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The four digital horsemen: Disinformation, misinformation, fake news and pseudoscience

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KEYWORDS: conspiracy theory, diffusion, disinformation, fake news, memes, misinformation, pseudoscience

Brian H. Spitzberg is Senate Distinguished Professor Emeritus of the School of Communication, San Diego State University. This essay is largely based on the keynote presentation to the Prologos Interaction Research Days Conference at the University of Jyväskylä, Finland, October 10–11, 2024.

Abstract

Deception and information distortion are likely as ancient as communication itself. The contemporary digital media ecosystem, however, has vastly amplified and accelerated the potential reach and deleterious impact of such distortions. Four common digital types of such distortion are examined: misinformation, disinformation, fake news, and pseudoscience, collectively subsumed under the concept of distorted information in media (DIM). DIM threatens the erosion of democratic institutions, civic discourse, rational policy formation, and public health. As such, DIM poses potential existential threats to humanity. Addressing such threats requires comprehensive theory development. An integrative nested multilevel systems model of meme diffusion (M^3D) is posited to provide a framework for organizing relevant theories, constructs, and research. M^3D is organized by exigency, message, communicator, social network, societal context, geotechnical, and outcome levels. The heuristic value of the model is illustrated by its potential for generating testable propositions as a priority for theory development in the area of DIM diffusion.

The biblical narrative of the four horsemen of the apocalypse has mainly become secularized to refer to any harbinger of existential threats. One exegesis of the text suggests the identity of the first horseman masquerades as a ”false messiahship and false prophecy capable of deceiving many” (Boxall, 2011, p. 84). The prospect that deception would signal the apocalypse seems an apt analogy for considering the processes and implications of misinformation, disinformation, fake news, and pseudoscience. Each of these is a potential form of deception, and whenever produced in mediated form, they represent distortions of information in media (DIM). Like the four horsemen, DIM represents a threat to democratic institutions and social order, and in the event of subsequent pandemics, DIM even threatens the apocalyptic extinction of our species. This essay outlines these concepts' nature and scope and summarizes a conceptual model within which DIM diffusion can be theorized and studied.

Definitions

In order to interpret a narrative such as the four horsemen, it is important to have a reference for each of the individual horsemen. Why four, and why these four? What do they represent individually and collectively? While there are dozens of potentially relevant terms associated with deception and DIM (see Figure 1; Kapantai et al., 2021; Spitzberg, 2021a, 2024b, 2024c), most can be conceptualized within the four horsemen of misinformation, disinformation, fake news, and pseudoscience (see Table 1). The sender's intentions distinguish misinformation from disinformation: *Misinformation* is the unintentional distortion of information, whereas *disinformation* involves intentional de-

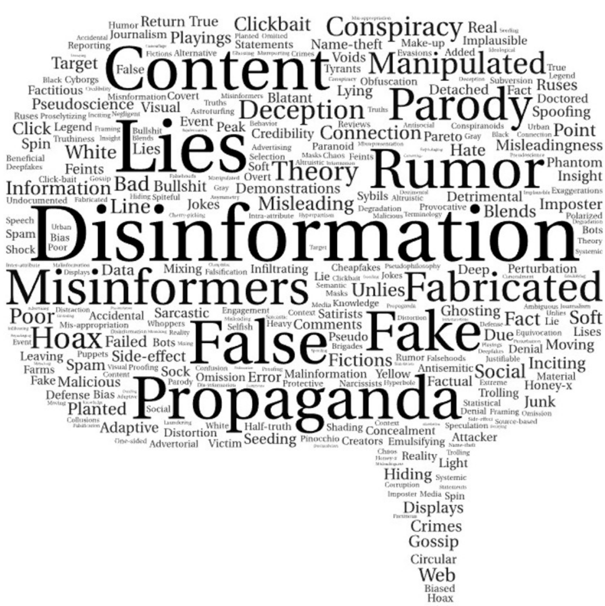

Figure 1. Word cloud of terms categorizing types of DIM

Figure created with https://wordart.com/create, sans ”news” and ”satire,” based on terms in Spitzberg (2021a, 2024b, 2024c) referenced list of typologies of DIM.

