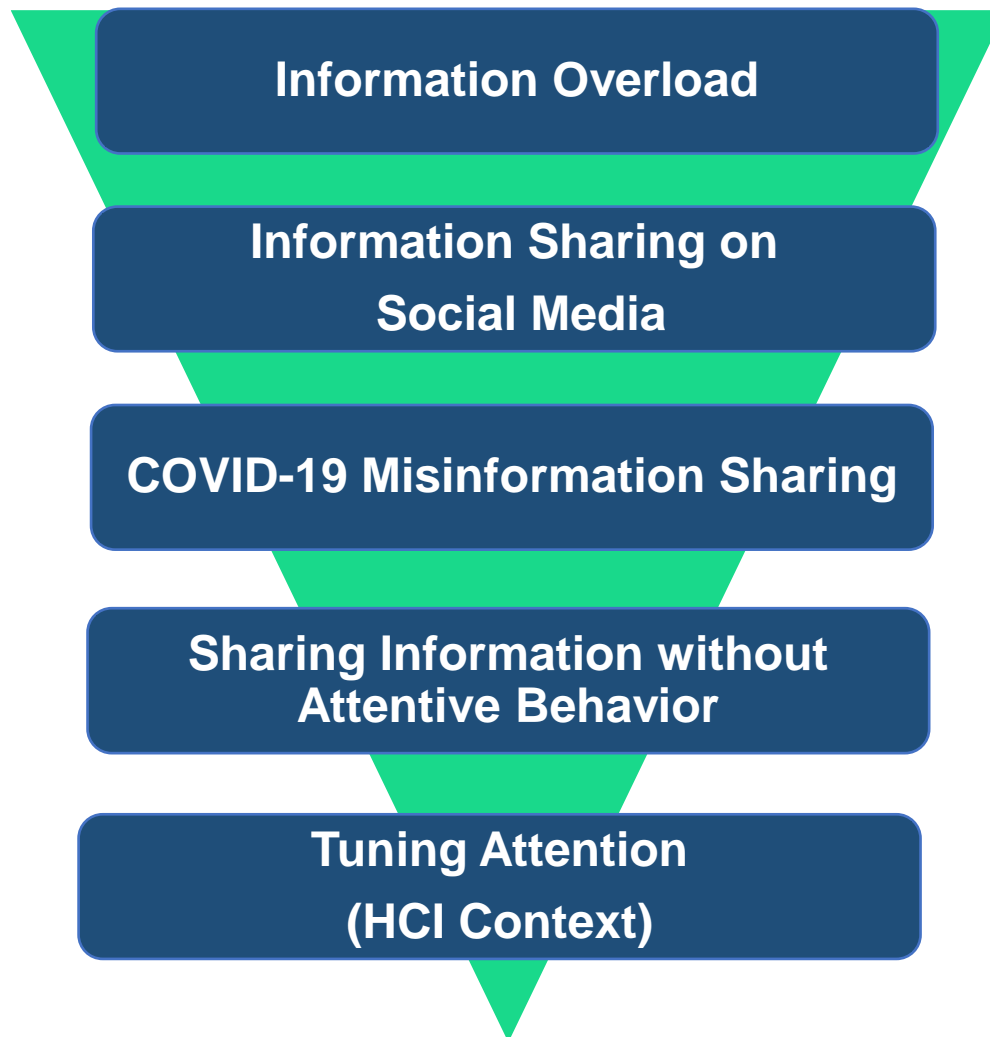
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# Outline

- Introduction
- Objective
- Theoretical Foundations
- Concept/Framework
- Methodology/Experiment/Pilot Testing
- Result

# Introduction



Refer to Cisco VNI (2018) annual Global IP traffic will reach 396 Exabyte per month by 2022, up from 122 Exabyte per month in 2017.

According to Internet Live Stats (2021) there are on average over 9536 tweets per second and the number just keeps growing.

The increasing of shared misinformation in social media should be disrupted our responses from natural disasters, political to terrorist attacks( Vosoughi et al. 2018).

As an indication of the extent of this problem, recent studies Gabielkov et al. (2016) revealed that around 59% of links on Twitter were shared by users without even reading them.

In future research, existing studies ((Vosoughi et al. 2018; Cook et al. 2017 & Bakshy et al. 2009) encourage the investigation of the factors on human judgment (HCI).

# Introduction



One of the significant limitations in human behaviour when receiving online information is our lack of visual cognitive abilities, the ability to pay greater attention in a short time.



The question arises about how we handle online messages, which contain and send people with the same associated interests as ourselves, regarding social influences and individual beliefs.

# Objective

- This study aims to produce a model that can describe the selective exposure phenomenon amid COVID-19 misinformation and proposed attention-based design, which is expected to intervene in the attention of user interactions in the behaviour of sharing misinformation.



**WE CAN'T STOP  
FAKE NEWS  
FROM BEING MADE.  
BUT WE CAN STOP  
SHARING IT. **

Download **FAKEBLOK** at [www.fakeblok.com](http://www.fakeblok.com)

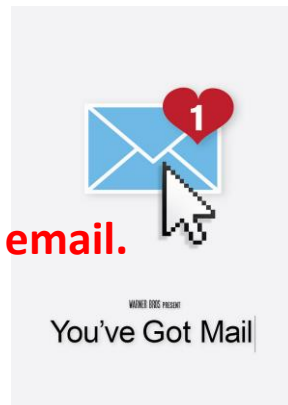
# Theoretical Foundations

## Visual Selective Attention

According to Zizlsperger et al. (2012), **selective attention increases choice certainty in human decision making.**

Refer to Chelazzi (2012), **efficient goal-directed behavior** is crucially mediated by visual selective attention.

