

Using Attention-Based Design to Intervene in Decisions to Share Misinformation By Millennials

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Abstract

Having attentive behavior when a user decides to share information on social media is essential. Through such attentive behavior, users are more effectively identify misinformation so that they are not affected by its latent misleading information. In fact, through the vast growth in information in the omnipresence of online media today, increasingly we observe behavioral problems stemming from our one-click habit of easy decision making. This spread of misinformation can literally do severe damage, such as making medical decisions while distracted by receiving COVID-19 misinformation. However, although much research has explored traceability and situation prediction on the spread of misinformation, more research is required to prevent and understand the distraction that exists on human attention, allowing such spreading. Questions arise on how technological interventions can handle the lack of user awareness and when deciding to share information. The research objectives of this study are to investigate and intervene in the role of user attention factors when users decide to share information online. The study uses a mixture of quantitative and qualitative methods. In Study 1, we determined the importance of the attention factor in sharing information on social media by conducting a self-report survey (n=112). We also designed and experimented with a visual selective attention system (VSAS) to intervene in a Millennial's decision (n=38) by applying an attention-based design approach in Study 2. We conclude that the intervention significantly improved user choices about what they share on online media. Engaging in attentive behavior while sharing information is expected to reduce the spread of misinformation. Furthermore, attentive behavioral factors are needed to form the basis of developing interactions in the design of future social media application systems and produce continuous knowledge that conducts to the non-coercive approach of handling misinformation sharing behavior.

Keywords: Attention based design; decision to share misinformation; millennials

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1. Introduction

There are on average over 9,536 tweets per second and the number just keeps growing according to Internet Live Stats (Internet Live Stats, 2021). This abundance of information in today's online media makes us relatively distracted from the truth of the information (Pennycook et al., 2021). (Cicero et al., 2018) shows that the increasingly vast and growing digital world generated through annual Global IP traffic will reach 396 Exabytes per month by 2022, up from 122 exabytes per month in 2017. Referring to (Johnson, 2020), increasingly massive Internet growth has also dramatically influenced social media applications. There were 4.2 billion active social media users worldwide, and this global internet penetration cover 59.5% of the world's global population.

Yet "*The light of credibility from the current spokespeople is gradually fading*". Edelman (2021), states that "*A person like yourself is now as credible as an academic or technical expert and far more credible than a CEO or government official.*" This worrying finding implies that if spokespeople have lost their credibility, then who should we put our trust in? This study also justifies that the world has entered and declared a form of information bankruptcy, referring to the poor amount of reliable information, which is a paradoxical contradiction with the fact that we now have an abundance of information.

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The ability to share and openly discuss topics online has helped give rise to open development of social media applications. The convenience that supports users in using social media applications further triggers them to share information more quickly and openly. However, this has also triggered the behavior of sharing information on social media, which should be performed only when the user is exhibiting attentive behavior so that valuable information can be consumed constructively, and any latent potential harm in misinformation can be identified and ignored. As an indication of the extent of this problem, recent studies from (Gabelkov et al., 2016) revealed that 59% of links on Twitter were shared by users without even reading them.

Various attempts have been made to overcome the challenges of users inadvertently or deliberately sharing misinformation. One common approach widely used in designing online social media platforms is to rely on algorithms to identify fake stories as misinformation, as has been done by Facebook (Mosseri, 2016). However, to do this consistently and accurately it is difficult to rely on machine and robotic approaches (Vosoughi et al., 2018). In this context, the actual "*iceberg problem*" that has not received much attention in research is understanding the challenges underpinning the psychological problem of inattentive user judgment when sharing misinformation.

Sharing misinformation can promote severe influences on people's own beliefs as well as causing reputational damage to the user who shared misinformation. The increase in shared misinformation on social media has now grown to the point where it reaches more people than the truth, and shared misinformation on social media negatively influences our responses to natural disasters, political events, and terrorist attacks (Vosoughi et al., 2018). Consequently, sharing misinformation can affect and threaten the stability of democratic life in a nation. Furthermore, managing the outcomes of natural disasters, climate and pandemic information when the public is confused with misinformation can cause the effort required to acquire and share actual valuable knowledge and mitigate the effects of sharing misinformation, to be delayed (Erku et al., 2021).

Misinformation has provided a broad loss impact that affects the multidimensional aspects of general society. In the context of the current COVID-19 pandemic, misinformation has turned the world into parallel pandemics that include falsified drug information, medical supplies, and "*infodemic*" misinformation (Amin et al., 2021; Erku et al., 2021). Meanwhile, collaborative efforts and global partnerships are urgently needed to fight the pandemic. The role of the younger generation, especially Millennials, is significant and crucial in dealing with the COVID-19 pandemic as young people and Millennials are a key group in sharing information with a collective responsibility to help stop the transmission of the COVID-19 infodemic. They are also the most active group of online users, interacting with an average of 6 digital platforms (such as WhatsApp, Facebook, Twitter, TikTok, WeChat, and Instagram) every day. According to the (World Health Organization, 2021), more than half (59.1%) of Gen Z and Millennials surveyed are "*highly aware*" of the "*fake news*" surrounding COVID-19 and can frequently find it. However, the challenge is how to recruit them to actively fight it rather than let it continue, with many (35.1%) ignoring it.

