ORIGINAL ARTICLE

The Psychology behind Misinformation: *A Correlational Study on Cognitive Failure and Worldview*

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Abstract

This study examines the psychological factors contributing to news consumers' vulnerability to misinformation in today's post-truth media environment. Specifically, it investigates the influence of cognitive failure and worldview on individuals' vulnerabilities to be misinformed and tendencies to carry negative confirmation bias. A correlational research design was employed, utilizing survey questionnaires administered to 201 participants who consume news through online platforms, as well as print and broadcast media. Findings indicate that cognitive failure and worldview significantly contribute to the susceptibility of individuals to misinformation. The results highlight the importance of addressing these cognitive and perceptual factors in media literacy programs. Future efforts in misinformation mitigation are recommended to incorporate psychological insights to enhance critical news consumption.

Keywords: Misinformation, cognitive failure, worldview, news consumers

Introduction

In a post-truth world where fake news has been rampant, many people do not discern whether what the information they are consuming online is true or not because of the absence of reflection on the accuracy of information (Pennycook & Rand, 2021). Fake news, as defined by the Cambridge Dictionary (n.d.), are false stories that appear to be news spread on the internet or using other media, usually created to influence political views or as a joke; however, Waisbord (2018, p.3) emphasized that fake news is the "collapse of the old news order and the chaos of contemporary public communication" as it shows the changes in the dynamics of belief formation and the contested role of news in modern societies.

Misinformation, on the other hand, as defined by Collins Dictionary (n.d.), is erroneous

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information that is given to someone, often in a deliberate attempt to make them believe something that is not true. Wu et al. (2019) used the term to refer to any false or inaccurate information disseminated on social media. They are both related since one of the types of misinformation is fake news, which scholars classify as the intentional dissemination of false information presented as news (Wu et al., 2019).

The influx of fake news circulating online led news consumers to often go with their gut and intuition instead of taking the information they see at face value (Ecker et al., 2022). There have been approaches and solutions to curb misinformation and fake news, but Bakir and McStay (2018) think that achieving widespread impact will face many challenges.

Guided by Dual Process Theory, this study investigated the correlation of cognitive failure and news consumers' world perspectives with misinformation. Few studies link these psychological variables to news consumers' failure to distinguish bogus news, resulting in misinformation. The study targeted the consumers' perspective through psychology and learned how they think about which news they see, providing new theoretical lens on a rising practical issue in journalism. The researchers sought to answer the central question: *Do cognitive failure and worldview lead to misinformation among news consumers?*

Literature review

Cognitive failure: Cognitive failures are defined as minor errors in thinking during everyday life that includes absent-mindedness, or mistakes or errors caused by lapses in attention or memory failure (Reason & Mycielska, 1982). Examples of it include walking to a room only to forget what the person was looking for or pulling the door before noticing the "pull' sign right on its front (Carrigan & Barkus, 2016). Recent literature such as Kemp et al. (2022) have shown possible linkage between worsening memory lapses with prolonged exposure to fake news. Escolà-Gascón et al. (2022) pointed out that failure to detect fake news is related to increased psychopathological risks like anxiety, schizotypy, paranoia, narcissism, and the like, which are mental conditions that affect social skills, and is contributing factor in news literacy. The failure to differentiate false or misleading news from the truth is a symptom of political polarization because they fail to stop and discern whether what they see on social media is true (Pennycook & Rand, 2021).

When deciding if what they see is true, people go for their gut feel or intuition - they are biased toward the validity of the information given (Ecker et al., 2022). Another element is discomfort: the more significant the discomfort is, the more they would believe it and could lead to wider spread of misinformation (Susmann & Wegener, 2022). Tan and Yu Hsu (2022) noted that emotions also play a role in discerning fake news since it can alter one's psychological distance that may affect decision-making. The degree to which an

emotion is relevant to the context of fake news is crucial to its manifestation (Tan & Yu Hsu, 2022). So hypothetically, cognitive failure may make people confused as to which news they should believe in —making news consumers easily becoming misinformed.

Worldview: Funk (2001) defined worldview as a set of ideas about fundamental aspects of reality that underpin and influence everything one perceives, thinks, knows, and does. One's philosophies of life, attitude, outlook, ideology, faith, or even religion are all terms for one's worldview. This definition can mean that news consumers have different philosophies that help them determine what news they want to see and believe in based on their philosophy.

According to Kahan et al. (2011) as cited in Weaver et al. (2017), there are two dimensions of worldview: hierarchy-egalitarianism and individualism-communitarianism. The hierarchy-egalitarianism represents people's attitudes toward social structure particularly societal hierarchy and roles that involves gender, race and class. The individualism-communitarianism, meanwhile, represents people's inclination toward things that would safeguard their well-being without societal interference.

In a sense, we can hypothesize that news consumers' worldviews may lead them to be misinformed. Leiserowitz et al. (2012) found in their research that people's motivational states (values, wishes, and preferences) impact their attention to information, evaluation of data, and conclusions. They tend to accept data and interpretations that validate their prior views, searching for evidence to support their preferred conclusion and stopping once confirmation is found. Conversely, data that contradicts their pre-existing views are often viewed with suspicion (Leiserowitz et al., 2012).
Due to the increasing threat of trolling, misinformation continues to be prevalent in the post-truth era. The confusion of modern public communication has led to the demise of the conventional concepts of news and truth as the cornerstones of journalistic standards. For instance, it is now more challenging to achieve and preserve the traditional notions of news and truth that serve as the foundation of accepted journalistic practice (Waisbord, 2018).

