The Psychological Underpinnings of Believability

Emeritus Professor Karen J. Pine & Claire Gregory, M.A.

Table of Contents

Introduction

The current paper is an update of a 2011 report written by Professor Karen J Pine following the 2008 financial crash and the UK MP's expenses scandal. While the original report was written from an advertising and marketing standpoint, the current adaptation takes a more psychological approach to the topic of believability. This paper has been written in conjunction with 100 Ways in 100 Days™, a UK based company that offers an employee engagement programme to companies which encourages participants to make sustainable behaviour changes in their personal lives. An important aspect of behaviour change is communicating information in a clear and believable manner. This goal is what inspired the literature review encompassed in this paper, which discusses the basis of belief, factors that impact belief, and addresses modern day issues of misinformation and mistrust in experts.

The Evolution of Belief

Our evolutionary history favoured those who could distinguish truth from fiction, particularly when there was competition for resources. Even apes can deceive one another. According to evolutionary psychologists, apes are not only capable of purposeful deception, but also have deception skills superior to those of three-year-old human children (Kirkpatrick, 2007; Lewis et al., 1989). The survival value of the ability to deceive cannot be underestimated, particularly if it originally involved high-stakes situations such as the whereabouts of food sources. Uncertainty may have been the enemy of survival, and those who honed their truth detecting skills would outwit and out-survive those who did not. It is therefore little wonder that humans have evolved neural systems in the brain associated with these functions (Harris et al., 2007; Sacks & Hirsch, 2008; Byrne & Whiten, 1988).

The notion that humans can process messages without being aware they are processing them is not surprising when we consider that the unconscious mind can process 11 million bits of information every second, while the conscious mind can only process 40-50 bits of information per second (Agarwal, 2020). Due to the fact that we can only consciously process such a small percentage of the information we are constantly bombarded with, our brains have developed a number of mental shortcuts for efficiency, called heuristics. Every day we divide our attention between multiple inputs. Judging the believability of each would cause a huge cognitive load on our mental resources (Miller, 1956). Much of the time people only pay attention to things on a superficial level, preferring to rely on heuristics, which are fast peripheral strategies to help us judge stimuli. Some common heuristics include likeability and trustworthiness of the source that information comes from, or emotional triggers caused by the message itself (Salovich et al., 2021; Meinert & Krämer, 2022).

Sam Harris, from the University of California Los Angeles Brain Mapping Center, and colleagues published a ground-breaking study identifying the neural correlates of the more peripheral route to belief. The research team used fMRI brain imaging to find that there are distinct brain areas involved in belief, disbelief, and uncertainty. They found that accepting something as true, or rejecting it as false, did not rely solely on the logic and reasoning areas of the brain. The more intuitive, or hedonic, areas of the brain seemed to be making the final acceptance or rejection decision about the statements the participants were presented with (Harris et al., 2007). Despite the logical areas of the brain being involved in the linguistic assessment of the statements, believability was found to be coming from a more emotional brain area than a rational one. Believable messages can activate the emotional areas of the brain without the receiver being aware of it. This highlights the importance of the automatic and peripheral route to believability, because unlike the central logical route, it does not require the recipient to be actively thinking.

Research has shown that consumers make buying decisions even when they aren't paying attention to products, via the automatic and intuitive processes that feed directly into the subconscious (Tusche et al., 2010). Brain research has shown that humans may be hard-wired to believe rather than disbelieve as our default, until we find proof to the contrary (Harris et al., 2007). It has previously been thought that judging a proposition as true involves less mental effort than it does to judge it as false (Seitz & Angel, 2020). The speed with which organizations and humans operate now, and with which vast flows of information reach the outside world, is increasing at an alarming rate. Fast-moving organizations cannot afford to have their people checking to see if they have understood something correctly, seeking clarification of the facts, or having doubts about what they have heard. Too much time deliberating over a message can delay decisions, while the world moves on. It is more important than ever to convey messages that people feel confident acting upon with no second thoughts or doubts.

What Makes Messages Believable

There are two routes to believability. The explicit, overt route that involves facts, information and appeals to reason can be thought of as the *central route*. The route that changes beliefs by subtly targeting unconscious psychological responses can be thought of as the *peripheral route* (Kirkpatrick, 2007; Gao et al., 2022). In some areas of cognitive psychology, these two routes of thinking and processing are referred to as System 1 and System 2, with System 1 being the more intuitive and quick-processing route, while System 2 is the slower and more analytical side that prefers facts and data (Byrne & Whitten, 1988; Stanovich & West, 2000; Tversky & Kahneman, 1974). Effective persuasive communication involves a combination of both approaches, but in this new age of scepticism, the emphasis on the peripheral route and System 1 processing is even more important than before.

- *Believable messages capture short attention spans, and consider the intuitive and subconscious factors at play in how people make decisions about what to believe.*

Confirmation Bias

How can a message creep under the scepticism barrier, and replace an old belief with a new one? After all, the reluctance to let go of existing beliefs is only human (Moore et al., 2021). Beliefs are integral to our personalities (Sherman & Cohen, 2006). Expression of our beliefs is often what defines us to others, so we have honed our skills for scepticism (Steele, 1988). For a person to change their view is to change part of their identity, of which most are very protective (Moore et al., 2021; Sherman & Cohen, 2006). Psychological research can shed light on factors that increase the likelihood of people changing their beliefs. Researchers from Sheffield University in 2008, for example, showed that it helps to positively affirm someone's existing identity before challenging their pre-existing views (Armitage et al., 2008). Participants engaged in self-affirmation before they were exposed to a persuasive health message about smoking. The researchers found that those who first did a self-affirmation task were more likely to accept the health message, even if it was threatening to their identity as a smoker. Essentially, if people's self-esteem is boosted by reminding them that they are moral, discerning, compassionate, and so on, they are more likely to find a message believable. In fact, flattery and discussion of the participant's best qualities was more effective than using a simple logical argument (Bago et al., 2020). These findings have been consistent since as far back as 1975, when researchers at an American elementary school found that repeatedly telling students that they were neat and tidy people led to more of a decrease in classroom littering than the use of persuasion (Miller, Brickman & Bolen, 1975).

When people are not buttered up first, however, they prefer messages that confirm or re-affirm their pre-existing belief to ones that try to persuade them to give up or change those existing beliefs (Festinger, 1957; Moore et al., 2021; Klayman, 1995). This tendency is called a confirmation bias, where people selectively attend to and process information that confirms their own beliefs (Kahneman, 2011; Festinger, 1957). Under these conditions, a message's strength of argument may matter less than its consistency with the receiver's pre-existing attitudes. The message which has a positive impact is the one that highlights beliefs central to a person's identity.