This phenomenon also confirms that things such as the intensity of the news or information topic can influence users' behavior to share information on social media (Bonchi et al., 2011). The quality of the information content is not a mandatory requirement for online virality (Kenneth Rapoza, 2018). Although research conducted by (Ghaisani et al., 2017) shows what motivates a person to share information on social media, not much is comprehended about what factors influence a person in sharing information. Information sharing behavior is influenced by factors such as beliefs, similar interests (social influence), and factors such as wanting to promote themselves. Studies that have examined information sharing between individuals have presumed that the behavioral routine of sharing information is habitually considered to be benefit-oriented. In the context of motivation, (Munar & Jacobsen, 2014) describes motivation in sharing information as divided into two parts, namely self-centred motivation and community-related motivation, and this is something we explore further here.

The significance of knowing the relationship between attentive behavior and sharing misinformation will be a future reference point in the development of applications for information sharing, both in terms of the design and function of the application itself (Amin et al., 2021). While more than half (58%) of respondents surveyed in the UK report finding the content they think is inaccurate or misleading, only a fifth (21%) report and care to correct it. This is a worrying finding (Dr. Dora-Olivia Vicol, 2020). One in two people see misinformation on social media, but only half of them actually do anything about it. A similar difference exists between the proportion of people who share poor content and those who recalled being challenged about it. Nearly half (43%) share, but fewer (39%) think critically. We believe that an attention-based design approach within the systematic extent of Human-Computer Interaction, is needed.

Other studies (Bakshy et al., 2009; Pennycook et al., 2021; Vosoughi et al., 2018) encourage the investigation of the factors on human judgment. This research resolves that human behavior provides more to the spread of misinformation and truth than automated robots do. This indicates that misinformation containment strategies should also emphasize

behavioral interventions, such as labeling and incentives, to prevent the spread of misinformation, rather than focusing exclusively on and relying on bots. In line with several issues regarding the complex dimensions of handling the spread of misinformation include labeling, incentives on economic motives, regulations, data transparency, and ethics in communicating on social media (Vosoughi et al., 2018).

In this study, we aim to (1) determine the role of attention factors relating to user behaviour in sharing misinformation on social media; (2) conduct self-report surveys and do pre- and post-intervention user experiments. This paper is divided into six sections. Section 1 contains an introduction. Section 2 defines misinformation theory and discusses some of the related research. Section 3 discusses methods used to clarify the constructs of the study proposed. Section 4 analyses the user attention factor and experiment sessions, followed by Section 5 on the discussion. Finally, Section 6 concludes the study and provides future directions.

2. Materials and Methods

The research methods conducted in the two studies reported in this paper was carried out systematically, starting from a self-report survey with sampling ($n=112$) in Study 1. The purpose of defining the systematic method between these studies is that the resulting interpretation process is valid and reliable. In Study 1, we estimated the significant correlation factor of attention towards sharing misinformation on social media. The attention variable is the independent variable (x), and the misinformation sharing behavior variable is the dependent variable (y), as shown in Figure 1.

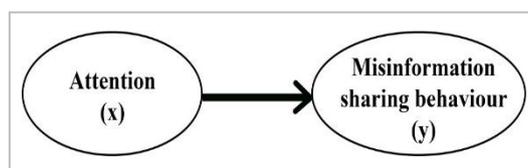


Fig. 1. Relationship between attention and misinformation sharing behavior

The data collected in Study 1 used non-probability sampling with a purposive sampling method. The sampling method used pre-determined criteria such as age range and user activity on social media. The instrument applied is an online questionnaire. The questions determine the effect of attention behavior in sharing misinformation on social media. The questions consisted of demographic information including gender, profession, age, education, and frequently used social media platforms. For each type of question, the respondent is asked to indicate his/her attention to sharing a specific kind of information on social media. Respondents are asked to choose one item that suited the most, using 5-point Likert scales. This question relates to whether the user agrees or disagrees whether the attention factor plays an essential role in the context of information-sharing behavior on social media. One of the questions is to construct whether the user agrees whether users share information on social media without attentive behavior by only reading the title without understanding the contents of the information context.

2.1. VSAS System User Experiment

2.1.1. Instruments

In the VSAS User Experiment, we conducted a pre and post-test intervention with two sessions over two weeks' duration to see if we could observe changes in Millennial users' decision behavior on sharing information. We designed and experimented with a system called Visual Selective Attention System (VSAS) that applies an attention-based design approach in the user interface. We designed and built the VSAS system that is similar to the WhatsApp social media application. 86.6% of the 112 users used WhatsApp in their social media interactions. We built the VSAS system using Android Studio 4.1.1. and the language used is JAVA and XML. We use Firebase's real-time database as cloud storage and database management. The design of user interfaces in VSAS is based on a mobile application using a spotlight and zoom-lens technique (see Figure 2). This attention-based design is designed to intervene in user decisions when they are deciding whether or not to share information.