As a result, news audiences should become more skeptical and aware of tricks by being actively inoculated to resist arguments by practicing weaker versions of the same logic. Roozenbeek and van der Linden (2019) developed a "broad spectrum" vaccine that precisely targets a variety of (developing) disinformation infections is urgently needed, as suggested by the idea of psychological immunization against misleading information. Furthermore, Guelmami et al. (2021) also created the Social Media Disinformation Scale (SMDS-12) as a measurement scale to test the social media users' confidence, consumption, and sharing of information related to the COVID-19 pandemic. The SMDS-12 may also be utilized to gauge the accuracy of misinformation disseminated through social media.

Confirmation bias: Confirmation bias is people's proclivity to digest information by seeking or interpreting information confirming their previous opinions (Del Vicario et al., 2017). It plays a significant role in polarization, enabling groups in certain conditions, such as public debates, to fragment public opinion (Del Vicario et al., 2017). They argued that the combination of social influence and confirmation bias generates polarization of communities and homogeneous links, creating a rift in informational influence.

There are many solutions to dealing with fake news, yet it faces unique challenges to achieve widespread implementation and impact. There are numerous solutions to curtailing misinformation and fake news, all wanting to achieve broad impacts. Expect challenges though in rolling out these approaches, some analysts think (Bakir & McStay, 2018), not to mention using research-oriented methods (e.g., observation, experimentation) to help people discern truth from error (Myers, 2019).

Misinformation: Misinformation refers to all false or inaccurate information spread online. Wu et al. (2019) noted that misinformation is categorized into several forms: unintentionally-spread and intentionally spread misinformation, urban legends, fake news, unverified information, rumors, crowdturfing or information backed by falsified supporters, spam, internet trolls, hate speech, and cyberbullying. As social network usage increased, the media's abuse of spreading disinformation and misinformation also increased manyfold (Kumar & Geethakumari, 2014).

Distrust in mainstream media may lead to misinformation among news consumers. Hameleers et al. (2022) stated in their study that the impression that mainstream media could be reporting intentionally false information leads to people seeking alternative sources of information. Linden (2022) likened misinformation to a viral pathogen that can infect its host, spreading rapidly from one individual to another within a given network without the need for physical contact.

With the above discussions on confirmation bias and misinformation, we can, therefore, observe some interaction between these two variables. We hypothesize that news consumers' confirmation bias leads them to be misinformed; eventually, the misinformed news consumer may be carrying negative confirmation bias on the news.

Theoritical Framework

The Dual Process Theory is used as this study's theoretical framework here to explain news consumers' behavior. According to Pennycook and Rand (2013), the theory claims that human cognition can be divided into two categories that are essentially different from one another and have different properties: Type 1 outputs are characterized by automaticity coming into the mind directly as a reaction to the stimulus, and Type 2

processing requires working memory. Evans and Stanovich (2013) explained that Type 1 processes cue default responses that Type 2 processes can later override. It also assumes that while Type 1 processing can be used to form beliefs, logical reasoning requires Type 2 processing. Moreover, Evans (2011) defined Type 1 processing as "fast, high capacity, independent of working memory and cognitive ability," and Type 2 processing as "slow, low capacity, heavily dependent on working memory and related to individual differences in cognitive ability."

While the theory is commonly used in psychological research, it can also be utilized in journalism studies. Researchers, Pennycook and Rand (2013), related the theory in their research about cognitive reflection and disbelief in fake news. Thus, the theory allows the study to further understand news consumers' cognitive ability and behavior when reading and selecting news. The theory should help determine whether news consumers make informed judgments or use their potentially harmful habits in consuming news information.

Research hypotheses: The research questions and hypotheses were based on four variables: worldview, cognitive failure, misinformation, and confirmation bias. Variables 'cognitive failure' and 'worldview' are dependent variables. Below are the hypotheses of the study [see Figure 1]:

H1 (+): Worldviews of news consumers lead to the presence of misinformation.
H2 (+): The presence of news consumers' cognitive failure leads to misinformation.
H3 (+): The presence of worldview and cognitive failure challenges the decisions of news consumers on which news to believe.
H4 (-): Misinformation results to negative confirmation bias amongst news consumers.
H5 (-): Confirmation bias of news audiences leads to misinformation.

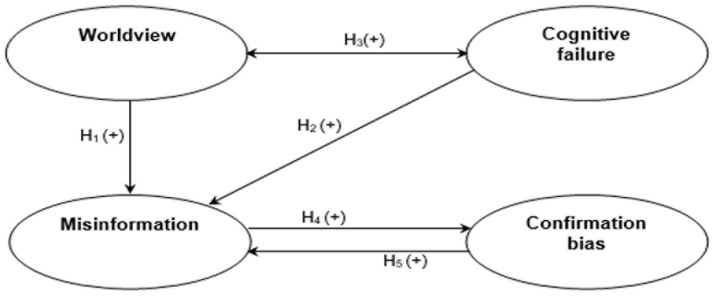

Figure 1. Research hypotheses (a simulacrum)

Methods and Design

Researchers used a correlational research design to determine how cognitive failures and worldviews of news audiences lead to misinformation. Seeram (2019) noted that correlational research is non-experimental research that explains the relationship among variables. Moreover, Coyle (n.d., as cited in Seeram, 2019) explained that the research design could uncover the interacting variables and their type of interaction, thus allowing the researchers to create predictions based on the relationships.