- *A message is believable if it affirms an individuals' self-esteem and positive qualities, and if it confirms, rather than challenges, their pre-existing views.*

Cognition and Emotion

Individuals differ in their propensity to believe things. People who have a high 'need for cognition' (Cacioppo & Petty, 1982) tend to engage in more cognitive processing of a message, devoting more time and thought to it, particularly if they have not been engaged at the emotional level. On the other hand, those low in need for cognition are more likely to make quick judgments and use heuristics (mental shortcuts) to arrive at decisions about incoming information (Petty et al., 2009).

As well as cognitive capacities, the physiological and emotional state of the message receiver plays a role too. Caffeine, for example, has been shown to make people more receptive to persuasive messages, but only if the argument is thoughtful, genuine, and well-reasoned (Martin et al., 2007).

An individual's receptivity is also affected by their mood at the time that they receive the message. Research has shown that congruency between the mood of the receiver and the focus of a message increases the effectiveness of the message, with positive mood enhancing the effectiveness of positively-framed messages, and negative mood enhancing the effectiveness of negatively-framed messages (Sar & Anghelcev, 2015). The process also works in reverse, with a 2014 study demonstrating that framing a message positively tends to result in participants having more favourable attitudes toward a persuasive message (Putrevu, 2014). This is why many marketing techniques often use soothing music, free samples, and friendly approaches when approaching consumers. One campaign, for the Dutch airline KLM, focused on using a mood boosting vending machine to draw in customers (Mosaic Group Case Studies, 2020). They placed vending machines in three main UK train stations on Blue Monday 2020, a day often claimed to be the most depressing day of the year in the Northern Hemisphere, which offered free prizes to commuters. The prizes included items from marshmallows and hot chocolate to free flights.

- *Individuals differ in the extent to which they engage cognitively with messages, but inducing a positive mood for the receiver of the message enhances believability.*

Believable Language

Persuasive speakers and politicians have found ways of conveying a message that is not only profound but at the same time simple and easy to grasp. Choice of words plays a critical role in the credibility of their messages. Effective communicators know how to use the peripheral route so that their message resonates with the listener's emotions, feelings, and beliefs. Words don't only have denotation, which is a literal meaning, but also connotation, which is their more abstract or metaphoric meaning. For example, saying someone is cold could either mean they are literally chilly (denotation), or that they are aloof (connotation). Denotative meaning and connotative meaning have been shown to be stored in different areas of the brain, with connotation being processed in more intuitive areas while denotation is processed in more logical areas (Brownell et al., 1984). More recent research on this subject has found that this can impact people's ability to understand metaphors, if they have damage to the connotation processing areas of the brain (Rinaldi et al., 2004). These studies show us that words may seem overt, but they can still navigate the peripheral route to believability.

In a wittily entitled paper "Consequences of Erudite Vernacular Utilized Irrespective of Necessity: Problems with Using Long Words Needlessly" US psychologist Dan Oppenheimer asked participants to rate the intelligence of writers who used complex or simple vocabulary (Oppenheimer, 2006). Use of overly complex language led to a writer being judged as less intelligent, while higher intelligence ratings were given to those who used simpler language.

Simple language can enhance positive perceptions about a message's author and the credibility of the source. Oppenheimer and colleagues also found that companies with simple names did better on the stock market compared to those with difficult to read or convoluted names (Oppenheimer, 2006). This is due to a cognitive bias called processing fluency, whereby people prefer things that are easy to mentally process and understand (Rinaldi et al., 2004). Words that are straightforward and uncomplicated are therefore more fluent. They are not only easier to process and remember, but people may also find them more trustworthy (McGlone & Tofighbakhsh, 2000; Lev-Ari & Keysar, 2010; Unkelbach, 2007). Receivers cannot form opinions about messages that are hard to comprehend – in fact, difficult to process messages are likely to elicit negative emotions.

- *Simple language that is easy for the receiver to understand is more believable.*

Believing People in the In-Group

Another psychological underpinning of believability is the fact that humans believe people who are part of their in-group, or who are similar to themselves (Cookson et al., 2021). Research looking at the desired personality traits of political candidates has found that people are more likely to support candidates who are like themselves when it comes to value-related personality traits (Aichholzer & Willman, 2020; Meng & Davidson, 2020). Voters want to elect candidates who exhibit similar personality traits to themselves. We like people who are like us, and find them more believable than those who differ from us (Unkelbach, 2007; Tajfel & Turner, 1986).

This knowledge is being used by behavioural scientists to nudge people's behaviour in a range of contexts. For example, a hotel utilizing bathroom signs simply asking guests not to ask for fresh towels as often to help save the environment had little impact on guests' towel use behaviour. However, when using signs that mentioned that the majority of guests who stayed in that specific hotel room re-used their towels to help the environment, there was a significant increase in guests complying with the request (Goldstein et al., 2008). The specific in-group language (referring to other guests in the same hotel room as the reader) led to greater believability and behavioural change. The towel signs have been critiqued in recent years as being an example of corporate greenwashing – where company messaging shown to consumers indicates environmental-friendly policies, but doesn't align with the actual amount of environmental impact their actions are having (Netto et al., 2020). Greenwashing, while being problematic for our environment, does highlight the impact that effective messaging can have on influencing consumers believability towards brands. The in-group, like-me effect can be utilized not only in written or digital communications, but also, for example, at events where people to be influenced are seated near those who are already believers.

- *People believe messages from, or about, others similar to themselves.*

The Power of Statistics

The use of statistics in messaging is a common way for authors to encourage believability in their arguments. Statistics are often argued to signal that a message is more precise and therefore more truthful (Van Dijk, 1988). A 2011 study found that news stories are seen as more credible when statistics are shown in numerical form (e.g., 20%) compared to verbal generalizations (e.g., "some") (Link, Henke & Möhring, 2021). A more recent 2021 study investigated at statistics in relation to their use on social media, by looking at how people responded to Instagram posts about a major sporting event (Hahn, 2021). The researcher found that not only did using statistics in the posts make people perceive the information as more trustworthy and reliable, it also enhanced the reported enjoyment of the media content as rated by the participants (Hahn, 2021).