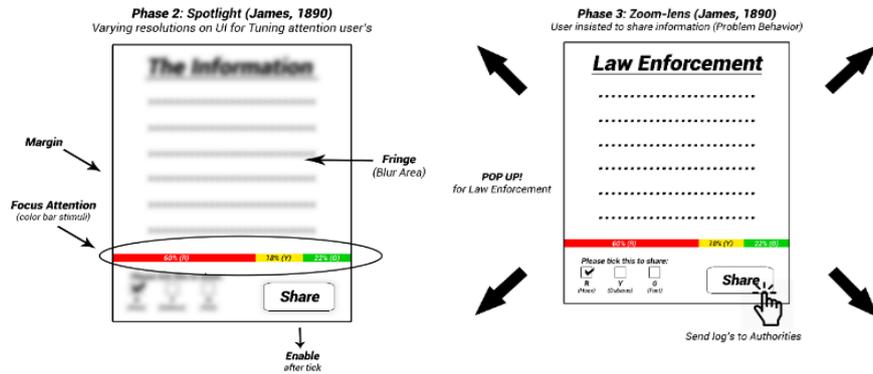


Fig. 2. The VSAS prototype wireframe and design layout



Fig. 3. The main page of VSAS

Specific hypotheses are developed for this study as follows:

- H1: Attention factors influence the behavior of misinformation sharing on social media
- H2: Attention-based design significantly influences a Millennial's decision on sharing information

2.1.2. Participants

Participants (n=38) consisted of 11 females and 27 males with an average age of 20 (SD = 1.11) and all were students. Participants were compensated \$5 for their time. Each experiment section took 1.5 to 2 hours.

2.1.3. Procedure

Participants gathered on an online Google Meet where each registered on VSAS and filled out a simple questionnaire to capture their demographic information. The user experiment started with a brief introduction to the experiment and the experiment topics followed a pre-designed guideline but occasionally extended when it was necessary. Participants were observed on their responses to ten items of information, and their interactions were logged. For each item of information sent, we also asked questions that narrate their social influences factors, which in previous research found that social influences triggered users when sharing information on social media (Kümpel et al., 2015). The narrative questions are of the form, "If this information is sent from a family group, will you share it again?". We repeated this question narrative about social influences to all Millennial participants for each of the ten items of information provided. Following that, millennial participants simply reply to each question by entering Likert scale numbers 1 to 5, where "1" indicates strongly disagrees with sharing information, "2" disagrees with sharing information, "3" is neutral, "4" agrees to share information, and "5" strongly agrees to share information. For a complete description of the ten information items see appendix 1. The ten chosen contexts of the questions we provide include health, casual, political, and

sensational information, where some of the contexts of this information are often sent when users are being influenced to share information (Osatuyi, 2013).

In the second user session, we added a color stimulus label at the bottom of the image for each of the ten items of information. We generated the color stimulus labels from fact-checking sources, and adjusted the design metaphor for each color, indicating whether the information indicated a hoax, dubious, or fact (see Figure 4).

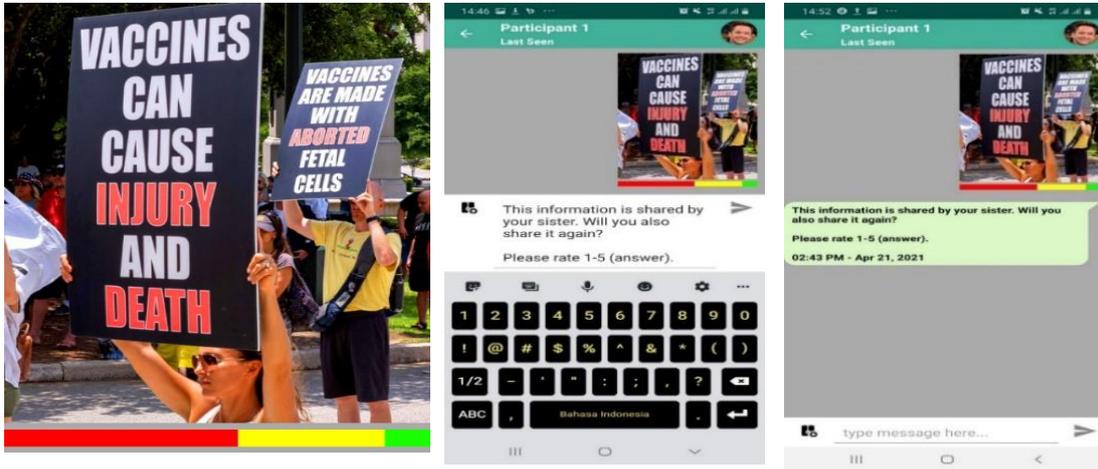


Fig. 4. Color stimulus design label at the bottom of the image

We developed this second session from the theory of visual selective attention by intervening in Millennials' attention while evaluating the information they received. This attention-based design is also expected to influence psychological factors such as epistemic beliefs and social influences when millennial users decide whether to share the information. After Millennial users had been intervened with labels, the following intervention is to use crowd-intelligence-based approach. This step is needed as a form of collaboration and user crowd concern in evaluating information (Dr. Dora-Olivia Vicol, 2020) by asking the user to click one of the hoaxes, dubious, or fact buttons.