**When we see a pop up email.**

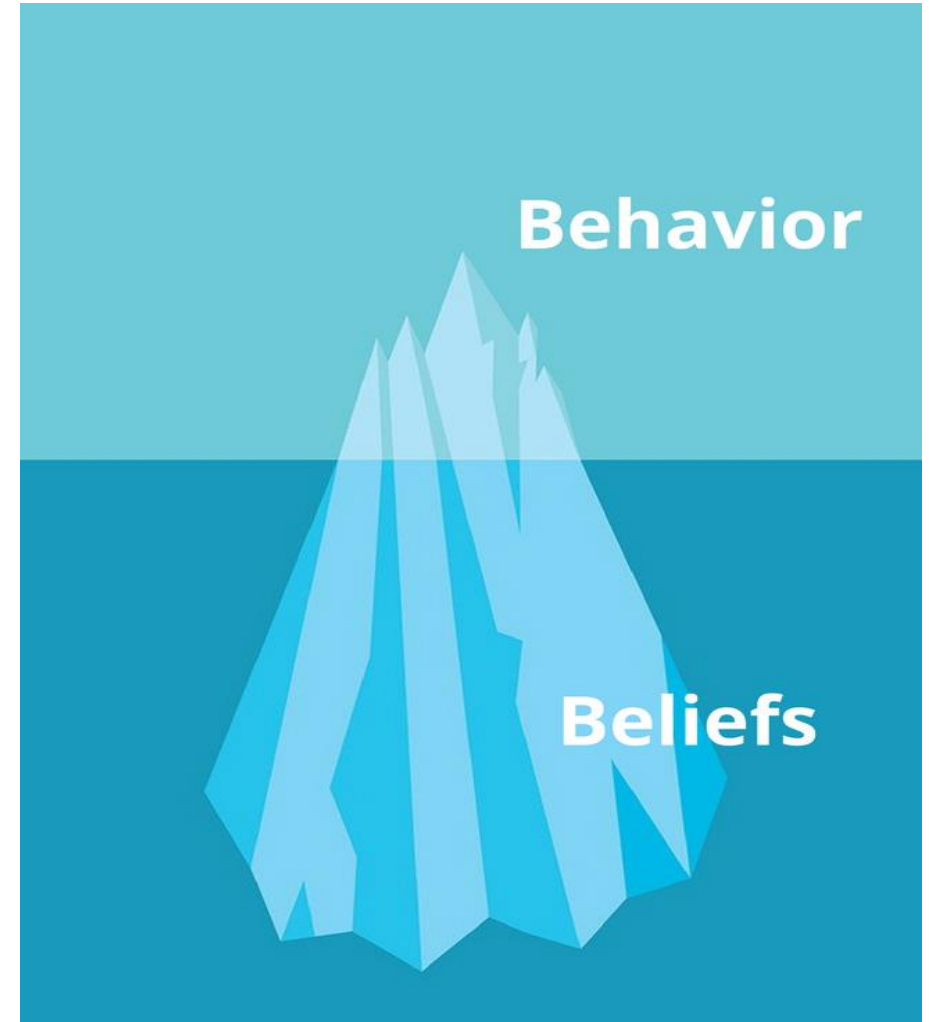


# Theoretical Foundations

## Epistemic Belief

According to Chua et al. (2017), **epistemic belief significantly affected users' decision to share** online health rumors.

Garrett & Weeks (2017) founds Individuals are **prone to believe misperceptions** that are **consistent** with their political identity, and this bias increases with opportunity (e.g., **time to think**) and with **ability** (e.g., cognitive resources).