ception. The colloquial term *fake news* is a type of disinformation made to appear as if it was published by an authoritative or institutional source operating by professional journalistic or editorial procedures. *Pseudoscience* consists of intentional or unintentional falsified or unfalsifiable (Popper, 1980) messages or claims presented in forms and formatting that mimic the evidentiary and epistemic presentational style of professional scientific reporting. Pseudoscience is framed in the trappings of science but lacks the actual methodological rigor, epistemic warrants, evidence, peer review, or transparency associated with scientific practice (Hansson, 2009).

These four forms of DIM are often imbricated into and through propaganda and conspiracy theories that provide broader meanings and ideological narrative frames within which DIM secures its footholds. *Propaganda* is generally an institutionally or politically formulated instigated set of systematically biased messages designed to influence publics in ways favorable to the sender or the sender's organizational affiliations. *Conspiracy theories* are narratives that account for empirical phenomena by positing hidden cabals of agents manipulating events in ways favorable to their interests. Conspiracy theories are often employed in ways that represent self-sealing claims that insulate arguments or beliefs from falsification. Any evidence contrary to the conspiracy theory is viewed as a symptom of the conspiracy itself. Conspiracy theories are not intrinsically deceptive, as actual conspiracies do occur. However, most conspiracy theories trade on misinformation, disinformation, or pseudoscience and are often presented as fake news. Further, most elaborate conspiratorial narratives are highly improbable and reasonably falsified over time (Grimes, 2016).

Scope and Importance

The appearance of four horsemen qua horsemen seems relatively uninteresting. As a sign of the apocalypse or as Conquest, War, Famine, and Death, such horsemen clearly indicate cause for concern. Similarly, DIM might not be much of a concern if it were a rare occurrence lacking consequence. Unfortunately, DIM is both common, commonly misleading, and consequential.

DIM is a relatively common informational pollutant in our collective information ecosystem. In the U.S., 37% of those polled reported seeing inaccurate news about the present presidential election extremely or very often, and another 36% saw such information somewhat often (Shearer et al., 2024). Mere exposure is not necessarily concerning, except that 52% of those surveyed reported that they find it "difficult to determine what is true and what is not" (p. 4). An Ofcom (2024) survey of UK adults found that 15% rarely or never consider the truthfulness or accuracy of what they see on social media, and "45% claim to have seen a deliberately untrue or misleading news story on social media" in the past year (Ofcom, 2024, p. 24). An IPSOS interview across 27 EU states found people either reported that they had been very often (10%), often (18%), or sometimes (33%) exposed to disinformation or fake news in the past week, and approximately a third (25% not very, 5% not at all, 6% don't know) lacked confidence in their ability to recognize disinformation and fake news (European Parliament Directorate-General for Communication, 2022). In a 2023 IPSOS and UNESCO (2023) survey across 16 countries, 85% of respondents indicated they were very (43%) or somewhat (42%) concerned about the impact of disinformation in their respective country, and 85% believed that disinformation had already had a significant impact on their political life. In this survey, 78% claimed to have often read deliberately falsified information on social media, and 94% reported they had at least once been misled or influenced by such disinformation before finding out it was false (IPSOS/UNESCO, 2023). A large-scale global survey by Reuters (Newman et al., 2024) found substantial proportions of media consumers have seen false or misleading information about a variety of topics in the past week, including politics (36%), Coronavirus/COVID-19 (30%), economics (28%), Israel-Palestine conflict (27%), Ukraine war (24%), climate change or environment (23%), immigration (21%) or other health issue (18%). Across the sample, 59% reported being con-