One of the common critiques of using statistics in messaging is that audience members viewing the messages often don't have the numeracy skills necessary to completely understand the numbers or statistics being used by those writing the message (Zillmann, Callison, and Gibson, 2009). One way authors have been trying to mitigate this is by presenting statistical information via interactive data visualizations, such as a map that can be hovered over to obtain more specific information about the areas selected (Link, Henke & Möhring, 2021). However, the different ways data is presented does not seem to have an impact on believability of a message, as researchers have found it neither influences message credibility or reading experience (Link, Henke & Möhring, 2021).

Real People versus Statistics

"There is a distinction between an individual life and a statistical life. Let a six-year-old girl with brown hair need thousands of dollars for an operation that will prolong her life until Christmas, and the post office will be swamped with nickels and dimes to save her. But let it be reported that without a sales tax the hospital facilities of Massachusetts will deteriorate and cause a barely perceptible increase in preventable deaths – not many will drop a tear or reach for their checkbooks" – Schelling, Bailey & Fromm, 1968

Another factor to keep in mind when creating believable messages is that the vividness of a message can play a role in how it is received. Messages with vivid and concrete examples influence receivers more than those which include more information but in a less vivid writing style (Nisbett & Ross, 1980; Guadangno et al., 2011). One way to make a message vivid is to use real examples rather than only statistics to tell a story.

In 1987, 18-month-old Jessica McClure captured the attention of the world when she became trapped in an eight-inch-wide well casing. While huge efforts were underway to free 'Baby Jessica', followed at every twist and turn by the world's media, money poured in from people to help the rescue effort. Jessica was freed after 58 hours, by which time $700,000 had been raised and a popular movie was already in the making (Jenni, 1997). Meanwhile, charities trying to get donations for world causes struggled to understand why this one child had galvanized people into giving, while their repeated appeals for funds to help millions of children fell on deaf ears.

The answer lies in the difference between the identifiable victim and the statistical victim. An identifiable victim is more believable - they have a name, a gender, and a real family going through true distress. This elicits a more empathetic response, resonates with the reader emotionally, and has a powerful persuasive impact. Research into organ donation has demonstrated that people are more likely to sign up to organ donation programs if there is only one identified recipient, compared to a large number of victims (Harel & Kogut, 2021). Statistical victims, while greater in number and need, fail to press our believability buttons because they lack an impact, but vivid language and narratives do (Kogut & Ritov, 2005). Consider the concept of 'apocalypse fatigue', the idea that people who hear too much about disasters such as climate change mentally disconnect from the topic rather than engage with it (Suttie, 2018). One way to overcome this issue is to re-frame issues in the context of what people care about, for example their families or children having clean air to breathe and no respiratory diseases. The identifiable victim effect occurs because identified victims spark greater emotions in the reader, which triggers more willingness to help (Cacioppo & Petty, 1982).

- *Real identifiable individuals and a story are more believable than facts and statistics.*

Believable Messengers

The identifiable individual at the centre of many successful campaigns is often a celebrity. Yet since celebrities, by definition, are not part of the average person's in-group, how can they give credence to a message? These days people rise to fame faster than ever before, often via social media or reality television. With the use of social media to reach out to fans, there is also a component of parasocial relationships, where average people feel as if they personally know and are familiar with the celebrities they follow on social media. It's been found that the more a celebrity interacts with people on social media, the more likely their audience is to trust them due to these parasocial relationships (Ramussen, 2018). When celebrities endorse a message, some people also identify with them through aspiration to become like them. However, the power of a celebrity to influence ultimately depends on their credibility, trustworthiness, and attractiveness (Erdogan, 2010; O'Mahony & Meenaghan, 1997; Zakari, Dogbe & Asante, 2019).

Source credibility is a key factor in believability and is derived from trustworthiness and competence (Amos et al., 2008; Goldsmith et al., 2000). This is why experts are seen as having high credibility. Expert endorsement can enhance credibility via the peripheral route, by activating an expertise heuristic (Miller, 1956). This heuristic tells us that we can trust experts to tell us the truth, and therefore we don't need to put as much mental effort into evaluating their claims. Researchers in the Netherlands conducted a neuroscience study which found that a single exposure to an expert caused participants to have more favourable attitudes toward a product, and increased memory of that product (Klucharev et al., 2008). Using brain imaging techniques, they found that expert communication impacted a set of brain regions involved in perceptions of trustworthiness. However, the non-expert voice can also carry considerable credibility if there is a strong connection to the listeners in-group. In fact, with the rise of social media, more and more people are relying on 'friendtelligence' and word of mouth endorsements when deciding whether or not to trust a brand (Bickart & Schindler, 2001). The sceptical consumer, suspicious of big corporations or the media, may ultimately be more likely to find a friend or an online community more believable.

Perception of message credibility is also dependent on another dimension, source attractiveness. This includes the physical attractiveness and image of the endorser. According to models of source credibility, the three most influential source effects on purchase intentions for consumers are celebrity trustworthiness, expertise, and attractiveness (Kogut & Ritov, 2005; Ramussen, 2018). Therefore, attractiveness alone is not enough. An attractive celebrity with no apparent expertise or who does not have a reputation to tell the truth and be honest will not engender believability. Furthermore, physical attributes need to align with the brand or organization, creating product-fit or corporate-fit (Biswas et al., 2009). It is important that the idea of the celebrity endorser using the product they endorse is believable. Product-fit can also be applied to the consumer themselves. Research published in the Journal of Consumer Behavior showed that women carrying a Victoria's Secret shopping bag believed themselves to be more feminine and better looking, while people using an MIT pen perceived themselves as harder working and more intelligent (Park & John, 2010).

- *A believable messenger is usually credible, trustworthy, and attractive with high corporate or product fit.*
- *Consumers are increasingly influenced by word-of-mouth endorsements from people like them online.*

The Age of Scepticism

"There is no use trying; one can't believe impossible things." – Alice

"I dare say you haven't had much practice. When I was your age, I always did it for half an hour each day. Why, sometimes I've believed as many as six impossible things before breakfast." – The Red Queen (Carroll, 1871).

Most of us are more like Alice than the Queen. We won't believe impossible things. In fact, more and more of us are starting to question possible things. Our trust in politicians took a dive during the 2008 financial crash, and got even worse with Brexit and the Trump era (Clemence, 2020; Gramlich, 2019), and beliefs in bankers and climate scientists isn't much better (Leiserowitz et al., 2013; Pidgeon, 2012). A 2020 survey found that politicians were the second most distrusted profession in the UK, only more trusted than advertising executives (Clemence, 2020). There isn't only a lack of trust at the moment, there is also a general increase in scepticism in today's society. In the UK, climate denying political groups have simply begun to rebrand as concerned about the cost of net-zero policies rather than anti-science, but their goals to sow distrust remain largely the same (Mathiesen & Webber, 2021). Opinions are shifting, people who were once believers are now more likely to be doubters (Krimsky, 2007).