The three buttons representing crowd-intelligence-based detection represent Millennials' user-generated views on information based on their opinions, points of view, or knowledge (Guo et al., 2020). This intervention is expected to increase user attention when deciding whether to share the information or not. We designed the numbers on the circle label based on fact-checking sources in each previous question (see Figure 5). We also designed the background on the interface to be blurry with a visual selective attention technique, namely "spotlight" (Posner et al., 1980), so that the label on crowd-intelligence based detection view is more prominent and it is expected that users can focus and pay attention to cues in this design (see Figure 5). All information added on crowd-intelligence-based detection choices based on user evaluation answers are saved in the Firebase

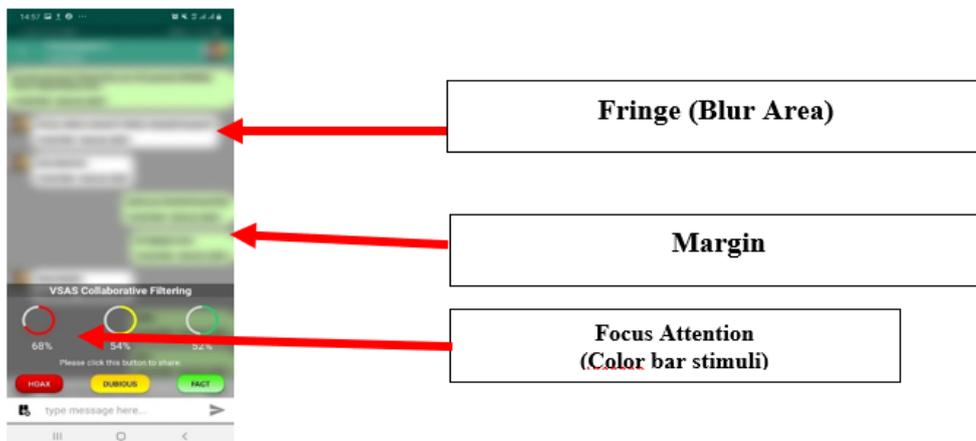


Fig. 5. Crowd-intelligence-based detection

In the final intervention design (see Figure 6), we use a visual selective attention approach with a zoom-lens technique (Posner et al., 1980), by bringing up a pop-up message. In this technique, we include a law enforcement warning design that contains information that is "Sharing of misinformation may be illegal and may have future consequences" with a zoom animation effect. At the bottom of this interface, we include a statement that VSAS design can increase the attention of users when deciding to share information. Each Millennial user responds to this statement by selecting an answer (Likert scale) from 1 to 5, where "1" represents the answer strongly disagrees, "2" disagrees, "3" is neutral, "4" agrees, and "5" strongly agrees. In this zoom-lens intervention technique, the statement data on each Millennial user's answer is also stored in the Firebase real-time database.

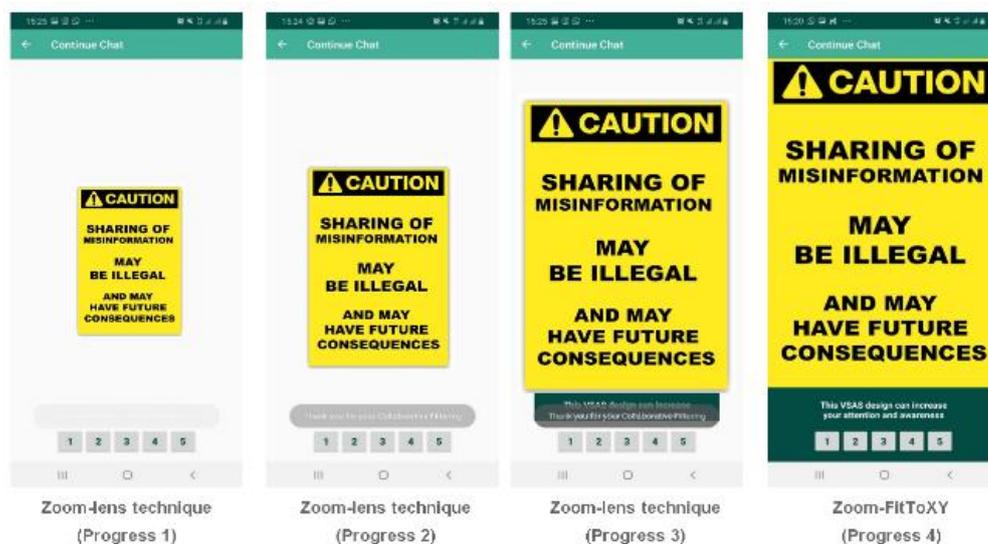


Fig. 6. Zoom-Lens Technique for bringing a pop-up Message

Specific hypotheses are developed for this study as follows:

- H1: Attention factors influence the behavior of misinformation sharing on social media
- H2: Attention-based design significantly influences a Millennial's decision on sharing information

3. Results

3.1. User Attention

The respondent's data were collected between October 1 and November 30, 2018 (8 weeks), and 112 answers from participants were collected. Demographic data are presented in Table 1, showing that the sample contains slightly more women (55.4%) than men. The source of the largest participating country is Indonesia, at 92.9%. The most popularly used social media platform is WhatsApp at 86.6%, and the age span of most participants is 30-39 years at 39.3%.