Subjects: Voluntary response and criteria sampling were used to recruit participants for this study. The following criteria were observed: (a) the respondents must be Filipino citizens; (b) residents of Metro Manila; (c) must be at least 18 years old; and (d) must be news consumers who get their news information through an online platform and at **least** one mainstream media platform, which includes print and broadcast media.

A total of 201 respondents participated voluntarily by answering the online survey. The majority are female (70.6%), are working (49.3%), and are students (34.8%). The mean age is 33.46 years. A little over 65 percent of respondents expressed that they support a Filipino politician.

Instrumentation: The researchers deployed a survey questionnaire. The questionnaire contained the following sections: news consumers' demographic information (i.e., gender, age, etc.); test statements on the personal worldviews of respondents; a Likert scale coming from the Cognitive Failures Questionnaire (Broadbent et al., 1982); the Need for Closure Scale or NFCS (Webster & Kruglansi, 1994); and a set of questions to identify fake news using news headlines.

The researchers used the CFQ created by Broadbent et al. (1982) to evaluate how frequently news audiences commit errors in information comprehension. It includes four general factors: attentional difficulties, problems with memory, motor functioning, and errors of perception. The respondents were asked to evaluate themselves for each cognitive failure on a 5-point scale (1 = never, 5 = very often). Moreover, the researchers utilized the NFCS, originally developed and published by Webster and Kruglansi in 1994 but were updated by Roets and Van Hiel, to assess individuals' motivations regarding their ability of information processing and judgment. It was computed by adding the total number of items. Furthermore, sub-scale scores were calculated by summing up the items based on their sub-scale designation. The following sub-scales are: (1) 'a'—measure the need for order; (2) 'b'–-measure the need for predictability; (3) 'c'—measure decisiveness; (4) 'd'—measure avoidance of ambiguity, (5) 'e'—measure closed-mindedness. Lastly, the respondents were asked a set of questions to identify fake news using news headlines. These were a unit of actual news headlines and false information, which respondents rated from 1 to 4 (1 = not accurate, 4 = extremely accurate).

Experts such as a psychology professor and a journalist validated and reviewed the research instrument before the survey questionnaires were administered. A pilot survey was done to 20 individuals whose characteristics are similar to the actual research participants (these pilot survey respondents were not recruited anymore for the actual survey). An open-ended question was added at the end of each section to assess how the respondents interpreted the questions. After its approval, the researchers finalized the content of the survey and distributed the questionnaires through online and physical modes of surveying (the former via Facebook).

Data analysis: Demographic information was presented as frequencies and percentages. The descriptive data for the variables worldview, cognitive failure and confirmation bias were analyzed using descriptive statistics (mean, median, standard deviation), the same **w**ith misinformation (frequency counts).

To test the first, second, fourth, and fifth hypotheses, partial least squares– structural equation modeling (PLS-SEM) was employed using the Warp-PLS version 7 software. Unlike other regression-based approaches, this technique enables researchers to include mediating variables in a model. It offers the advantage of analyzing complex model structures, leading to more comprehensive and meaningful conclusions (Haenlein & Kaplan, 2004). This technique requires the assessment of the measurement model and the analysis of the structural model.

To test the third hypothesis, the non-parametric Kendall's tau-b coefficient of correlation was computed and tested for significance at the 0.05 level. This was deemed appropriate instead of the Pearson-Product Moment correlation coefficient since the One-Sample Kolmogorov-Smirnov test for normality indicated that the Worldview and Cognitive Failure data were not normally distributed.

The measurement model was assessed in terms of convergent validity (using average variance extracted or AVE) and discriminant validity (using HTMT ratio) as well as in terms of internal consistency (using Cronbach's alpha) and composite reliability. Additionally, the structural models were evaluated using some global model fit and quality indices (Kock, 2021) provided by WarpPLS Version 7.0. The average path coefficient (APC), average R-squared (ARS), the average block variance inflationary factor (AVIF), and the average full VIF must be less than or equal to 3.3, and the Tenenhaus goodness of fit (GOF), a measure of the model's explanatory power, must not be lower than 0.10 to be considered acceptable.

As to the sufficiency of the sample size, a prospective minimum sample size computation using the inverse square root method recommended by Kock and Hadaya (2018) was used. Given a significance level of 0.05 and a required statistical power level of 0.80, the

sample size of N = 201 respondents is sufficient. Meanwhile, the measurement model was evaluated based on the following psychometric properties: internal consistency (using Cronbach's alpha), composite reliability, convergent validity, and discriminant validity. As suggested by Kock (2021), the composite reliability and Cronbach's alpha values must be at least 0.70 to be considered reliable.