Why People Fall for Fake News

One of the causes of the increase in scepticism is the recent increase in fake news, causing people to approach messages with more caution than previously necessary. Fake news is false information that appears to be news media in the way that it is presented, but doesn't have the same intent or editorial oversight that genuine news articles do (Lazer et al., 2018). The modern phenomena of fake news as we know it today arose around 2016, during the US Trump-Clinton presidential election and the UK Brexit referendum (Clemence, 2020). During these times of political polarization, misleading and fake news stories were posted and spread with social media. Recently, with the Covid-19 pandemic, more fake news and misinformation has sprung up in regard to vaccines for the coronavirus (Loomba et al., 2021). The International Fact-Checking Network, created in 2015 to coordinate global fact-checkers and flag misinformation worldwide, found more than 3,500 false pandemic claims in less than 3.5 months during 2020 (Avram et al., 2020).

Researchers from Princeton, Dartmouth, and the University of Exeter worked together to analyse web traffic during the 2016 US Clinton-Trump Presidential election for traffic to fake news websites. The team found that Americans aged 60 and older, as well as those who were more politically conservative, consumed more information from websites that featured false or dubious claims about politics and the election campaigns (Guess et al., 2020). These findings were supported by later research where a survey of voters in the 2020 US Biden-Trump election found that Trump voters were more likely to believe misinformation, such as that Trump had won the presidency, showing that misinformation is an ongoing problem (Pennycook & Rand, 2021). However, it's not only those who are politically conservative or over 60 who fall prey to false headlines – it can happen to people of any age and demographic.

The reason for this is that creators of fake news, who can be either those who simply want to generate traffic to their websites to earn advertising revenue or those who want to spread certain ideological ideas, use a few key strategies to achieve high readership. Specifically, they tend to use highly emotional material, polarizing subjects, conspiracy theories, and the impersonation of trusted accounts to get their headlines attention (Roozenbeek & van der Linden, 2019). For example, people publishing fake news will intentionally try to trigger

emotions (often anger or sympathy) in order to increase believability in their story. Interestingly, heightened emotionality has been shown to be predictive of higher belief in fake news, but not in real news (Martel, Pennycook & Rand, 2020). One real world demonstration of this is a variety of false news claims made during the 2022 war between Russia and Ukraine. Some pro-Russia social media accounts claimed that the media images of injured Ukrainian citizens were actually images taken from a gas explosion in 2018 (Devlin & Sardar, 2022). The concept that the news was faking attacks by Russia was designed to cause anger and distrust in the media, and lead to questions of whether Russia was truly causing the destruction being reported. The more a reader is relying on emotions, the less they are able to discern between true and false news. If manipulated, emotions can outweigh the strength of an individual's analytical thinking skills, which can make it harder for readers to tell true and false news apart (Lazer et al., 2018)

The familiarity heuristic, which is a mental shortcut our brains take that makes us prefer more familiar experiences, can also result in the belief of fake news (Kahneman, 2011). More exposure to rumours or false headlines leads to an increase in how likely it is that a person believes the information when it is presented to them later on (Allport & Lepkin, 1945). Social media can exacerbate this effect, as the algorithms used create an echo chamber of groups of similar perspectives that reinforce a shared narrative rather than representing diverse points of view (Cinelli et al., 2021). Repeated exposure to misinformation has also been shown to cause people to feel that it is less unethical to share that repeated information, regardless of whether the sharer themselves actually believes the content (Effron & Raj, 2019).

Despite these findings, people do seem to have an innate feeling for whether information they read is true or not. Participants in a recent study were asked to read various headlines consisting of either true or false information, and to judge whether the headlines were true or not (Salovich et al., 2021). After judging the truth of the headlines, the participants were asked to also rate their confidence in their own judgments of the truthfulness of the headline they had just rated. The researchers found that when participants had made an incorrect judgment, such as judging a false headline as truthful, they tended to have lower confidence ratings in their judgment after making it. Even if they had judged the fake headline to be true, people felt less sure about that decision than they did when judging a true headline to be true (Salovich et al., 2021).

Slowing down and taking time to deliberate over the content of news headlines has been shown to reduce mistakes in judging how true headlines are, showing that people are capable of detecting fake news if they dedicate effort to the task (Bago et al., 2021).

- *Purveyors of fake news can use tools like emotions and familiarity to make their information seem more believable, distracting people from their gut feelings of what the truth is.*
- *Using too much emotional language in a message can make it seem like click-bait and not true information.*

Social Media's Role in Fake News

In today's digital age social media plays a large role in the sharing of information, both true and false. Social media is the ideal breeding ground for fake news and misinformation, as content can be spread without any fact checking or editorial oversight. Individual users of social media can, in some cases, achieve as broad a readership as well-known news sources like the BBC or the New York Times, without needing any reputation or track record for reliable reporting (Allcott & Gentzkow, 2017).

People don't always create and publish fake news with the intent to further their personal ideologies, sometimes these stories are created simply in order to generate profit from the advertising revenue that is provided by people clicking on the links to false headlines (Roozenbeek & van der Linden, 2019). Sharing information on social media does not necessarily reflect the beliefs of the person sharing it.

Gordon Pennycook from the University of Regina in Canada, alongside colleagues from 3 other universities, conducted a 2021 study that found that the amount of truth in a news headline had very little impact on the intentions of individuals to share that headline on social media. They presented true and untrue headlines to participants, and found that how true a headline was had a large impact on whether or not the individuals in the study judged those headlines as accurate. However, how true the headline was did not impact whether or not the participants then wanted to share those same headlines on social media (Pennycook et al., 2021).

On social media, people seem to get distracted from paying close attention to the accuracy of the content, and instead focus on what they are sharing instead (Pennycook et al., 2021). One way to make sure that social media users don't share fake news is to remind users to think about the truthfulness of the post before sharing it. People inherently want to share true information, more than they want to further any partisan agendas, but they are easily distracted from this goal by the amount of stimulation that social media provides. This can cause people to share information and content that they don't necessarily believe in themselves, which in turn can further the readership of fake news.