3.2. Instrument Results in Study 1

In Study 1, we computed Pearson correlations and validity testing was done using SPSS to compare the value of r arithmetic with the value of the r table ($n-2$). The level of confidence was 95% ($\text{sig } \alpha = 0.05$) and the degree of freedom ($df = n-2$) so that the r table was 0.1548. Validity test results for item x1.q1 ($\beta = 0.892$, $p < 0.05$) is valid, item x1.q2 ($\beta = 0.864$, $p < 0.05$) is valid, and item x1.q3 ($\beta = 0.669$, $p < 0.05$) is valid. Validity test results for item y.q1 ($\beta = 0.749$, $p < 0.05$) is valid, item y.q2 ($\beta = 0.602$, $p < 0.05$) is valid, item y.q3 ($\beta = 0.774$, $p < 0.05$) is valid, y.q4 ($\beta = 0.767$, $p < 0.05$) is valid, and y.q5 ($\beta = 0.778$, $p < 0.05$) is valid. Based on the results of validity testing, it was found that all items used to measure each variable were deemed valid. Reliability testing was carried out by testing Cronbach Alpha, using the criterion of whether the Cronbach Alpha coefficient is greater than the significance level of 70% or $p > 0.7$, then the variable used is reliable. The reliability test results for item x ($\beta = 0.736$, $p > 0.7$) are reliable and for item y ($\beta = 0.787$, $p > 0.7$) is also reliable. Based on the significance value of the resulting analysis, the value of deviation from linearity Sig. is ($\beta = 0.102$, $p > 0.05$) and ($F \text{ table} = 1.628 < F \text{ value} = 3.93$), so from this result it can be concluded that there is a

significant linear relationship between the variable of attention (x) with misinformation sharing behavior (y). The linear correlation on data analysis depicted in Figure 7 shows that the scatter plot has a significant relationship and a negative correlation between the attention variable (x) and the misinformation sharing behavior (y) variable.

Testing for normality was conducted by examining data distribution, which is a normal probability distribution. The normality test results with the normal p-plot can be seen in Figure 8, where results show that the data is spread around the diagonal line and follows the diagonal line's direction, which means the regression model used in this study meets the assumption of normality.

Table 1. Results of respondent’s demographics in study 1

Demographic data		Number Percentage	Demographic data		Number Percentage
Gender	Male	44.6%	Country of origin	Indonesia	92.9%
	Female	55.4%		Malaysia	7.1%
Age	<17 years	12.5%	The most used social media	Twitter	11.6%
	18 – 20 years	2.7%		WhatsApp	86.6%
	21 – 29 years	33%		Facebook	50%
	30 – 39 years	39.3%		Instagram	55.4%
	40 – 49 years	8%		YouTube	24.1%
	50 – 69 years	4.5%			
	60> years	2.7%			
Highest education	Less than high school degree	12.5%			
	High school degree	15.2%			
	Diploma degree	3.6%			
	Bachelor's degree	40.2%			
	Master's degree Postgraduate degree	28.6% 12.5%			

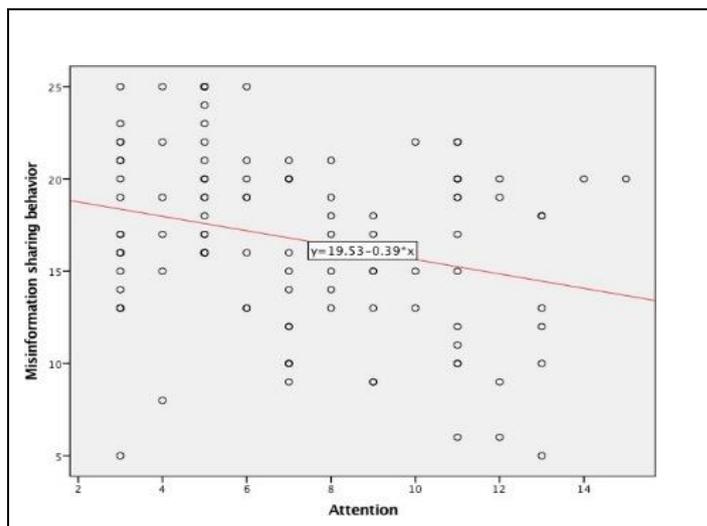


Fig. 8. Scatter plot showing a negative correlation between variables x and y

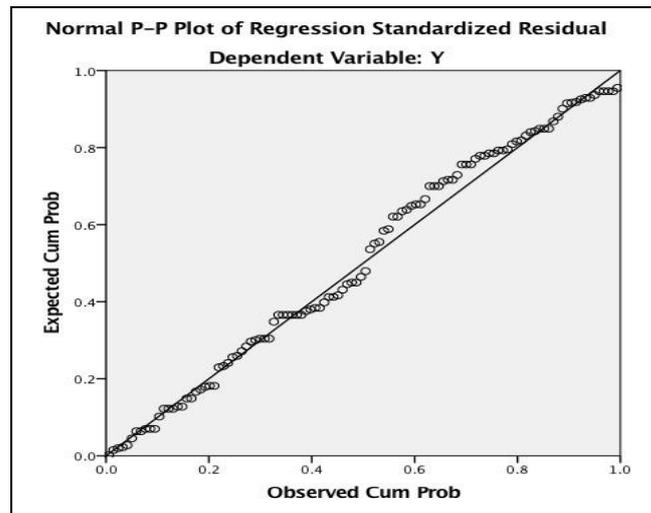


Fig. 9. P-plot test results

The normality test in Study 1 using the Kolmogorov-Smirnov Test One-Sample calculation method, if the significance value (Sig.) is greater than $p > 0.05$ then the research data is normally distributed according to the results of the analysis that shows ($\beta = 0.136, p > 0.05$). The analysis results show that ($\beta = 0.146, p > 0.05$), and the conclusion is that there was no heteroscedasticity in the regression model produced in this study. Based on Figure 9, the results of heteroscedasticity testing with scatter plot graphs show that the distribution of points does not form a particular pattern and these points spread randomly above or below point 0 on the y axis, so it can be concluded that in this regression model heteroscedasticity does not occur.