A measurement model has acceptable convergent validity when the indicator loadings are close to 0.50 and the p-values associated with these loadings are at most 0.05. The Heterotrait-Monotrait (HTMT) Ratio of Correlations is used for discriminant validity assessment in conjunction with latent variable correlations. The HTMT ratio is smaller than one, indicating that discriminant validity is established between two latent variables. The full collinearity variance inflationary factors (VIFs) are also provided to assess the degree of collinearity involving the latent variables in the model. Some observed variables or indicators were removed since they failed to meet the criteria mentioned earlier [see Table 8].

Table 1. Properties of the measurement model

Variables and question items	Factor Loadings	Composite reliability	Cronbach's Alpha	AVEs	VIFs
Worldview		.883	.841	.559	1.100
WV1	0.754**				
WV2	0.805**				
WV3	0.748**				
WV6	0.661**				
WV7	0.747**				
WV8	0.763**				
Confirmation Bias		.914	.882	.679	1.042
NCFA	0.871**				
NCFB	0.803**				
NCFC	0.36**				
NCFD	0.793**				
NCFE	0.816**				
Cognitive Failure					1.088
Misinformation Score					1.053

**The loadings are significant at p < .001

Ethical considerations: The project received approval from the University of Santo Tomas Journalism program's institutional review board (with approval number JRNERC-202324-10). A participation information sheet and consent form were handed out to respondents prior their answering. Data were stored and encrypted using Figshare, a cloud-based server for researchers.

Findings

A total of 201 respondents participated voluntarily by answering the online survey. The majority are female (70.60%), close to 50% are working (49.30%), and 34.8% are students. The mean age is 33.46 years, with a standard deviation of 14.225 years. A little over 65% expressed that they support a Filipino politician.

To test whether a significant difference in misinformation and confirmation bias exists between male and female respondents and between those who support and do not support a politician, the non-parametric Mann-Whitney test for independent samples was done since the results of the One-Sample Kolmogorov-Smirnov test indicated that the misinformation and confirmation bias scores are not normally distributed.

There is a significant difference between the confirmation bias scores of the male and female respondents [see Table 2]. Furthermore, it can be concluded that the mean confirmation bias scores of the female respondents (M = 52.21) are significantly higher than their male counterparts (M = 45.25), $z = -2.433$, $p < 0.05$. On the other hand, the males' mean misinformation score of 6.31 is not significantly different from the misinformation scores of the female respondents (M = 6.00), $z = -1.547$, $p > 0.05$.

Table 2. Summaries of respondents' scores when grouped based on gender

Gender	N	Confirmation Bias Score			Misinformation Score		
		Mean	SD		Mean	SD	
Male	59	45.25	15.601		6.31	1.193	
Female	142	52.21	17.080		6.00	1.315	
Mann-Whitney test results	**N**	**Mean Rank**	**z**	**p-value**	**Mean Rank**	**z**	**p-value**
Male	59	85.52			110.59		
Female	142	--	-2.433	0.015	--	-1.547	0.122

Table 3 shows a significant difference between the confirmation bias scores of those who support and do not support a politician. Furthermore, it can be concluded that the mean confirmation bias scores of those who support a politician (M = 53.46) are significantly

higher than those who do not support (M = 48.49; z = -1.968, p < 0.05). On the other hand, given the mean misinformation scores of those who support a politician, the difference, however, is not statistically significant (z = -0.826, p > 0.05).

Table 3. Summaries of respondents' scores when grouped based on support for a politician

Support a politician?	N	Confirmation Bias Score			Misinformation Score		
		Mean		SD	Mean		SD
Male	68	53.46		18.064	6.19		1.273
Female	133	48.49		16.118	6.04		1.293
Mann-Whitney test results	**N**	**Mean Rank**	**z**	**p-value**	**Mean Rank**	**z**	**p-value**
Male	68	112.29			105.62		
Female	133	95.33	-1.968	0.049	98.64	-0.826	0.409

Worldview, cognitive failure, confirmation bias and misinformation

Most respondents slightly disagreed to the test statement that "people only believe in "free will" because they are taught to believe in it"; "It is pure coincidence that human life has developed on Earth"; and that "when people say they feel joy through spiritual experiences, this is just the power of suggestion. They disagreed with the rest of the statements provided regarding worldviews on monotheistic belief and free will illusion. In assessing cognitive failure, it was found minor mistakes are committed occasionally (median = 2) [see Table 4].

Table 4. Respondents' worldview regarding monotheistic belief and freewill illusion

Statements / Indicators	Median*	Mean	SD
The idea of "free will" is a joke: there is no such thing.	2	2.52	1.470
People only believe in "free will" because they are taught to believe in it.	3	3.05	1.558
Human beings are like computers: controlled by their programming, and without real choice.	2	2.50	1.484
Freewill Illusion			
It is pure coincidence that human life has developed on Earth.	3	3.01	1.425
I find the whole idea of 'spirituality' or 'something spiritual' is nonsense.	2	2.33	1.278
When people say they feel joy through spiritual experiences, this is just the power of suggestion.	3	2.78	1.379

Notes: Interpretation based on the Median values below - 6 – Strongly Agree, 1 – Strongly Disagree

It was also found that respondents agreed that they do not like situations that are

uncertain, feel relieved when they have made a decision, are dying to reach a solution quickly when confronted with a problem, and enjoy having a clear and structured mode of life. They usually consult many different opinions before forming their own views [see Table 5].