Exposure to social signals also plays a role in how believable fake news is – specifically the ability to see how many likes and shares a post already has. Exposures to the likes and shares on a post causes people to be more vulnerable to fake news, as people rely on these social signals instead of judging the veracity of the content for themselves (Avram et al., 2020). This concept is often called social proof, or informational social influence (Cialdini, 1984). Humans copy the actions of others, and therefore can be influenced by other people's reactions to products or posts. If a post has lots of engagement, people are less likely to look at the information itself closely, and are more likely to like or share the post (Avram et al., 2020). Malicious social media users can use automated systems such as bots to make it appear as if large numbers of individual social media users have individually viewed the content they post and agreed with it or shared it to their own followers, which can falsely inflate the credibility of

the post when viewed by real people and can impact how closely they investigate the claims being made (Avram et al., 2020).

- *Believability can be impacted by social signals such as likes and shares on social media platforms.*

Scepticism Towards Experts

Despite cognitive heuristics and short cuts causing experts to generally be seen as believable sources of information, the recent years have shown an increase in scepticism towards such experts (Clemence, 2020). Audiences tend to be slightly uncertain about news in general, even if it's true, simply because they cannot independently verify the reporting they are told, as they don't have access to the same resources (Tsfati & Cohen, 2003). There is general media scepticism present in most countries, with individuals being concerned that journalists are not objective in their reporting, or that they are prioritizing personal, political or financial gains over accuracy in the reporting (Tsfati & Cappella, 2003). The majority of media sceptics tend to seek out alternative news sources, which can lead to exposure to fake news (Tsfati & Capella, 2003).

Mistrust in experts goes beyond the news, it also applies to science experts, as has been highlighted during the Covid-19 pandemic. Due to the lack of information known about Covid-19 at the start of the pandemic, there was a lot of inconsistency from the experts. This caused the public to feel less trust towards the experts, as they felt the lack of consistency meant that the experts were not well enough informed to be instructing others in how to behave (Boyd, 2021). This was not the fault of the scientists, but does drive home the message that consistency in messaging plays a large role in the believability and trust of those receiving the messages. In this world of information being accessible at the touch of a button, there is also the issue of a breakdown in the distinction between experts and non-experts (Tsfati & Cohen, 2003). Anyone can look up a few facts online and posture as an expert on a topic with ease. As people feel that they can do their own research and find information, they start to reject the concept that they are not as trusted as experts, and feel that they deserve to have as much of a say in science-informed policy as the experts (Tsfati & Cohen, 2003). There are also some individuals, often those experiencing some form of social or financial disadvantage such as the unemployed or low-educated, who view scientific experts negatively as they view them as part of the 'elite' and therefore have a negative bias against them as a whole (Staerklé et al., 2022). Meanwhile, the average person is seen as being higher in common sense (Tsfati & Cappella, 2003). This concept, sometimes referred to as "epistemological populism" is based on assumptions that knowledge coming from firsthand experience by everyday people is more virtuous and trustworthy than the knowledge of experts (Saurette & Gunster, 2011). This can come into play in many scientific contexts, but recently has been seen both in response to climate change and the COVID-19 pandemic.

Online echo chambers can also contribute to distrust in experts, as social media algorithms tailor recommended posts and content to match the user's history of engagement

on the platform leading to a cycle of providing content that lines up with individual users interests and views rather than contradicting them or offering expert information. These environments can lead to the easy spreading of conspiracy beliefs – such as that the pandemic was man made to enact population control (Guess, Nyhan & Reifler, 2020; Jennings et al., 2021). A team of UK researchers found that general distrust in the government and belief in conspiracies predicted hesitancy to get vaccinated against COVID-19 (Jennings et al., 2021). They also found that larger amounts of social media use increased hesitancy to get vaccinated as well.

When it comes to climate change, people who are more sceptical of scientific experts have been shown to feel less responsibility for climate change mitigation behaviours, and also to feel more negatively about governmental guidelines for behaviour during the pandemic (Tsfati & Cappella, 2003). Such people tend to be cynical and dismissive of these emergencies that face humanity as a whole, a finding which was consistent across various different countries (Tsfati & Cappella, 2003). People in general have been found to try and avoid information that makes them uncomfortable (Karlsson, Loewenstein & Seppi, 2009). Climate change and the pandemic both fall into this category, due to being complicated problems that people feel they have little individual control over – leading them to avoid information that will distress or upset them (Haltinner & Sarathchandra, 2017). Overwhelming messages can lead to paralysis and demoralization, so it is important that messaging focuses on hope, empowerment, and personal responsibility (Boyd, 2021).

- *Consistent messages that highlight achievable goals in an approachable way, and have a good dose of hope and empowerment, are more likely to be viewed with less scepticism.*

The Way Forward

In this paper, the latest thinking from neuroscience and psychological researchers has been summarized to provide an up-to-date analysis of the psychological underpinnings of believability. As the world enters a new age of scepticism, facts, figures, and imploring will be inadequate tools with which to convey messages. This literature review hopes to allow for a comprehensive and broad understanding of the ways in which the human mind goes about finding information and messages believable. 100 Ways in 100 Days™ hopes to use this information about what how messages are believed to spread awareness of climate change, and encourage incremental daily behaviour changes in individuals to help promote sustainability.

About the Authors

Claire Gregory, M.A.

Claire Gregory is a PhD candidate at the University of Surrey, England. She is a teaching assistant within the school of psychology, and is also currently working as a behaviour change researcher for a UK-based start up, all while being a full time PhD student. Claire completed her undergraduate and masters program at the University of St Andrews in Scotland, where she graduated with honours before moving to Surrey. While at the University of St Andrews, Claire was awarded Class Representative of the Year in 2019 for her work liaising between professors and students within the school of psychology. Her areas of expertise include the psychology of decision making, dual-process theories of cognition, and intuition. In her own research, she investigates the role that intuition plays in everyday decision making. Claire recently was invited to speak at the international Advances in Decision Analysis conference 2022 in Washington, D.C., where she presented the findings of her PhD research. She has recently won the British Psychological Society Postgraduate Rapid Project Grant to help fund her ongoing PhD research.

Emeritus Professor Karen J. Pine

After a career in advertising and marketing, Karen Pine ran several businesses before deciding she wanted to get right to the core of understanding human behaviour and to study psychology. She gained a first class honours degree in 1993, a PhD in 1996, and later on became a psychology lecturer, then a reader and in 2007 was made Professor of Developmental Psychology at the University of Hertfordshire. Professor Pine's research has been published extensively in academic journals and presented at conferences worldwide. It spans a wide range of topics including brain mechanisms, advertising, implicit and explicit cognitions, body image, nonverbal communications and children's development. Professor Pine is also a sought-after media contributor and appears regularly in the media, in print as well as on the radio and television. As well as her extensive academic portfolio of publications she has written a number of popular books on behaviour change including *The No Diet Diet*, *The Do Something Different Journal*, *Sheconomics* and *Love Not Smoking*. Professor Pine is now retired.