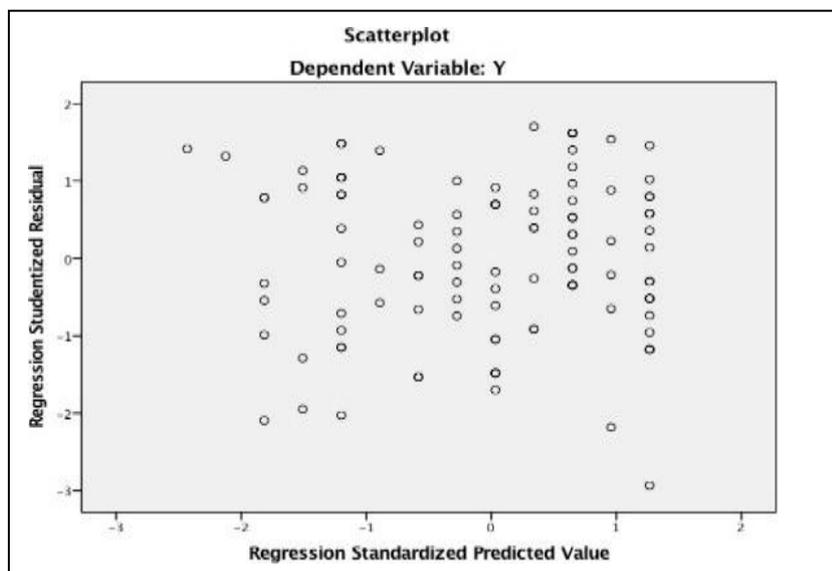


Fig. 10. Results of heteroscedasticity on the scatter plot

In the classical assumption, test analysis results state that all tests should be significantly fulfilled, including a negative linear relationship between the variable attention (x) with MSB (y), that the data are normally distributed, and the absence of heteroscedasticity occurs. The hypothesis test in study 1 presented a significance value of $p = 0.05$. From this result ($p = 0.05$) can conclude that H1 is accepted, which mean that there is a significant influence of attention (x) toward misinformation sharing behaviour (y). The resulting correlation shows a negative relationship seen from the regression coefficient of ($\beta = -2.894$).

Based on the data analysis, the regression equation results are obtained as: ($y=19,533-0,390+e$). The regression equation generated verified that the constant value is 19,533, indicating that if there is no change in the attention variable (Value $x = 0$), the value of misinformation sharing behaviour on social media (y) is 19,533 units, and for the attention variable's

regression coefficient value is -0.390, meaning that if the attention variable increases by 1% and the constant (a) is 0 (zero), then the misinformation sharing behaviour on social media decreases -0.390. The results of the analysis show that the regression coefficient value is negative -0.390. These results verified that the variable attention (x) that has a negative linear correlation trend toward misinformation sharing behaviour (y), so the higher attention (x), the decreasing misinformation sharing behaviour (y).

The Determination Coefficient (R) analysis shows that the R Square = 0.074. This value implies that the attention (x) on the misinformation sharing behaviour (y) = 7%, while 93% misinformation sharing behaviour is influenced by other variables not examined in this study. The significant regression determines (F(1, 11) = 8.899, p < .004), with an R2 of 0.074. The regression coefficient (B = -0.390) indicates that the linear correlation between attention factors and misinformation sharing behavior is moderate negative.

The results justify that when attention behavior increased, misinformation sharing behavior will significantly decrease. Along with the findings, we conclude that attention is one of the key factors underlying misinformation sharing behavior. Additionally, we suggest that attentive behavioral factors are needed to form the basis of developing interactions into the design of future social media systems, which can avoid the potential harm caused by sharing misinformation. Based on the analysis in Study 1 it shows that the H1 hypothesis is accepted.

3.3. VSAS User Experiment Result

The results of the post-test intervention experiment in the second session showed the success of behavior changes that occurred in the second Millennials participant group (see Figure 10). The participant answer choices changed to the response to the first session after information was received, which is if there was information that vaccines could cause death sent by the closest family, the participant answer is "4", which means agreeing to share the information. However, in the second session of the post-test intervention session, the second participant answered is "2", which means that he did not agree to share the information. This changed behavior shows that the intervention carried out can change the participant's decision not to share the information because the information about the vaccine is a "hoax."