# Theoretical Foundations

## Social Influence

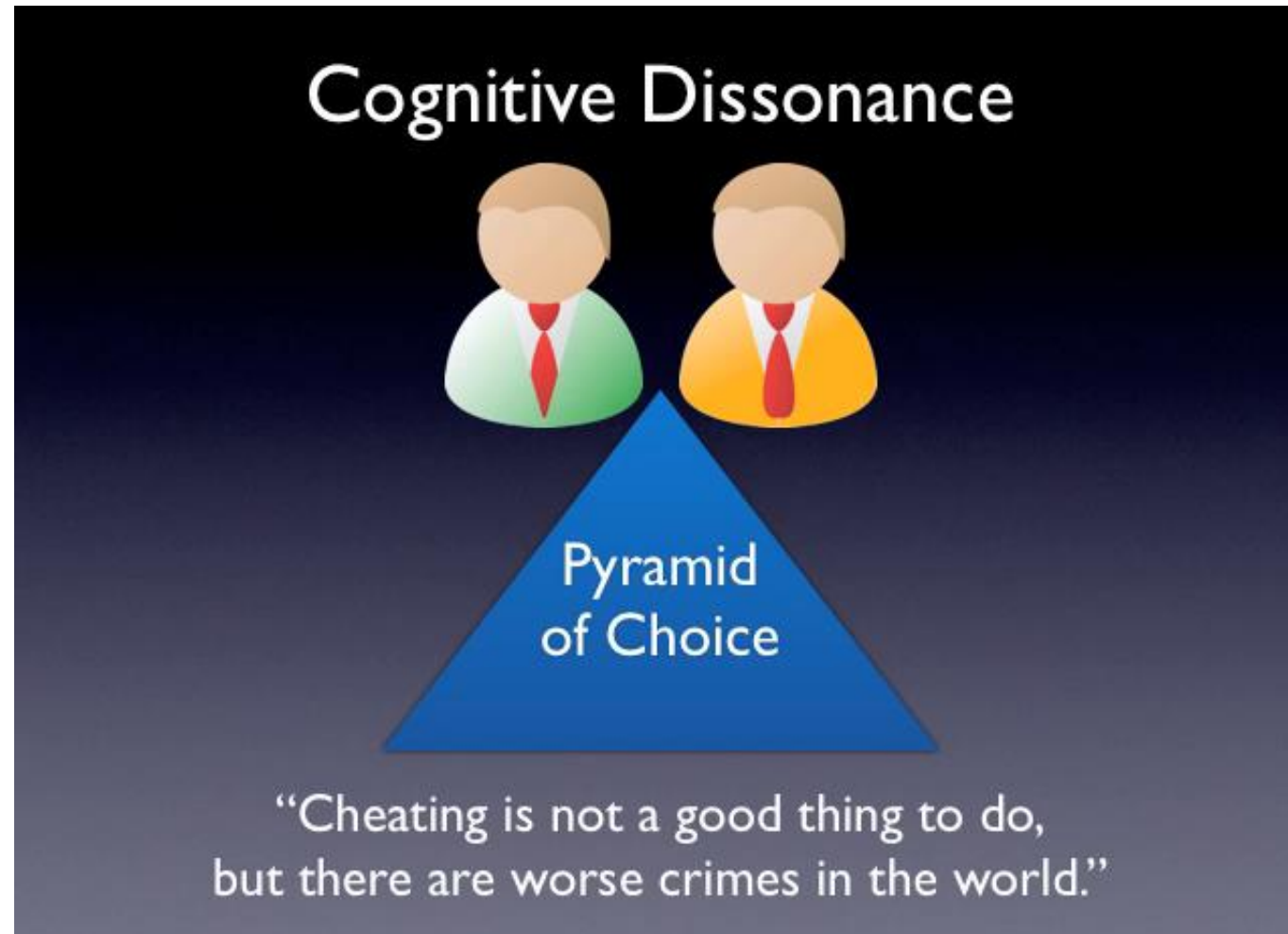
According to Ghaisani et al. (2017) the motivation on sharing in personal information is **maintaining relationships** so that the appearance of social media can be created by **promoting relationships or interactions between users.**

Refer to Kümpel et al. (2015) since people tend to follow similar activities as their peers, **social influence is believed to play a critical role in recognizing, adapting, and sharing (news) content.**