Reference List:

Agarwal, P. (2020). *Sway: Unravelling Unconscious Bias*. Bloomsbury Sigma.

Aichholzer, J., & Willmann, J. (2020). Desired personality traits in politicians: Similar to me but more of a leader. *Journal of Research in Personality*, *88*. https://doi.org/10.1016/j.jrp.2020.103990

Allcott, H., & Gentzkow, M. (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, *31*(2), 211–236. https://doi.org/10.1257/jep.31.2.211

Allport, F. H., & Lepkin, M. (1945). Wartime rumors of waste and special prvilege: Why some people believe them. *The Journal of Abnormal and Social Psychology*, *40*(1), 3–36. https://doi.org/10.1037/h0058110

Amos, C., Holmes, G., & Strutton, D. (2008). Exploring the Relationship Between Celebrity Endorser Effects and Advertising Effectiveness. *International Journal of Advertising*, *27*(2), 209–234. https://doi.org/10.1080/02650487.2008.11073052

Armitage, C. J., Harris, P. R., Hepton, G., & Napper, L. (2008). Self-Affirmation Increases Acceptance of Health-Risk Information Among UK Adult Smokers with Low Socioeconomic Status. *Psychology of Addictive Behaviors*, *22*(1), 88–95. https://doi.org/10.1037/0893-164X.22.1.88

Avram, M., Micallef, N., Patil, S., & Menczer, F. (2020). Exposure to social engagement metrics increases vulnerability to misinformation. *The Harvard Kennedy School Misinformation Review*, *1*(5), 1–11. https://doi.org/10.37016/mr-2020-033

Bago, B., Rand, D. G., & Pennycook, G. (2020). Fake News, Fast and Slow: Deliberation Reduces Belief in False (but Not True) News Headlines. *Journal of Experimental Psychology: General*. https://doi.org/10.1037/xge0000729

Bickart, B., & Schindler, R. M. (2001). Internet Forums as Influential Sources of Consumer Information. *Journal of Interactive Marketing*, *15*(3), 31–40. https://doi.org/10.1002/dir.1014

Biswas, S., Hussain, M., & O'Donnell, K. (2009). Celebrity Endorsements in Advertisements and Consumer Perceptions: A Cross-Cultural Study. *Journal of Global Marketing*, *22*(2), 121–137. https://doi.org/10.1080/08911760902765940

Boyd, K. (2021). Beyond politics: Additional factors underlying skepticism of a COVID-19 vaccine. *History and Philosophy of the Life Sciences*, *43*(12), 1–4. https://doi.org/10.1007/s40656-021-00369-8

Brownell, H. H., Potter, H. H., & Michelow, D. (1984). Sensitivity to Lexical Denotation and Connotation iin Brain-Damaged Patients: A Double Dissociation? *Brain and Language*, *22*(2), 253–265. https://doi.org/10.1016/0093-934X(84)90093-2

Byrne, R. W., & Whiten, A. (1988). *Machiavellian intelligence: Social expertise and the evolution of intellect in monkeys, apes, and humans*. Clarendon Press.

Cacioppo, J. T., & Petty, R. E. (1982). The Need for Cognition. *Journal of Personality and Social Psychology*, *42*(1), 116–131. https://doi.org/10.1037/0022-3514.42.1.116

Carroll, L. (1871). *Through the Looking-Glass*. Macmillan.

Cialdini, R. B. (1984). *Influence: The Psychology of Persuasion* (1st ed.). Harper Business.

Cinelli, M., Morales, G. D. F., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2021). The echo chamber effect on social media. *PNAS*, *118*(9), 1–8. https://doi.org/10.1073/pnas.2023301118

Clemence, M. (2020). *Ipsos Veracity Index 2020*. Ipsos Group S.A.
Cookson, D., Jolley, D., Dempsey, R. C., & Povey, R. (2021). "If they believe, then so shall I": Perceived beliefs of the in-group predict conspiracy theory belief. *Group Processes & Intergroup Relations*, *24*(5), 759–782. https://doi.org/10.1177/1368430221993907
de Freitas Netto, S., Sobral, M. F. F., Ribeiro, A. R. B., & da Luz Soares, G. (2020). Concepts and forms of greenwashing: A systematic review. *Environmental Sciences Europe*, *32*(19). https://doi.org/10.1186/s12302-020-0300-3
de Freitas Netto, S. V., Sobral, M. F. F., Ribeiro, A. R. B., & da Luz Soares, G. R. (2020). Concepts and forms of greenwashing: A systematic review. *Environmental Sciences Europe*, *32*(19). https://doi.org/10.1186/s12302-020-0300-3
Devlin, K., & Sardarizadeh, S. (2022, February 28). Ukraine invasion: Misleading claims continue to go viral. *BBC News*. https://www.bbc.co.uk/news/60554910
Effron, D. A., & Raj, M. (2019). Misinformation and Morality: Encountering Fake-News Headlines Makes Them Seem Less Unethical to Publish and Share. *Psychological Science*, *31*(1), 75–87. https://doi.org/10.1177/0956797619887896
Erdogan, B. Z. (1999). Celebrity Endorsement: A Literature Review. *Journal of Marketing Management*, *15*(4), 291–314. https://doi.org/10.1362/026725799784870379
Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford University Press.
Gao, T. Y., Han, X. C., Bang, D., & Han, S. H. (2022). Cultural Differences in Neurocognitive Mechanisms Underlying Believing. *NeuroImage*, *250*. https://doi.org/10.1016/j.neuroimage.2022.118954
Goldsmith, R. E., Lafferty, B. A., & Newell, S. J. (2000). The Impact of Corporate Credibility and Celebrity on Consumer Reaction to Advertisements and Brands. *Journal of Advertising*, *29*(3), 43–54. https://doi.org/10.1080/00913367.2000.10673616
Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels. *Journal of Consumer Research*, *35*(3), 472–482. https://doi.org/10.1086/586910
Gramlich, J. (2019). *Young Americans are less trusting of other people—And key institutions—Than their elders*. The Pew Research Center.
Guadagno, R. E., Rhoads, K. V., & Sagarin, B. J. (2011). Figural Vividness and Persuasion: Capturing the "Elusive" Vividness Effect. *Personality and Social Psychology Bulletin*, *37*(5), 626–638. https://doi.org/10.1177/0146167211399585
Guess, A., Nagler, J., & Tucker, J. (2019). Less than you think: Prevalence and predictors of fake news dissemination on Facebook. *Science Advances*, *5*(1). https://doi.org/10.1126/sciadv.aau4586
Hahn, D. (2021). The Effect of Statistics on Enjoyment and Perceived Credibility in Sports Media. *Communication & Sport*, 1–19. https://doi.org/10.1177/2167479521998395
Haltinner, K., & Sarathchandra, D. (2018). Climate change skepticism as a psychological coping strategy. *Sociology Compass*, *12*(6), 1–10. https://doi.org/10.1111/soc4.12586
Harel, I., & Kogut, T. (2021). The Effect of the Number and Identification of Recipients on Organ-Donation Decisions. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.794422
Harris, S., Sheth, S. A., & Cohen, M. S. (2007). Functional Neuroimaging of Belief, Disbelief, and Uncertainty. *Annals of Neurology*, *63*(2), 141–147. https://doi.org/10.1002/ana.21301
Jenni, K., & Loewenstein, G. (1997). Explaining the Identifiable Victim Effect. *Journal of Risk and Uncertainty*, *14*, 235–257. https://doi.org/10.1023/A:1007740225484