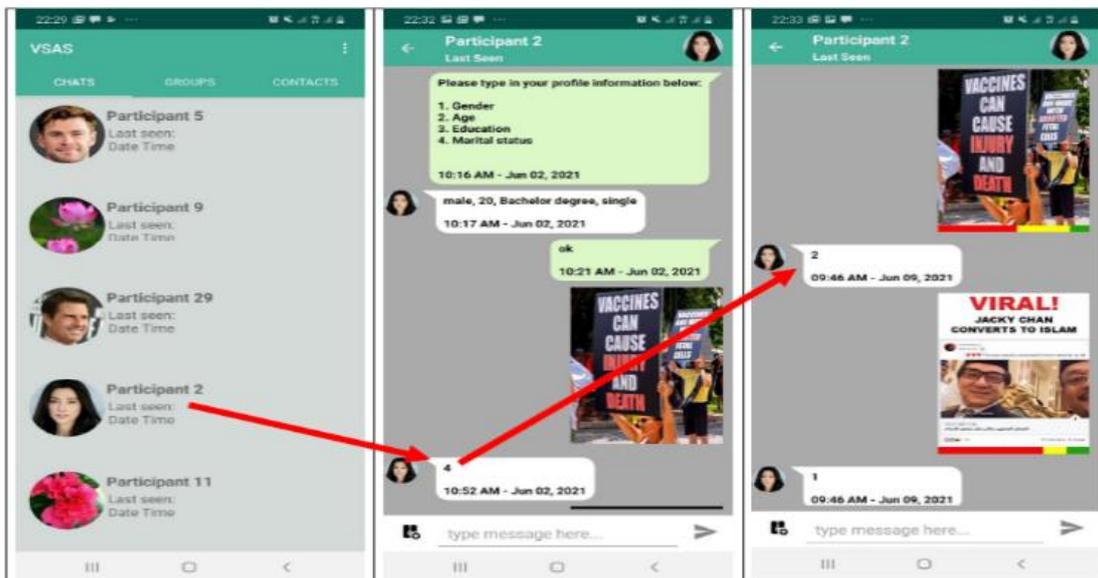


Fig. 11. The results of the post-test intervention experiment

Next, we continued to analyze the experimental results using a descriptive statistical approach by presenting what most respondents expressed and the spread of their responses and polarity in their judgments (how strongly respondents agree with each other) by looking at the central tendency of the user's choice on describing the median and Inter-Quartile Range (IQR) of each item (see Figure 11). The descriptive statistical analysis of the post-and pre-intervention procedure shows that the H2 hypothesis is accepted.

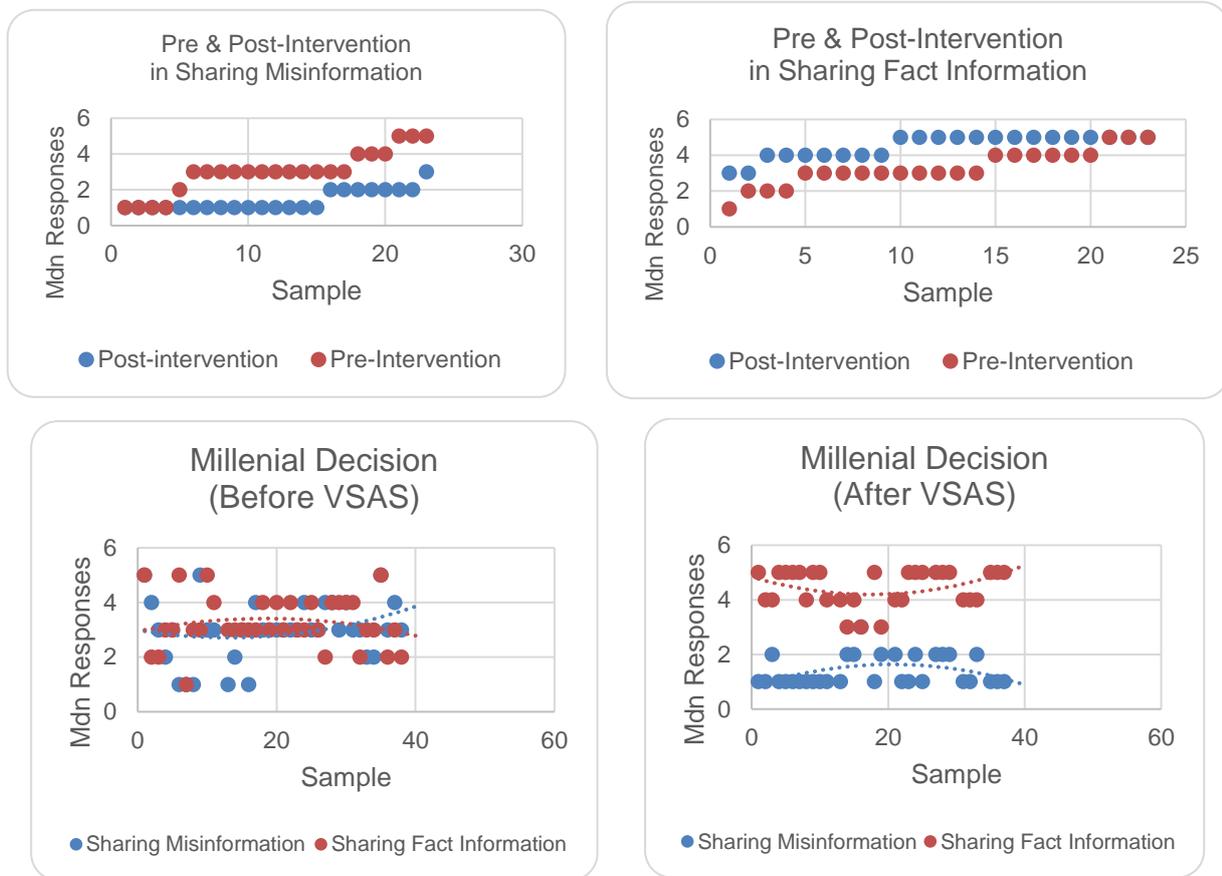


Fig. 12. The descriptive statistical analysis of the post-and pre-test intervention

Table 2 shows that in the post-test intervention on sharing misinformation, the response of 23 Millennial users shows that 15 participants or 65.2% of the total sample chose to answer "1", which strongly disagrees with sharing information that they received, 7 participants or 30.4% of the total sample chose to answer "2", which is that they did not agree to share the information received, and 1 participant or 4.3% of the total sample chose to answer 3, which is neutral to share the information received. The conclusion of this distribution shows a significant change in behavior towards Millennial users' choices when they have received an intervention based on attention-based design. In the analysis of the results of post-test interventions in sharing misinformation, most respondents indicated agreement with the choices in sharing information (Mdn=1, IQR=1).