Table 5. Respondents' answers regarding cognitive failure

Statements/Indicators	Median *	Mean	SD
Do you read something and find you haven't been thinking about it and must read it again?	2	2.49	0.960
Do you find you forget why you went from one part of the house to the other?	2	2.17	1.020
Do you fail to notice signposts on the road?	2	1.71	1.003
Do you find you confuse right and left when giving directions?	1	1.58	1.181
Do you bump into people?	2	1.70	1.030
Do you find you forget whether you've turned off a light or a fire or locked the door?	2	2.06	1.105
Do you fail to listen to people's names when you are meeting them?	2	2.04	1.051
Do you say something and realize afterwards that it might be taken as insulting?	2	2.23	1.105
Do you fail to hear people speaking to you when you are doing something else?	2	2.27	1.058
Do you lose your temper and regret it?	2	2.29	1.075
Do you leave important letters unanswered for days?	2	1.82	1.087
Do you find you forget which way to turn on a road you know well but rarely use?	1	1.56	1.009
Do you fail to see what you want in a supermarket (although it's there)?	2	1.75	1.090
Do you find yourself suddenly wondering whether you've used a word correctly?	2	2.34	1.007
Do you have trouble making up your mind?	2	2.27	1.103
Do you find you forget appointments?	1	1.49	1.045
Do you forget where you put something like a newspaper or a book?	2	2.08	1.015
Do you find you accidentally throw away the thing you want and keep what you meant to throw away – as in the example of throwing away the matchbox and putting the used match in your pocket?	1	1.59	1.137
Do you daydream when you ought to be listening to something?	2	2.11	1.083
Do you find you forget people's names?	2	2.19	1.038
Do you start doing one thing at home and get distracted into doing something else (unintentionally)?	2	2.38	1.028
Do you find you can't quite remember something although it's "on the tip of your tongue"?	2	2.44	0.942
Do you find you forget what you came to the shops to buy?	2	1.86	1.063
Do you drop things?	2	1.80	1.002
Do you find you can't think of anything to say?	2	1.97	1.010

Notes: Interpretation based on the Median values below - 6 – Strongly Agree, 1 – Strongly Disagree

Table 6 presents the different news headlines that were evaluated by the respondents to assess misinformation, showing the correct responses, the percentage of those who correctly and incorrectly responded. More than half of respondents incorrectly assessed the headlines "Robredo admits 'mistakes' in responding to disinformation", and "Marcos Jr. is top pick of Generation Z, says Pulse Asia survey".

Table 6. Misinformation test (respondents' correct and incorrect answers)

News Headline	Correct Answer	% of Correct	% of Incorrect
President Ferdinand Marcos Jr. declares February 29-31 a special non-working holiday.	Inaccurate	80.10	19.90
Robredo admits 'mistakes' in responding to disinformation.	Accurate	48.76	51.24
Marcos Jr. is top pick of Generation Z, says Pulse Asia survey	Accurate	26.87	73.13
'In Supreme Court Appeal, Maria Ressa Claims Rappler Is Satire, A Protected Free Speech!	Inaccurate	54.23	45.77
Philippines-US joint West Philippine Sea patrols should not offend	Accurate	57.21	42.79
TV Patrol Anchors Flash The 5-Finger Hand Gesture; Netizens Speculate	Inaccurate	65.67	34.33
COVID-19 out of top 10 causes of deaths in PH, report shows	Accurate	58.71	41.29
PH gets better political risk rating, but 2022 growth still in doubt	Accurate	52.24	47.76
People Power Monument was empty during 50th anniversary of martial law declaration	Inaccurate	80.10	19.90
Queen Elizabeth congratulates Bongbong Marcos' presidential win	Inaccurate	85.07	14.93

Table 7 presents the sum of the responses to the variables of the study. Respondents, on average, have a medium level of confirmation bias. For cognitive failure, the mean score is M = 50.17 —indicating that these respondents occasionally commit errors in information comprehension. The mean score for confirmation bias is M = 59.98. Based on the scoring note of the instrument adopted, scores up to 30 mean low confirmation bias while scores between 75 to 90 mean high confirmation bias. It can be deduced that the respondents, on average, have a medium level of confirmation bias. Finally, regarding the news items evaluated as inaccurate or accurate to assess misinformation, the incorrect answers per respondent carried the mean score of M = 3.91. This result implies that the respondents are able to identify false information nearly 60 percent out of 10 items.

Table 7. Descriptive results for the four main variables under study

Total Score	Variables	Mean	SD
36	Worldview	16.19	6.424
100	Cognitive Failure	50.17	16.921
90	Confirmation Bias	59.98	11.79

10	Misinformation (No. of mistakes)	3.91	1.285

To test the hypothesis that "a news consumer's worldview is significantly correlated with how frequently he/she commits errors in information comprehension," results show a significant but weak positive correlation between worldview and cognitive failure, $\tau = 0.203$, $p < 0.001$ [see Table 8]. Regarding the subscales, monotheistic beliefs and free will illusion are positively and significantly correlated with cognitive belief, but to an even weaker extent, $\tau = 0.183$ and $\tau = 0.162$, respectively. These results indicate that although the correlation is not strong, the higher the level of agreement regarding worldview, the higher the cognitive failure or the frequency of committing minor errors in news information comprehension. These results do not imply causality. Nevertheless, the study's third hypothesis is supported.