Kahneman, D. (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux.
Karlsson, N., Loewenstein, G., & Seppi, D. (2009). The Ostrich Effect: Selective Attention to Information. *Journal of Risk and Uncertainty*, *38*, 95–115. https://doi.org/10.1007/s11166-009-9060-6
Kirkpatrick, C. (2007). Tactical Deception and the Great Apes: Insight into the question of theory of mind. *TOTEM: The UWO Journal of Anthropology*, *15*, 31–37.
Klayman, J. (1995). Varities of Confirmation Bias. In J. Busemeyer, R. Hastie, & D. L. Medin (Eds.), *Psychology of Learning and Motivation* (Vol. 32, pp. 385–418). Academic Press.
KLM Beats January Blues With Vending Machine Dispensing Gifts. (2020, January 15). *IPM BiteSize*. https://www.promomarketing.info/klm-beats-january-blues-vending-machine-dispensing-gifts/
Klucharev, V., Smidts, A., & Fernández, G. (2008). Brain Mechanisms of Persuasion: How "Expert Power" Modulates Memory and Attitudes. *Social Cognitive and Affective Neuroscience*, *3*(4), 353–366. https://doi.org/10.1093/scan/nsn022
Kogut, T., & Ritov, I. (2005). The "Identified Victim" Effect: An Identified Group, or Just a Single Individual? *Journal of Behavioral Decision Making*, *18*, 157–167. https://doi.org/10.1002/bdm.492
Krimsky, S. (2007). Risk communication in the internet age: The rise of disorganized skepticism. *Environmental Hazards*, *7*(2), 157–164. https://doi.org/10.1016/j.envhaz.2007.05.006
Lazer, D. M. J., Baum, M., Benkler, Y., & Berinsky, A. J. (2018). The Science of Fake News. *Science*, *359*, 1094–1096. https://doi.org/10.1126/science.aao2998
Leiserowitz, A. A., Maibach, E. W., Roser-Renouf, C., Feinberg, G., Rosenthal, S., & Marlon, J. (2013). *Climate change in the American mind: Americans' global warming beliefs and attitudes in April, 2013* [Yale Project on Climate Change Communication]. Yale University and George Mason University.
Lev-Ari, S., & Keysar, B. (2010). Why don't we believe non-native speakers? The influence of accent on credibility. *Journal of Experimental Social Psychology*, *46*(6), 1093–1096. https://doi.org/10.1016/j.jesp.2010.05.025
Lewis, M., Stranger, C., & Sullivan, M. W. (1989). Deception in 3-year-olds. *Developmental Psychology*, *25*(3), 439–443.
Link, E., Henke, J., & Möhring, W. (2021). Credibility and Enjoyment through Data? Effects of Statistical Information and Data Visualizations on Message Credibility and Reading Experience. *Journalism Studies*, *22*(5), 575–594. https://doi.org/10.1080/1461670X.2021.1889398
Loomba, S., de Figueiredo, A., Piatek, S. J., de Graaf, K., & Larson, H. J. (2021). Measuring the impact of COVID-19 vaccine misinformation on vaccination intent in the UK and USA. *Nature Human Behaviour*, *5*, 337–348. https://doi.org/10.1038/s41562-021-01056-1
Martel, C., Pennycook, G., & Rand, D. G. (2020). Reliance on emotion promotes belief in fake news. *Cognition Research: Principles and Implications*, *5*(47), 1–20. https://doi.org/10.1186/s41235-020-00252-3
Martin, P. Y., Hamilton, V. E., Terry, D. J., & Martin, R. (2007). Effects of Caffeine on Persuasion and Attitude Change: The Role of Secondary Tasks in Manipulating Systematic Message Processing. *European Journal of Social Psychology*, *37*(2), 320–338. https://doi.org/10.1002/ejsp.347
Mathiesen, K., & Webber, E. (2021). UK's climate science deniers rebrand. *Politico*. https://www.politico.eu/article/climate-change-skeptics-united-kingdom-science-deniers-rebrand/

McGlone, M. S., & Tofighbakhsh, J. (2000). Birds of a feather flock conjointly (?): Rhyme as reason in aphorisms. *Psychological Science*, *11*(5), 424–428. https://doi.org/10.1111/1467-9280.00282

Meinert, J., & Krämer, N. C. (2022). How the expertise heuristic accelerates decision-making and credibility judgments in social media by means of effort reduction. *PLoS ONE*, *17*(3). https://doi.org/10.1371/journal.pone.0264428

Meng, M. D., & Davidson, A. (2020). A Vote of Competence: How a Similar Upbringing to Political Candidates Influences Voting Choice. *Journal of Public Policy & Marketing*, *39*(4), 396–411. https://doi.org/10.1177/0743915620943181

Miller, G. A. (1956). The Magical Number Seven, Plus or Minus Two: Some limits on our capacity for processing information. *Psychological Review*, *63*(2), 81–97. https://doi.org/doi.org/10.1037/h0043158

Miller, R. L., Brickman, P., & Bolen, D. (1975). Attribution Versus Persuasion as a Means for Modifying Behavior. *Journal of Personality and Social Psychology*, *31*(3), 430–441.

Moore, A., Hong, S. J., & Cram, L. (2021). Trust in Information, Political Identity and the Brain: An Interdisciplinary fMRI Study. *Philosophical Transactions of the Royal Society B*, *376*(1822). https://doi.org/10.1098/rstb.2020.0140

Nisbett, R., & Ross, L. (1980). *Human Inference: Strategies and shortcomings of social judgment*. Prentice-Hall.