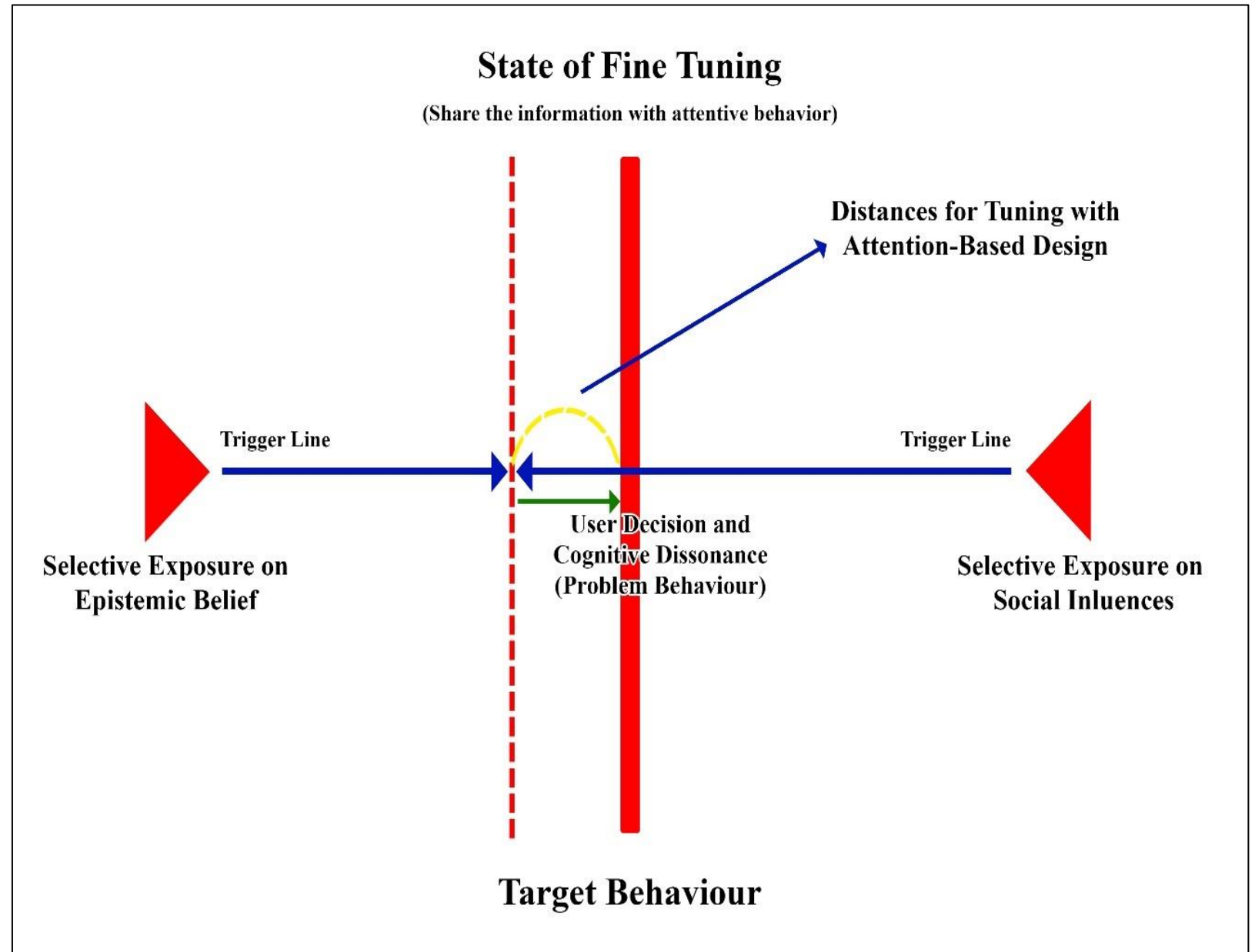
# Theoretical Foundations



McLeod (2018) refers cognitive dissonance **to a situation involving conflicting attitudes, beliefs or behaviors.**

# Concept / Framework

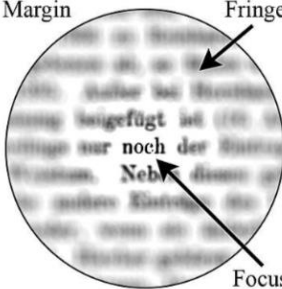
- ❖ Propose a model with Confirmatory Factor Analysis from previous research which states that attention-based design, epistemic belief and social influence can influence user decisions in sharing information.