Table 1. Conceptual definitions of key terms

Concept	Working Definition
Deception	Messages intended to mislead or create a perception, attitude, or belief in other(s) the sender believes to be untrue or inaccurate.
Conspiracy theory	A narrative or narrative complex alleging the existence of a secret cabal or hidden plot among powerful actors influencing events to achieve some goal, usually sinister and self-serving, through systematic deception and manipulation of the public.
Disinformation	Messages that intend to deceive receivers or distort information in strategic ways.
DIM	Messages spread in a mediated context that represent a meaning complex in which [a] a sender's understanding is discrepant from or incompatible with a [b] relatively consensual [c1] well-informed, [c2] expert and/or [d] professionally-vetted evidentiary state.
Fake news	A type of disinformation with partial or entirely false content (text, audio, and/or image) intended to deceive or manipulate audience(s) in part by framing or imitating legitimate, authoritative, or institutional news or reports. Fake news often employs sensationalism, seeking attention, clicks, and shares in the pursuit of profit, market share, or political, social, or ideological gain.
Malinformation	The intentional use of accurate or true information with hostile intent, such as strategic dissemination of hacked information, revenge porn, some hate speech, and information extortion.
Misinformation	Messages that are in some substantive sense inaccurate or misleading sent without malicious or deceptive intent of the sender.
Propaganda	Selectively biased, misleading, or fabricated information distributed to influence public opinion to benefit a government, political party, or organization or to harm the interests of another party, institution, or group.
Pseudoscience	Messages or claims made to imply that they represent scientific or scientifically achieved claims but failing to represent the kinds of evidentiary or epistemic warranting of the qualified scientific community relevant to the claim(s).

cerned about what is real and what is fake online news, and 13% to 27% reported finding it difficult to identify what news is trustworthy across various media platforms. Thus, while DIM represents a very small percentage of all media content and content consumption (Allen et al., 2020), people are clearly exposed to, concerned about, and influenced by such distorted information.

Another way of contemplating the scope of DIM is the prevalence of falsified or unfalsifiable beliefs in the population. While surveys vary by topic, time, and sample, a fifth to half of the population generally holds one or more false or unfalsifiable beliefs (Drochon, 2018; Hameleers et al., 2022; Spitzberg, 2024b). Beliefs in invisible entities such as ghosts, the devil, fate, and alien visitation are not uncommon. A substantial percentage of the population is suspicious of such scientifically established processes as evolution or the imminent threat of anthropocentric climate change. Disconcerting percentages of the population hold beliefs in false tenets of conspiracy theories such as QAnon, plots behind vaccination campaigns, and rigged elections. Many people are already prone to believing DIM.

Whether or not these information distortions influence more macro-level societal outcomes such as elections, public health policies, terrorism, social movements, and civil unrest is a much more complex causal question. There is little doubt that DIM represents serious potential deleterious societal effects over time. Misplaced trust in DIM is corrosive of trust in mainstream media and governmental institutions (Malik et al., 2023). DIM ”fosters hate, undermines social cohesion, and diminishes our capacity for collective action” (Council of Canadian Academies, 2023, p. xvi). The new, largely unfiltered media in which fake and legitimate news cannot be reliably distinguished threaten the societal quora and polity such that ”the public sphere can no longer direct the citizens’ attention to the relevant issues that need to be decided” (Habermas, 2022, p. 167). COVID-19 vaccines saved millions of lives and could have saved at least hundreds of thousands more lives had widescale DIM not brewed various vaccine-resistant beliefs (Council of Canadian Academies, 2023; Watson et al., 2022). The next pandemic could have a higher fatality rate, and vaccine resistance may be even more intractable by then due to DIM. It will be important to develop theoretical frameworks to manage the threats that DIM poses and accommodate the vast complexity of actors and factors involved.