Table 8. Correlation between variables (using Kendall's tau-b)

	Cognitive Failure	p-value
Monotheistic Belief (W1-W3)	0.183	<0.001
Free Will Illusion (W6-W8)	0.162	<0.001
Worldview	0.203	<0.001

Partial least squares – Structural Equation Modeling (PLS-SEM) was deemed appropriate for testing the study's four other hypotheses since PLS-SEM enables researchers to include mediating variables in a model, unlike other regression-based approaches. PLS-SEM offers the advantage of analyzing complex model structures, leading to more comprehensive and meaningful conclusions (Haenlein & Kaplan, 2004). This technique requires the assessment of the measurement model and the analysis of the structural model. Meanwhile, the indicators used to measure the different variables have acceptable internal consistency, as indicated by Cronbach's alpha and composite reliability values greater than 0.70. These reliability test results indicate that the respondents understood the indicators associated with each variable in the same manner as the researchers intended them. Regarding discriminant validity, all average variance extracted values (AVEs) are greater than any number in each column, indicating that discriminant validity can be regarded as established. This indicates that the respondents who completed the questionnaire do not confuse the indicators associated with one latent variable with those associated with other latent variables, especially regarding the meaning conveyed by these indicators.

Structural model assessment and hypothesis testing

Under this section is presented the results of two structural models that employed PLS-SEM. The structural models were evaluated using some global model fit and quality indices (Kock, 2021) provided by the software WarpPLS Version 7.0. For the

first structural model, model-fit indices for average path coefficient (APC), average block variance inflationary factor (AVIF) and the average full VIF (AFVIF) were acceptable, while the Tenenhaus goodness of fit (GOF) result (p = 0.201) suggests the model has a small explanatory power. The PLS-SEM results for the first structural model [see Figure 2] show worldview and cognitive failure can explain six percent of the variation in misinformation (INFO), while INFO can explain four percent of the variation in confirmation bias. For the second structural model [see Figure 3], worldview, cognitive failure, and confirmation bias can explain 10% of the variation in misinformation (INFO). Same with the first structural model, model-fit indices for APC, AVIF and the AFVIF were acceptable while the Tenenhaus goodness of fit (GOF) result (p = 0.281) suggests that the model has a small explanatory power.