# Concept/Framework


## Attention Techniques

**Spotlight**  
varying resolution



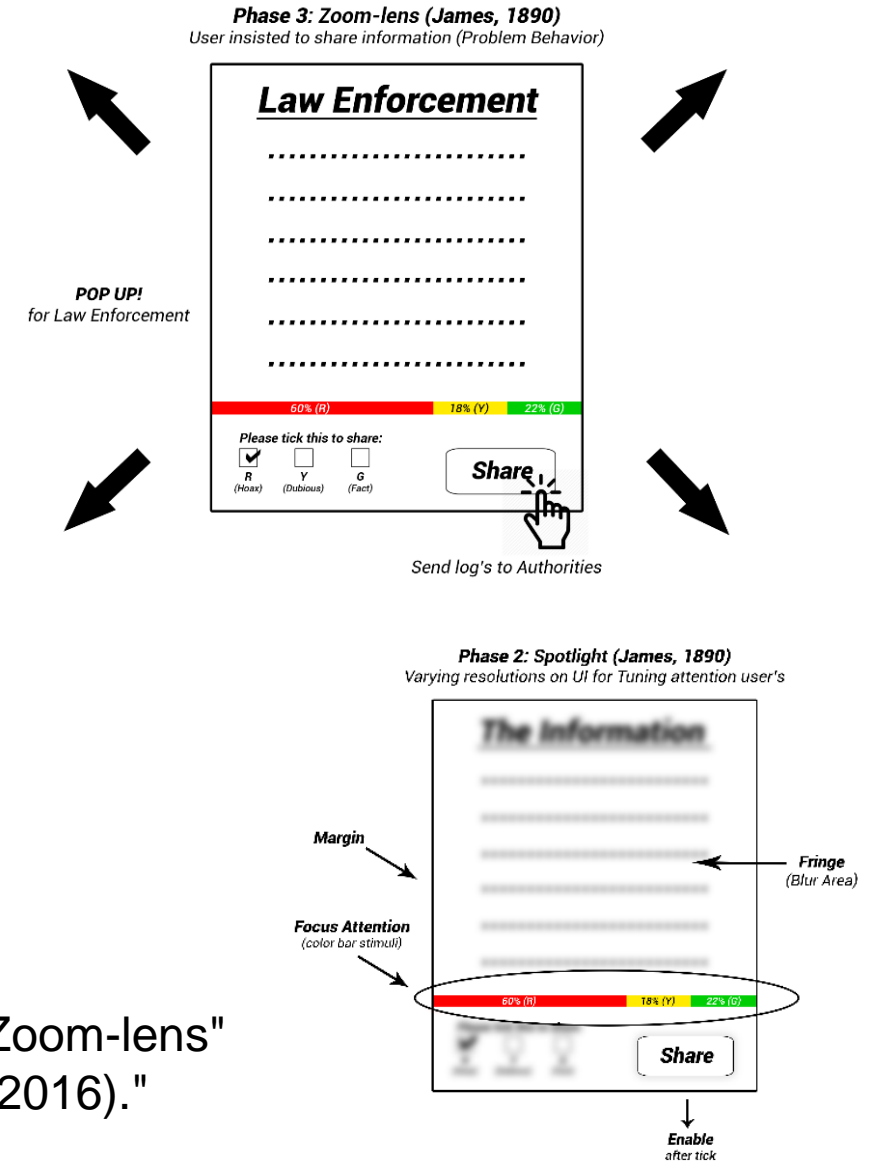
Margin  
Fringe  
Focus

**Zoom-lens**  
adds changing filter size



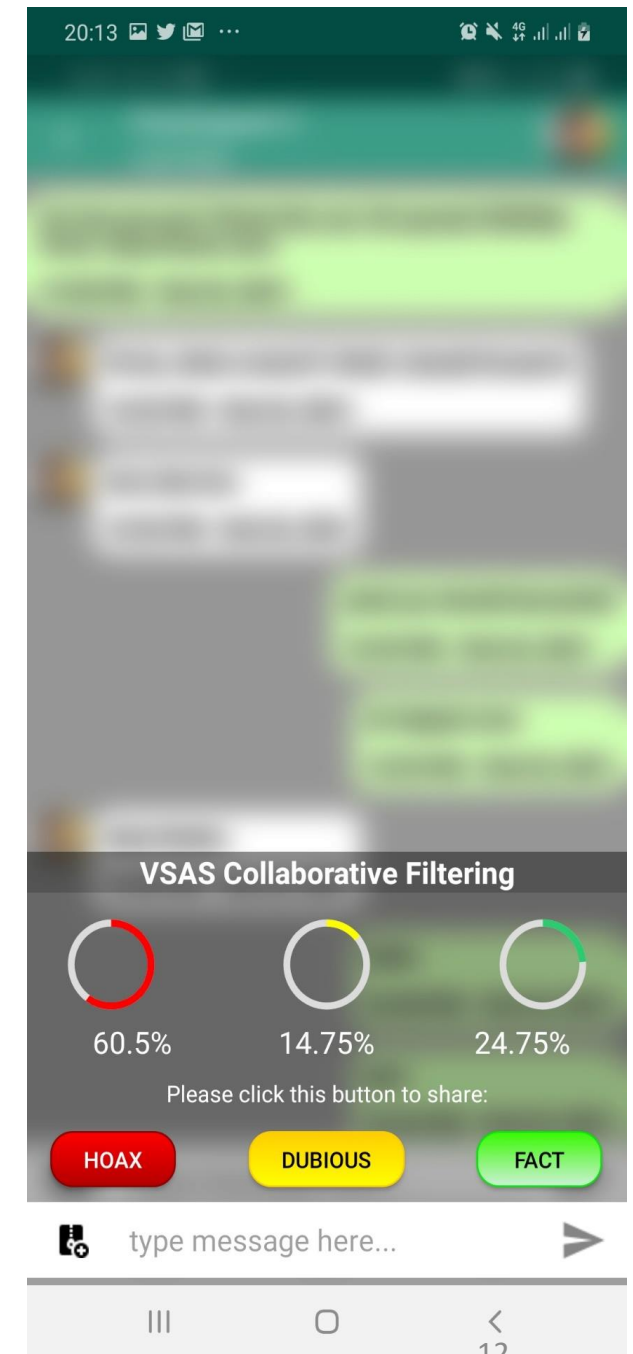
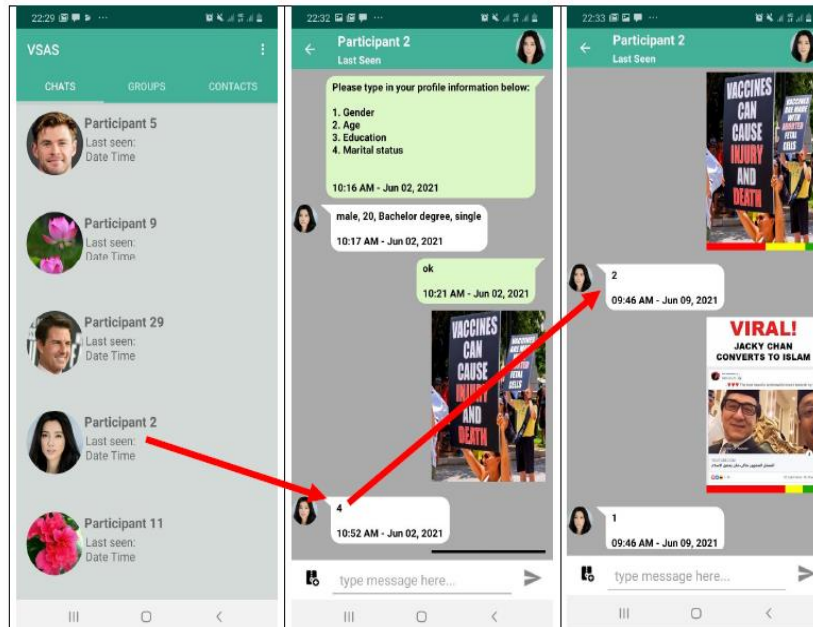
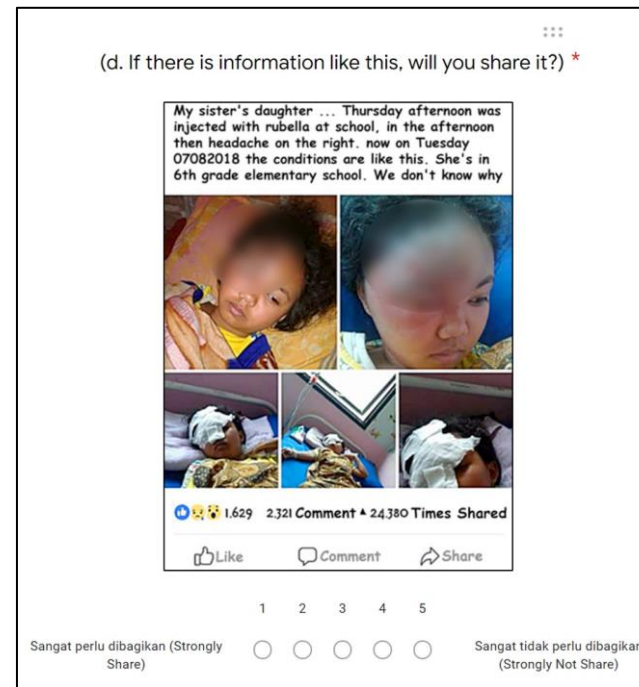
@nyghtowl