Theorizing DIM

The majority of research on DIM is atheoretical or variable-analytic (for reviews, see Abu Arqoub et al., 2022; Broda & Strombeck, 2024; Mahl et al., 2023). When theories are employed in the service of research, it is often needed to establish a rationale for a relatively narrow set of hypotheses. Few meta-theoretical efforts to date have attempted to construct conceptual models that can both (1) encompass the breadth of concepts and processes involved in DIM diffusion and (2) integrate existing mid-range theories to the cause. The purpose of meta-theory is to improve theory, and a primary method for doing so is to extract propositions from existing theories and synthesize them in ways that advance the parsimony, generalizability, and utility of theoretical frameworks (Turner, 1990). The multidimensional model of meme diffusion (M^3D) was developed toward such an objective. The following summary of the M^3D model began with an early general framework (Spitzberg, 2014), which was subsequently elaborated and intensively evidenced through research on the

COVID-19 pandemic as a case study (Spitzberg, 2021b, 2024b) and as synopsized in a keynote presentation at the Prologos conference in Finland (Spitzberg, 2024a).

Memes

The colloquial use of the term *meme* generally refers to humorous or ideological interchangeable assemblages of text, image, and audio in concise mediated formats. The viral nature of such assemblages led to their association with the concept of meme as coined by the evolutionary biologist Richard Dawkins. However, Dawkins intended a much more expansive concept for memes. Just as organisms and cells exchange biological information through genes, Dawkins (1976) speculated that there is likely an analog for transferring cultural information from person to person, or more precisely, from brain to brain. Just as genes are selfish in their persistence through function, memes seek persistence through attention. That is, memes are any form of repeatable and transferable information exchanged between individuals that are capable of (1) variation, (2) selection, and (3) retention (Spitzberg, 2014, 2024b). The vast majority of everyday communication is still face-to-face and unmediated. Such communication is generally ephemeral and subject to transitory information loss. This process is subject to extensive retention deterioration, error and bias in reproduction, and lack of repetition (Spitzberg, 2024b). All digital messages, in contrast, are generally highly transferable, repeatable, and variable codes that are selectively retained and subsequently available for reuse, replication, and diffusion through the population.

In cultural contexts, real space events often elicit and evoke people's reactions, which take the form of digital messaging. These memetic messages, in turn, often mobilize subsequent reactions from people in the form of further memetic messaging. Such viral message cascades often feed back into the information ecosystem and culture in ways that subsequently shape and influence further actions in real space. These three processes represent what Spitzberg (2014) refers to as evememic, etymemic, and polymemic processes. Events elicit digital communication, which sometimes virally evokes further digital communication, which elicits subsequent behavior, and the cycle iterates. This happens at the micro-interpersonal level as well as the macro-societal level. Social media were ”long believed to be a lag indicator for financial and political events” but are increasingly ”found to be an effective lead indicator” (Abbasi & Adjeroh, 2014, p. 61). For example, a police beating of an innocent person elicits viral memetic cascades, which evokes social unrest and protests (i.e., an evememic process), which evokes further memetic cascades, which both signal and evoke further social unrest (i.e., an etymemic). When these processes feed into one another, it represents a polymemic process.

These processes are theorized to co-occur in an information ecosystem in which information consumers with limited cognitive capacity are exposed to an accelerating production of digital information, resulting in an attention economy (Brown & Beruvides, 2020; Festré & Garrouste, 2015). In an attention economy, information producers (e.g., influencers, organizations, and institutions) compete for attention in the form of followers, eyeballs, clicks, likes, links, popularity, exposure, and influence. Such effects, in turn, are translated into status and economic capital. As with Dawkins' (1976) analogy to the selfish gene, memes compete in a context of natural selection, retention, imitation, and repetition such that more adaptive memes survive and thrive in the cultural milieu. Extending Darwin's metaphor for natural competition (Gould, 1985), the information ecosystem is like "a surface covered with ten-thousand sharp wedges … packed closely together and driven in by incessant blows" (p. 9). Unlike natural selection, memes are also intentionally selected, much like the breeding process that Darwin relied upon to demonstrate the extent to which particular traits could be reinforced through selective replication. Any new message that can be driven profoundly or virally will necessarily displace others. Each new message has the potential to either link to or displace existing messages in the information ecosystem. Thus, for example, as online media consumption increases, print media consumption decreases; as mediated interaction increases, face-to-face interaction decreases (Twenge & Spitzberg, 2020; Twenge, Martin, et al., 2019; Twenge, Spitzberg, et al., 2019) and issue-attention cycles diminish in the process (Lee et al., 2024; Lorenz-Spreen et al., 2019).