Table 2. Distribution of Median Responses (Post-intervention on sharing misinformation)

Likert scale	Frequency (n)	Percentage (%)
1	15	65.2
2	7	30.4
3	1	4.3
4	0	0.0
5	0	0.0
Total	23	100

Table 3 shows that in the post-test intervention, in particular in the response of the 23 Millennial users to the context of sharing fact information shows that 14 participants or 60.9% of the total sample chose to answer "5", which is strongly agreed to share the information they received, 7 participants or 30.4% of the total sample chose to answer "4", which does not agree to share the information received, and 2 participants or 8.7% of the total sample chose to answer "3", which is neutral to share the information received. The conclusion of this distribution shows a significant change in behavior towards the choices of Millennial users when they have received an intervention based on attention-based

design to share fact information that has been received. In the analysis of the results of post-test intervention in sharing fact information, most respondents indicated agreement with the choices in sharing information (Mdn=5, IQR=1).

Table 3. Distribution of Median Responses Post-intervention on sharing fact information

Likert scale	Frequency (n)	Percentage (%)
1	0	0.0
2	0	0.0
3	2	8.7
4	7	30.4
5	14	60.9
Total	23	100.0

4. Discussion and Limitations

Our systematic analysis revealed that attention is a significant value (predictor) of online misinformation sharing behavior. These two variables have a direct negative relationship; it does not mean that they have causality because we only naturally observed the participants without changing or adding treatment to variable x in Study 1. In other words, no effort in this research is made to manipulate or control one of the variables. Therefore, we conducted a second study that requires adding a treatment variable that can manipulate or intervene in the misinformation sharing behavior. Based on this finding, we conclude that an attention-based design is required to affect a user's attention factor when the user decides to share misinformation in online media. This research aims to investigate the correlation between attentive behavior and selective exposure like social influence and epistemic belief towards a user's decision in information sharing.

Our primary research problem is based on the understanding that the user is the center of all efforts, especially concerning psychological factors such as attentive behavior when users acknowledge and are distracted while evaluating the content of the information received. This fundamental attitude is directly related to the next phase, from information screening to the diffusion of misinformation. We emphasize that promoting attention behavior when users are about to share misinformation is essential in dealing with the spread of fake news and misinformation. Several constraints expect to contribute to interpreting the results, specifically that this study is based only on a survey and a limited sample of participants. Experimental research with data generated by interaction logs from corporate social media platforms may support further analysis. The findings' generalisability is limited to the research context, which is only limited by attention behavior in sharing information on online media. This online survey, experiment, and analysis data is only obtained from active Millennial users in Malaysia and Indonesia. More data from cultural or demographic backgrounds of a wider range of places is required.

We also conclude that future investigations could explore more complex and comprehensive psychological approaches, such as the construction of trust factors and self-actualization to advance measures of how to deal with misinformation sharing behaviour online. This approach and its positive influence on the field of Human-Computer Interaction (HCI) needs to be achieved in developing a system, following the results of the previous research that encourages other approaches to the investigation into factors impacting human judgment. These results indicate that procedures for handling the dissemination of misinformation must also emphasize psychological and behavioral interventions, such as the design of labeling and incentives to limiting the expansion of misinformation, rather than concentrating only on restrictions using robotic-based applications. The conclusions also recommend that collective disciplines are required to design social media applications and information literacy learning to help reduce misinformation sharing and to support users to flag and to constructively counter misinformation.

5. Conclusion

Based on the findings of this research, we suggest a more comprehensive exploration of the user's psychological role in misinformation sharing. This study's findings can inform a basic theory and empirical research to understand the effects of misinformation on individuals in various domains such as health, security issues, terrorism, natural disasters, politics, and communication management in crises. The results from a set of regression analyses verified that attention factors have a significant negative correlation effect for users to share misinformation on social media, where a higher level of attention significantly reduces misinformation sharing behaviour and this result is also shown by experiments

on a second study. These research findings can also have indirect implications for application developers in designing an online social media system based on considering users' psychological aspects. It is concluded that the crucial common aspect is a need for a proper understanding of the aspects of human judgment factors. More comprehensive and collaborative research is needed to understand the complexity and challenges of human factors to form the basis for technology development concerning combatting misinformation. More specifically, future research can measure and collaborate on the actual techniques for interventions on designs or tools as a hybrid approach that serves as stimulants to intervene on misinformation-sharing behavior on social media platforms. From the outcome of this research, future research directions include investigating how to improve attention that can influence human judgment in sharing information and how this crucial factor engages and interacts with the system and when s/he will share information. The suggested method from this research result is to build an application with an awareness of psychological viewpoints, such as making someone have full attention to the information as s/he receives it. Having full attention can significantly defeat misinformation-sharing behavior by raising the cognitive processes maintained by a person. In the end, this can substantially reduce the problems of spreading misinformation that can create a falsehood and untrustworthy belief environment.

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