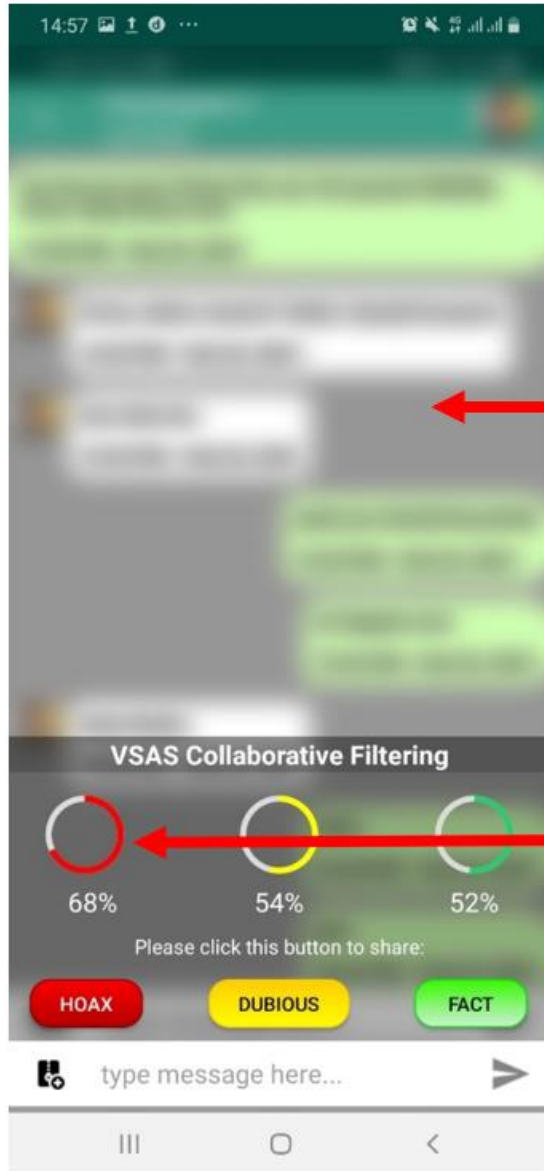
- ❖ Using the theory of Selective attention through the "Spotlight and Zoom-lens" technique and "Crowd-intelligence based detection (B. Guo et al., 2016)."



# Methodology / Experiment / Pilot Testing

❖ Visual Selective Attention System (VSAS) is used to intervene users' attention when deciding to share information.





Fringe (Blur Area)

Margin

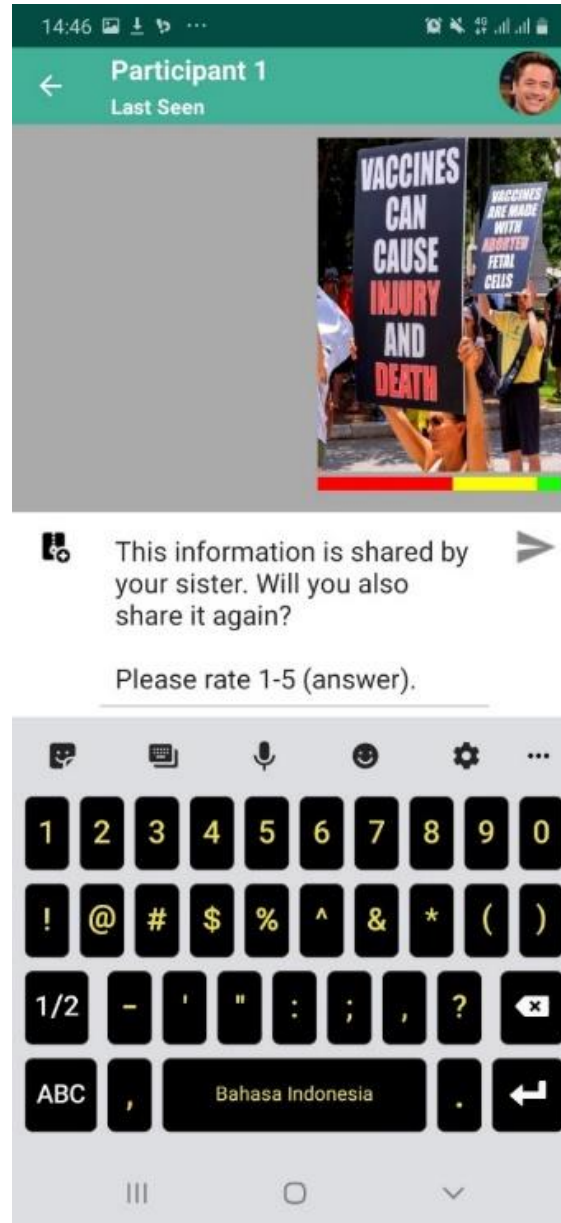
Focus Attention  
(Color bar stimuli)