The Multidimensional Model of Meme Diffusion

There are manifold factors likely to influence such memetic processes. The first task, therefore, is to provide some conceptual framework within which such factors can be coherently organized. The M^3D posits the following seven conceptual levels: exigency, meme or message, source or communicator, social network, societal, geotechnical, and outcomes (Spitzberg, 2014, 2021b). In developing the model well over 100 formal or informal corollary propositions have been proposed, drawing upon numerous existing theoretical concepts (Spitzberg, 2024b). These theories include agenda setting, attention economy, attribution, cultivation, diffusion of innovations, dual process and health beliefs models, general systems, groupthink, intergroup threat, issue-attention, narrative, signaling, significance quest, social identity, socioevolutionary, spiral of silence, planned behavior, threshold, terror management, and media richness and hyperpersonal models of media use (Spitzberg, 2024b). While a thorough review of the model is beyond the scope of the current forum, a basic synopsis of the model follows.

Exigency Level

Messages emerge from purpose. Symbolic communication no doubt evolved more extensively in the *Homo sapiens* than other species because of its extraordinary capacity for facilitating learning and coordination in groups, which in turn would have had survival and mating advantages. A generative grammar is capable of infinite creative construction of messages (Bolhuis et al., 2014), representing a toolbox of communicative exaptations (Buss et al., 1998) ranging from imaginings, storytelling, philosophies, theories, and advanced mathematics. Exaptations in evolutionary theory refer to changes that evolve for one function but become adapted to other subsequent functions. We use language and communication to communicate real threats, but now also imagined and fictional threats. It represents an exigency when we experience real or imagined things that we consider important to communicate to others, particularly regarding threats or affiliative opportunities. The communications produced in response to such exigencies lead to the message level of M^3D.

Message/Meme Level

In general, message design characteristics tend to have relatively small effects on persuading others (O'Keefe & Hoeken, 2021). Nevertheless, it seems almost axiomatic that some messages are more likely to diffuse and go viral compared to other messages (Baptista & Gradim, 2020). M^3D proposes that messages that are more affectively intense, distinctive, entropy-reducing, expressive, threatening, consistent with a given audience's existing views, easily reproduced, redundant, media convergent across platforms, richer in media content, and more competently constructed in use of persuasive tropes (e.g., *ethos, pathos, logos*, narrative vs. statistical) are more likely to diffuse and speciate through information ecosystems. There is also a well-evidenced illusory truth effect in which the mere repetition of a meme increases its credibility (Vellani et al., 2023). Other features that are more difficult to specify empirically and likely to promote diffusion and influence are how humorous or funny a message is and how topically salient it is vis-à-vis other prevailing news content. Messages that are easily folded into existing narrative beliefs or provide the believer with a needed sense of identity, meaning, or quest also tend to be repeated and reinforced (Spitzberg, 2024b). Messages, however, are always likely to be evaluated and selected based in part not just on the message but on the source of the message.

Source/Communicator-Level

Some communicators are more influential or credible than others. Sources that are more competent communicators (i.e., more motivated, knowledgeable, skilled) have established higher credibility or status and are more facile with communication media platforms. Their strategic and tactical toolbox seem more likely to have their messages attended to, approved and shared. Some people are also more susceptible to memes and DIM than others (Baptista & Gradim, 2022; Bryonov & Vziatysheva, 2021; van Mulukom et al., 2022). More media-literate individuals are generally more likely to be discerning of and more resistant to DIM. Individuals who experience grievance against attributed sources of anxiety, fear, and anger seem particularly susceptible to DIM acceptance and diffusion. In addition, the more cognitive biases an individual experiences, such as the confirmation bias, third-person effect, and us-versus-them bias, the more susceptible they are to DIM (Spitzberg, 2024b). The individual sources of such messages are themselves embedded in broader social contexts that influence the diffusion of their communications.