O'Mahony, S., & Meenaghan, T. (1997). The impact of celebrity endorsements on consumers. *Irish Marketing Review*, *10*(2), 15–24.

Oppenheimer, D. M. (2006). The Secret Life of Fluency. *Trends in Cognitive Sciences*, *12*(6), 237–241. https://doi.org/10.1016/j.tics.2008.02.014

Park, J. K., & John, D. R. (2010). Got to Get You into My Life: Do Brand Personalities Rub Off on Consumers? *Journal of Consumer Research*, *37*(December), 655–669. https://doi.org/10.1086/655807

Pennycook, G., & Rand, D. G. (2021). Examining false beliefs about voter fraud in the wake of the 2020 Presidential Election. *Harvard Kennedy School Misinformation Review*, *2*(1), 1–19. https://doi.org/10.37016/mr-2020-51

Petty, R. E., Briñol, P., Loersch, C., & McCaslin, M. J. (2009). The Need for Cognition. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of Individual Differences in Social Behavior* (pp. 318–329). The Guilford Press.

Pidgeon, N. (2012). Public understanding of, and attitudes to, climate change: UK and international perspectives and policy. *Climate Policy*, *12*, S85–S106. https://doi.org/doi.org/10.1080/14693062.2012.702982

Putrevu, S. (2014). The Influence of Mood and Attribute Framing on Consumer Response Toward Persuasive Appeals. *Journal of Current Issues & Research in Advertising*, *35*(2), 107–125. https://doi.org/10.1080/10641734.2014.899528

Rasmussen, L. (2018). Parasocial Interaction in the Digital Age: An Examination of Relationship Building and the Effectiveness of YouTube Celebrities. *The Journal of Social Media in Society*, *7*(1), 280–294.

Rinaldi, M. C., Marangolo, P., & Baldassarri, F. (2004). Metaphor Comprehension in Right Brain-Damaged Patients with Visuo-Verbal and Verbal Material: A dissociation (re) considered. *Cortex*, *40*(3), 479–490. https://doi.org/10.1016/S0010-9452(08)70141-2

Roozenbeek, J., & van der Linden, S. (2019). Fake news game confers psychological resistance against online misinformation. *Palgrave Communications*, *5*. https://doi.org/10.1057/s41599-019-0279-9

Sacks, O., & Hirsch, J. (2008). A Neurology of Belief. *Annals of Neurology*, *63*(2), 129–130. https://doi.org/10.1002/ana.21378

Salovich, N. A., Donovan, A. M., Hinze, S. R., & Rapp, D. N. (2021). Can confidence help account for and redress the effects of reading inaccurate information? *Memory & Cognition*, *49*(2), 293–310. https://doi.org/10.3758/s13421-020-01096-4

Sar, S., & Anghelcev, G. (2015). Congruity Between Mood and Message Regulatory Focus Enhances the Effectiveness of Anti Drinking and Driving Advertisements: A global versus local processing explanation. *The Review of Marketing Communications*, *34*(3), 421–446. https://doi.org/10.1080/02650487.2014.996198

Saurette, P., & Gunster, S. (2011). Ears Wide Shut: Epistemological Populism, Argutainment and Canadian Conservative Talk Radio. *Canadian Journal of Political Science*, *44*(1), 195–218. https://doi.org/10.10170S0008423910001095

Schelling, T. C., Bailey, M. J., & Fromm, G. (1968). The life you save may be your own. *Problems in Public Expenditure Analysis*, 127–162.

Seitz, R. J., & Angel, H.-F. (2020). Belief Formation—A driving force for brain evolution. *Brain and Cognition*, *140*. https://doi.org/10.1016/j.bandc.2020.105548

Sherman, D. K., & Cohen, G. L. (2006). The Psychology of Self-Defense: Self-Affirmation Theory. *Advances in Experimental Social Psychology*, *38*, 183–242. https://doi.org/10.1016/S0065-2601(06)38004-5

Staerklé, C., Cavallaro, M., Cortijos-Bernabeu, A., & Bonny, S. (2022). Common Sense as a Political Weapon: Populism, Science Skepticism, and Global Crisis-Solving Motivations. *Political Psychology*, *0*(0), 1–17. https://doi.org/10.1111/pops.12823

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences*, *23*(5), 645–726. https://doi.org/10.1017/S0140525X00003435

Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 21, pp. 261–302). Academic Press.

Suttie, J. (2018). How to Overcome "Apocalypse Fatigue" Around Climate Change. *Greater Good Magazine*. https://greatergood.berkeley.edu/article/item/how_to_overcome_apocalypse_fatigue_around_climate_change

Tajfel, H., & Turner, J. C. (1986). The Social Identity Theory of Intergroup Behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relation* (pp. 7–24). Hall Publishers.

Tsfati, Y., & Cappella, J. N. (2003). Do people watch what they do not trust?: Exploring the association between news media skepticism and exposure. *Communication Research*, *30*(5), 504–529. https://doi.org/10.1177/0093650203253371

Tsfati, Y., & Cohen, J. (2003). Perceptions of Media and Media Effects: The Third Person Effect, Trust in Media and Hostile Media Perceptions. In *The International Encyclopedia of Media Studies: Media Effects / Media Psychology*.

Tusche, A., Bode, S., & Haynes, J.-D. (2010). Neural Responses to Unattended Products Predict Later Consumer Choices. *The Journal of Neuroscience*, *30*(23), 8024–8031. https://doi.org/10.1523/JNEUROSCI.0064-10.2010

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

Unkelbach, C. (2007). Reversing the truth effect: Learning the interpretation of processing fluency in judgments of truth. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*(1), 219–230. https://doi.org/10.1037/0278-7393.33.1.219

van Dijk, T. A. (1988). The rhetoric of news discourse. In D. Zillmann & J. Bryant (Eds.), *News as discourse* (pp. 82–94). Lawrence Erlbaum Associates.

Zakari, M., Dogbe, C. S. K., & Asante, C. (2019). Effect of celebrity endorsement on telecommunication companies' reputation: The moderating role of celebrity characteristics. *Management Research Review*, *42*(12), 1–18. https://doi.org/htt10.1108/MRR-12-2018-0470

Zillmann, D., Callison, C., & Gibson, R. (2009). Quantitative Media Literacy: Individual Differences in Dealing with Numbers in the News. *Media Psychology*, *12*(4), 394–416. https://doi.org/10.1080/15213260903287275