## Methodology / Experiment / Pilot Testing

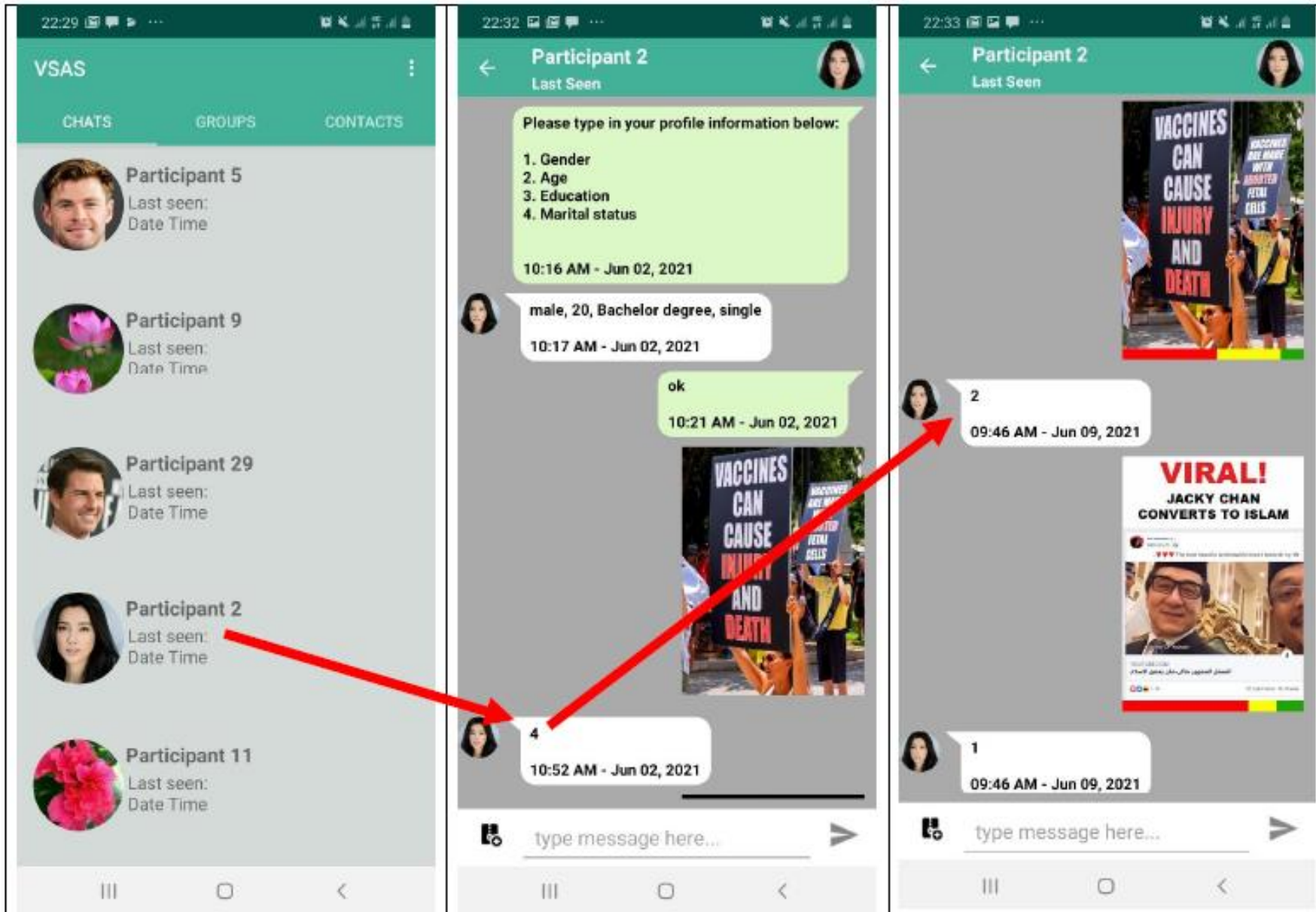
- ❖ **Visual Selective Attention System (VSAS)** is used to intervene users' attention when deciding to share information.