Social Network Level

Two sets of social network factors are hypothesized to affect meme diffusion: (1) objective or structural factors and (2) subjective or normative factors. Objective-structural factors include features such as how central a message source is in their social network, how many followers or connections the source has, the density of the network, and the number of liaisons or bridges the network has to other social or media networks and the size of those bridged networks. The subjective-normative features of social networks include the extent to which the network is producing counter-memes or messages competing with a given source's messaging, the narrative fidelity of a source's memes in relation to the network's extant beliefs and values, the homophily of the social network, the niche novelty of a source's meme in the network, and the belief-action threshold of the network (i.e., the proportion of a network's members who are perceived to believe or be doing something at which a member node will adopt the same belief or behavior). To the extent that a person's proportional consumption of information increases in a relatively homophilous echo chamber or coincides with a false consensus effect, the network tends to be more normatively influential (Spitzberg, 2024b). Echo chambers represent relatively insular information ecosystems that tend to (1) involve repetition and reinforcement of information or messages, (2) with a high degree of sharing and interconnectedness among messengers, (3) occuring in a relatively bounded or closed system, (4) in which dissenting information is excluded, reframed or rebutted. To the extent any given person's media diet is comprised primarily of similar information from relatively similar sources, it represents a self-reinforcing media ecosystem. This media ecosystem, in turn, is embedded in an even broader societal system in which it competes for attention.

Societal Level

Memes exist within complex social networks. These networks are shaped by competing institutions, influencers, and events vying for public attention. There are usually significant newsworthy events and rival institutions, influencers, and individuals seeking attention. In a 24/7 mediated attention economy, some counter-memes and counter-frames are constantly ready to wedge themselves into and displace existing memetic flows. New etymemic and evememic events swamp the news cycle, and journalists chase the next new storyline. New political or celebrity scandals, terror events, emerging pandemics, tragic accidents or disasters, and sports contests focus and refocus audience attention. Quotidian experiences, both novel and routine, alter the relevance and salience of given topics, uses and gratifications sought. Whether or not such uses and gratifications can be fulfilled through mediated messages depends in part upon the accessibility and usability of the media necessary for such diffusion.

Geotechnical Level

Even though smartphones and internet access have penetrated a substantial majority of the world's population, various digital divides still exist. Some countries significantly restrict access to the Internet or specific content. Even people with mobile phones may lack consistent access to signal and the Internet. Language barriers continue to limit the information that is usable to various populations. Infrastructure capacity and resilience vary extensively. Service costs continue to exclude lower socioeconomic groups from equal access to the full digital toolbox. Various spatial factors, such as proximity, continue to significantly promote the exchange of messaging despite the vastly reduced friction of distance (Spitzberg, 2019). Finally, advances in artificial intelligence, algorithmic targeting of individuals, and bots will continue to fine-tune the efficacy of messages in ways that facilitate diffusion and influence. The ability of information providers, benign and malicious, to foment and reinforce echo chambers curated to the individual is becoming highly sophisticated.

Outcomes

Any given theoretical context is likely to imply certain relevant outcomes of interest. Among the more general outcomes of memetic diffusion include popularity (i.e., the percentage of the potential population seeing, hearing, or engaging with a meme), velocity (i.e., the rapidity of market diffusion), longevity (i.e., the duration of a meme's circulation), fecundity (i.e., span & popularity of meme derivations) and speciation (i.e., a meme's evolutionary development and spinoffs). The vast majority of digital memes go practically nowhere. They reach a single receiver at a single diffusion step and go no further. Only a small fraction of all memes diffuse through multiple links, much less go extensively viral (Spitzberg, 2019, 2024b). In any given context or application, however, the outcomes of interest are likely to be more practical or specific. Health campaigns will need to know to what extent their messages increase compliance with the proposed health regimen. Political campaigns will need to know whether their campaign messaging turned out the votes needed for victory. An advertiser will need to know to what extent their ads increased sales or positive identification with the organization. A student will want to know how many likes their most recent post received.