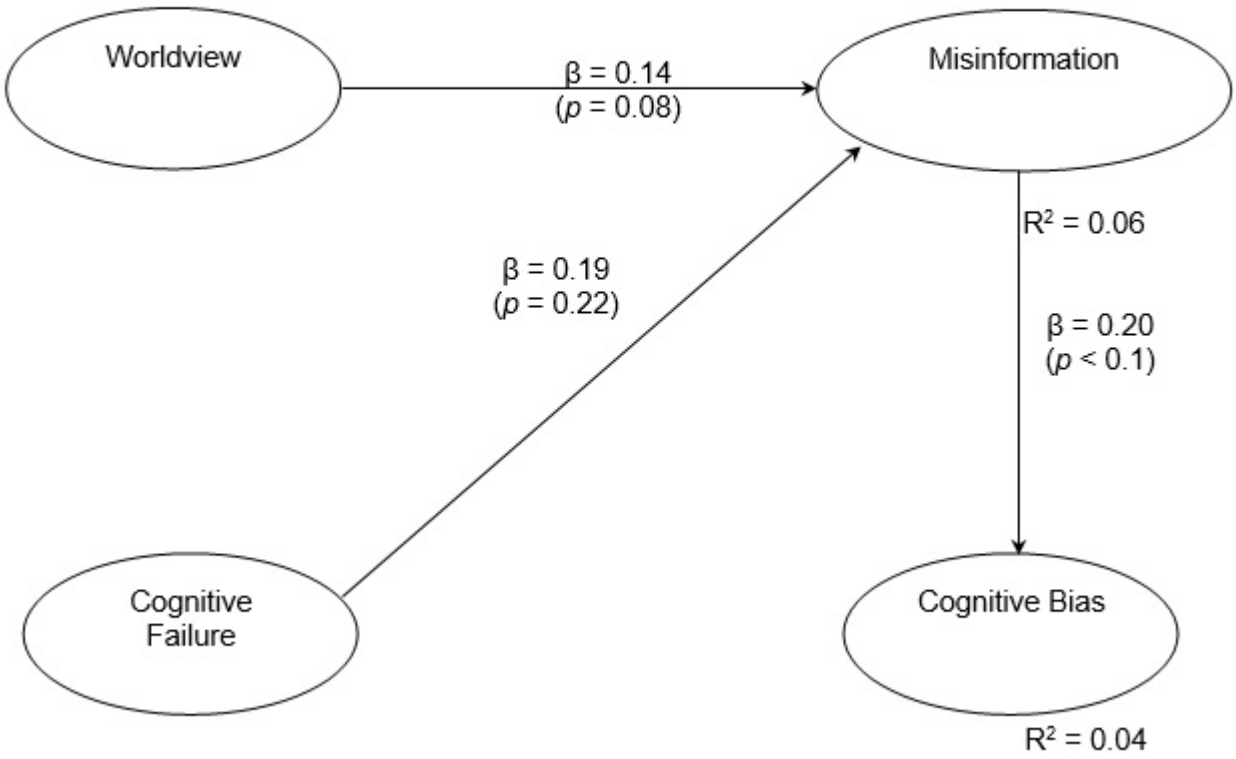

Figure 2. Results for structural model 1

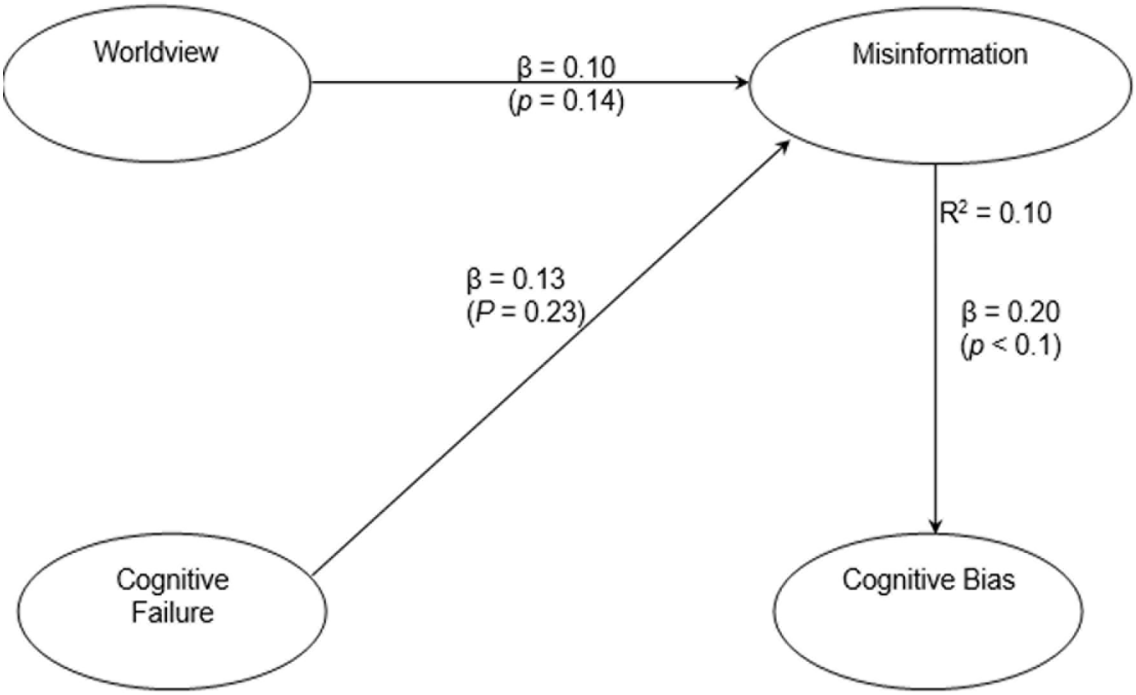

Figure 3. Results for structural model 2

We now reveal the results of the hypothesis testing for the first, second, fourth and fifth hypotheses [see Table 9]. The first hypothesis' (worldview presence of misinformation) path coefficient results show a p-value result greater than 0.05, and thus this first hypothesis is not statistically supported. For the second hypothesis (presence of cognitive failure misinformation) also had a p-value result greater than 0.05, and this specific hypothesis is also not statistically supported. The coefficient for the fourth hypothesis (misinformation negative confirmation bias) carried a p-value less than 0.05, thus statistically supporting this hypothesis. Finally, the fifth and final hypothesis (confirmation bias misinformation) also carried a coefficient with a p-value less than 0.05. This result indicates that confirmation bias has a significant but negative influence on misinformation. As well, since the beta coefficient is β = -0.200, a one-unit increase in confirmation bias results in a reduction in misinformation by 0.200 points. Individuals with higher motivation regarding their ability of information processing and judgment will have lower scores on misinformation or are more able to distinguish between accurate and inaccurate news information.

Table 9. Path coefficients for structural models 1 and 2

Hypotheses/Paths	β Coefficients	p-values
First structural model		
H1: Worldview → Misinformation	-0.135	0.082
H2: Cognitive Failure → Misinformation	0.185	0.215
H4: Misinformation → Confirmation Bias	-0.201	<0.001
Second structural model		
H1: Worldview → Misinformation	-0.099	0.144
H2: Cognitive Failure → Misinformation	0.158	0.231
H5: Confirmation Bias → Misinformation	-0.200	<0.001

Discussion

The researchers sought to determine if cognitive failure and worldview lead to misinformation among news consumers from the Philippines (N=201). Hypotheses were tested using partial least squares – structural equation modeling. Results essentially show that: 1). The worldviews of news consumers do not lead to the presence of misinformation, and results showed that there is no correlation. This may be because of the developed "broad spectrum" by Rozenbeek and van der Linden (2019); it is a vaccine that precisely targets a variety of (developing) disinformation infections that is urgently needed, and as suggested by the idea of psychological immunization against misleading information. Also, it might be because news consumers do not let their world views be affected when reading or selecting news. What the result of the first hypothesis indicates is that the worldviews of news consumers do not affect how they see or read news and thus does not contribute to news consumers being misinformed.