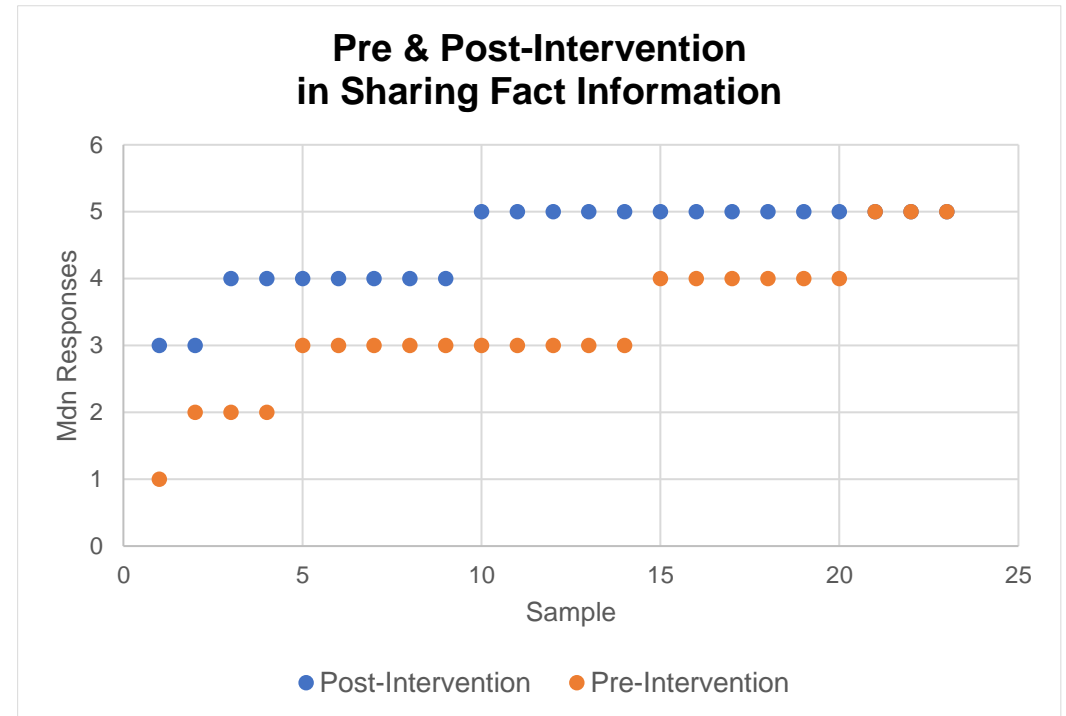
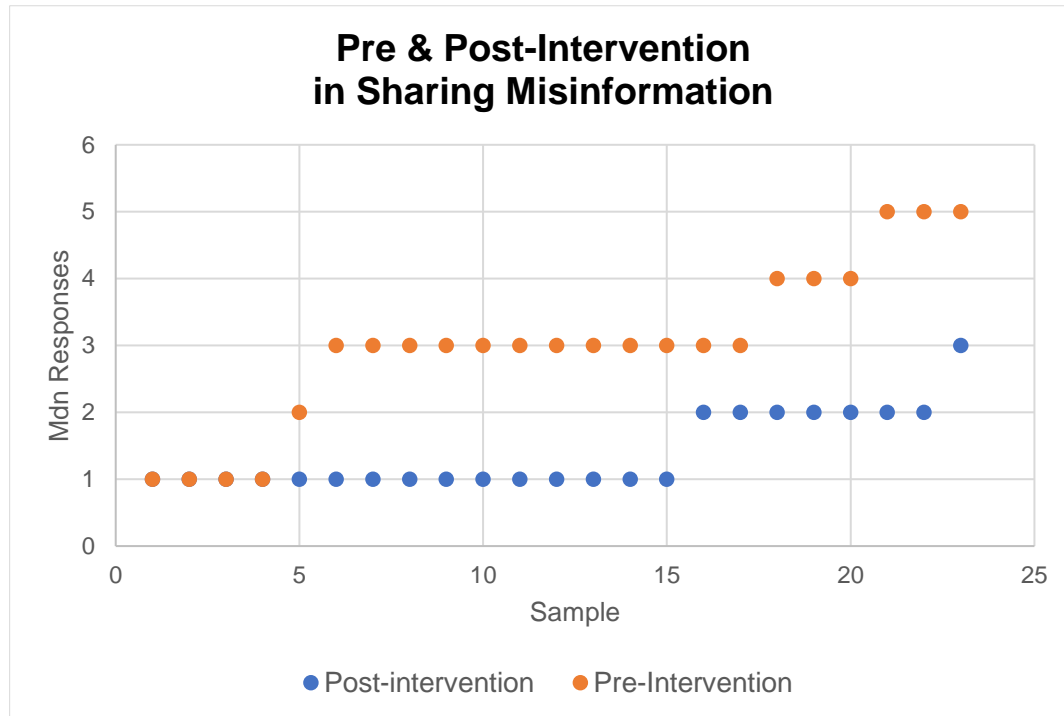
7/29/2021



14



# Result



Participants (n=38) consisted of 11 females and 27 males with an average age of 20 (SD = 1.11)



# Result

- ❖ The selective exposure could influence user attention in handling sharing COVID-19 misinformation
- ❖ The studies reveal that selective exposure occurs when users encounter medical information such as vaccine use in children
- ❖ Research into attention-based design and how those designs would affect selective exposure on a user in sharing COVID-19 misinformation is required
- ❖ The attention-based design also implied that a particular strategy would suggest intervening selective exposure amid COVID-19 misinformation.

# Result

- ❖ Research that focuses on detecting COVID-19 misinformation with machine learning approaches or robotic applications is expected to be complementary when a user fails to detect COVID-19 misinformation. Research using a hybrid approach to seeing COVID-19 misinformation with a unifying machine and human collaboration will be necessary
- ❖ As social beings, devices have limitations in terms of individual and social interactions. The studies reveal that selective exposure occurs when users encounter medical information such as vaccine use in children. By taking a practical approach to future research through attention-based design, it is expected to produce user interfaces that prioritize solving the COVID-19 misinformation phenomenon in a non-coercive manner, particularly prioritizing a humanist approach.



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Thank You.

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