In selective summary, the M^{3}D posits that novel or dramatic events tend to elicit reactions in the form of digital messages (i.e., memes). Messages that are novel, highly repetitive, effectively intensive, and involve various other persuasive design features are more likely to diffuse rapidly and widely. When sources have a high need for identity or meaning, particularly hero or victim identities, and are susceptible to cognitive biases and willingness to believe in unfalsifiable narratives, the more likely the memes they share will be infected by distorted information. To the extent these messages originate or are shared by sources that are high in credibility, status, and followership, the more amplified such diffusion is likely to be. Such meme diffusion is further amplified within highly homophilous, densely connected social networks. It is more likely to diffuse widely when these networks have bridges or liaisons connected to other large social networks. In the resulting attention economy, such memes will continue to diffuse until displaced by other more attention-evoking media issues and memes over time. All of these diffusion processes are enabled or constrained by geotechnical factors that facilitate or delimit access to and use of digital media and their pliability and interconnectedness.

Implications

The four horsemen of misinformation, disinformation, fake news, and pseudoscience may or may not represent a sign of an actual apocalypse. But they portend the possibility of any number of significant social crises. Identifying ways of theorizing and managing such threats now rather than later seems prudent. Apocalyptic warnings are easily rationalized away and ignored.

Theory Development

The communication discipline is well-represented in the scholarship regarding fake news (Abu Arqoub et al., 2022; Broda & Stromback, 2024; Ha et al., 2021; Wu et al., 2022), but less so regarding disinformation, misinformation, pseudoscience, and conspiracy theory. The M^{3}D illustrates that a theory of DIM diffusion will require interdisciplinary collaboration and will require theory construction at both the macro-level (i.e., grand theory) and micro-level (i.e., mid-range theory) to make significant progress in its management. Continued theory and model development should serve significantly in advancing the management of DIM.

Managing DIM

Numerous strategies are being explored for managing DIM across multiple disciplines (Aïmeur et al., 2023; Khan et al., 2022; Ziemer & Rothmund, 2024). Most interventions are designed at the individual (e.g., prebunking, inoculation, critical thinking, media literacy, nudging, debunking, content labeling) or geo-technical (e.g., algorithms, supporting reliable news media, government regulation or legislation, combatting bad actors) level (Roozenbeek et al., 2023). To date, most interventions have demonstrated relatively short-term and small effects. This is not surprising, given the extent to which DIM and conspiratorial beliefs can be enmeshed within elaborate interconnected beliefs, attitudes, values, and the echo chambers and social networks in which the individual is embedded. As DIM is a multilevel problem, it will require a multilevel approach to its management.

Conclusion

Misinformation, disinformation, fake news, and pseudoscience, collectively characterized here as distortions of information in the media (DIM), represent potentially apocalyptic threats to the role of science, democratic order, and potentially the human species. In commenting on the mysterious symbolism of the four horsemen in the Book of Revelation, Boxall (2011) cautioned that ”the line between good and evil, authentic messiahship and messianic pretensions, true and false prophecy, is sometimes very thin indeed” (p. 88). Much the same can be said of DIM and the false prophets promoting it—discerning the lines between true and false, intentional and unintentional, malicious and meaningless, is devilishly difficult yet vital to our survival.

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OTSIKKO JA ASIASANAT SUOMEKSI:

Maailmanlopun neljä digitaalista ratsastajaa:

disinformaatio, misinformaatio, valeuutiset ja pseudotiede

ASIASANAT: disinformaatio, meemit, misinformaatio, pseudotiede, salaliittoteoriat, tiedonvälitys, valeuutiset