The second hypothesis (cognitive failure misinformation) is also not supported. This result can be explained by the insight that the failure to detect fake news is related to increased psychopathological risks (Escolà-Gascón et al., 2022), but this may not apply to all news consumers. It is also because they analyze whether what they see is true or not. People's minor lapses in thinking do not lead them to get misinformed.

As to our third hypothesis (worldview and cognitive failure are present in deciding which news to believe), it was found that, to a certain extent, worldview with cognitive failure can affect news consumers in deciding which news to believe in. As said by Ecker et al. (2022), in their decision to believe what is accurate, they tend to be biased to believe in the validity of the information but instead go for their gut feel and intuition instead of deliberating. In contrast with our first hypothesis, the worldviews of news consumers are connected to the cognitive failures of news consumers in discerning news articles. Thus, worldview alone will not make them misinformed, but together with their lapses in thinking, they will.

Results for the fourth hypothesis (misinformation results in negative confirmation bias amongst news consumers) reveal a correlation. According to Del Vicario et al. (2017), these two variable play vital roles in polarization, enabling groups in certain conditions like public debates to fragment public opinion. It can also be that people believe what they read or confirm their bias in certain news they see or read, leading to them getting misinformed. This result for the fourth hypothesis, if we apply Dual Process Theory, shows that people are Type 1 or act automatically —and they may believe what they see, leading them to become prospectively misinformed.

Additionally, results found that women have a higher confirmation bias than men. This observation could be because certain types of people believe a phenomenon is a hoax (Nimbi et al., 2023). This difference could imply that women over men are more susceptible to finding information that suits their beliefs. It was also found that those who support politicians have a significantly higher confirmation bias than those who do not. This could be due to polarization which, according to Del Vicario et al. (2017), is a combination of social influence and confirmation bias that causes polarization among communities and homogenous links. This result means their bias toward a specific politician can influence how they read or select news.

The results showed that cognitive failure and confirmation bias lead to misinformation, and that the worldviews of news consumers alone will not get them misinformed. Instead, when cognitive failure is present, they tend to be misinformed. Study results also showed that females have a higher confirmation bias than males, and those who support a politician have a higher confirmation bias than those who do not.

We present the limitation that results of the hypothesis, with particular reference to the Tenenhaus goodness of fit (GOF) results for the two structural models, suggest that the model has a small explanatory power. That result showed even if the other model-fit indices in our PLS-SEM were acceptable. We also present the limitation that all respondents surveyed resided in the Philippines' most developed geographic region: Metro Manila, or the National Capital Region. Nevertheless, the study revealed pilot results that determined the correlation between the four major variables under study.

Our study found that both cognitive failure and worldview can lead to misinformation. There is a significant correlation between news consumers' worldviews and their minor errors in thinking that lead them to get misinformed. Our study also utilized the Dual Process Theory (in Pennycook & Rand, 2013) to understand the connection between the two psychological factors regarding being misinformed. It seemed that surveyed respondents go back to their habit (automatic action) which, according to the dual process theory, is a Type 1 person.

Conclusion

This study investigated if cognitive failure and worldview may lead one to be misinformed. Future researchers could look for other psychological factors that may affect one's vulnerability to misinformation, as well as use other theories on decision-making. The Dual Process Theory could only determine the behavior of individuals with one of two choices.

Future researchers may also employ mixed methods approaches to gather respondents' thoughts on how and why they may be misinformed. A mixed methods approach could help get a more comprehensive explanation behind a person being misinformed. It is also recommended that a survey questionnaire be created that may help get definitive answers for the study rather than relying on existing questionnaires used in previous studies. Having specific criteria for respondents is recommended if future researchers aim to approach a specific group of people rather than having a broad spectrum like in this study. Study results also provide empirical insights to concerned parties —schools, news media, advocate groups against misinformation (e.g., civil society organizations)— that have been training people to elude misinformation and fake news found both online and offline. Results also affirm the place of psychological variables in news consumption and in deciding whether to believe or elude the piece of misinformation.

Having more specific criteria for respondents can help compare different groups of people and could provide unique findings based on the chosen group. We say this insight in recommending journalists should consider that specific news consumers may either be skeptical of what they publish or accept their information outright, which could potentially result in being misinformed on various topics.

This study found that one's minor lapses in thinking and worldviews contribute to being misinformed, which now improves the point that being misinformed is a psychological concern. Misinformation affects everyone, but now, we can study this from different perspectives —not just on a social media basis.

Contributor Roles Taxonomy (CRediT) declaration by authors

Author 1 (lead author): study conceptualization; investigation; formal analysis (quantitative); research coordination; writing original draft; writing – review and editing.
Author 2: investigation; formal analysis (quantitative); writing original draft; writing – review and editing.

Author 3: supervision; formal analysis (qualitative, mixed methods); writing – review and editing.

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