

DIGITAL RESILIENCE AND HUMAN-TECHNOLOGY INTERACTION IN A BANI CONTEXT: THE IMPACT OF SOCIAL MEDIA ON PSYCHOLOGICAL FUNCTIONING IN MILITARY ENVIRONMENTS

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Abstract: *In contemporary environments defined by brittleness, anxiety, nonlinearity, and incomprehensibility (BANI), digital technologies increasingly shape human cognition and emotional functioning. Social media platforms operate as high-intensity informational ecosystems where both civilians and military personnel are continuously exposed to algorithmically curated, emotionally salient content. Digital exposure thus emerges as a critical, yet underexamined, factor influencing psychological resilience in operational settings. This paper presents a narrative literature review addressing the following central research question: how does exposure to social media “memeplexes”—i.e., clusters of rapidly disseminated and reinforcing digital content—contribute to the amplification of key BANI dimensions, notably anxiety and incomprehensibility, as well as influence psychological functioning and resilience within military contexts? This review focuses primarily on information overload, anxiety amplification, and maladaptive coping mechanisms, while also considering the role of upward social comparison. This paper further examines how these effects intersect with cognitive functioning, decision-making, and operational effectiveness in military contexts. By situating these processes within a broader civilian and military context, this work ultimately argues that shared digital environments expose military personnel to the same destabilizing influences as civilians. These findings highlight the need for targeted interventions and digital resilience strategies aimed at preserving adaptive functioning and sustained performance in increasingly complex environments.*

Keywords: BANI environments, social media, memeplexes, psychological resilience, information overload

1. Introduction

Contemporary operational environments are increasingly characterized by complexity, unpredictability, and a constant influx of rapidly changing information. These dynamics are commonly conceptualized through the BANI framework (brittle, anxious, nonlinear, and incomprehensible). Within such environments, digital technologies, in particular social media platforms, have been found to play a central role in shaping users’ cognitive and emotional processes. The above-mentioned platforms operate as continuous streams of

algorithmically curated content, through which users are repeatedly exposed to large volumes of emotionally salient information. While the impact of social media on civilian populations has been widely explored, its implications for military personnel remain relatively underexamined. Given the shared digital environment across civilian and military domains, the notion of “memeplexes,” understood as clusters of rapidly disseminated and self-reinforcing digital content, provides a useful framework for understanding how information spreads among social media users and the

psychological implications it may have for them at a broader social level.

The present paper examines the relationship between social media exposure and psychological resilience in operational contexts, focusing primarily on information overload, anxiety amplification, maladaptive coping mechanisms, and upward social comparison, as well as their implications for cognitive functioning, decision-making, and operational effectiveness within military environments. More specifically, this paper explores the central question of how exposure to social-media “memeplexes” contributes to the amplification of key BANI dimensions, particularly anxiety and incomprehensibility, and how it influences psychological functioning and resilience within military settings. This analysis is based on a narrative literature review approach, integrating relevant theoretical and empirical contributions on social media use, memeplex dynamics, and psychological resilience, with sources selected according to their relevance to the conceptual framework and research objectives, rather than following a systematic selection protocol.

2. The BANI Framework and Digital Environments

2.1. The BANI Model

The BANI framework, coined by futurist Jamais Cascio in 2018, offers a new lens for understanding the rapidly changing and unpredictable modern world we reside in. Unlike the earlier VUCA model, introduced

by the US Army War College in 1987, which describes a world that is volatile, uncertain, complex, and ambiguous, Cascio’s model characterizes contemporary environments as brittle, anxious, nonlinear, and incomprehensible [1].

The above-mentioned characteristics outlined in Cascio’s framework become particularly relevant within contemporary digital ecosystems, where individuals are continuously exposed to fragmented—i.e., information that is discontinuous, decontextualized, and rapidly shifting across diverse topics and perspectives—and often contradictory streams of information [1]. This persistent informational instability may not only foster incomprehensibility, but also intensify anxiety by increasing uncertainty within high-volume and information overload environments. Against this backdrop, Cascio’s framework provides a valuable conceptual lens for understanding the psychological impact of modern digital technologies.

2.2. Digital Environments as BANI Amplifiers

Social media platforms have become central components of contemporary digital environments, shaping how individuals access information and engage with the world around them. As illustrated in Figure 1, global social media-user identities have reached 5.24 billion in early 2025, representing 63.9% of the world’s population.

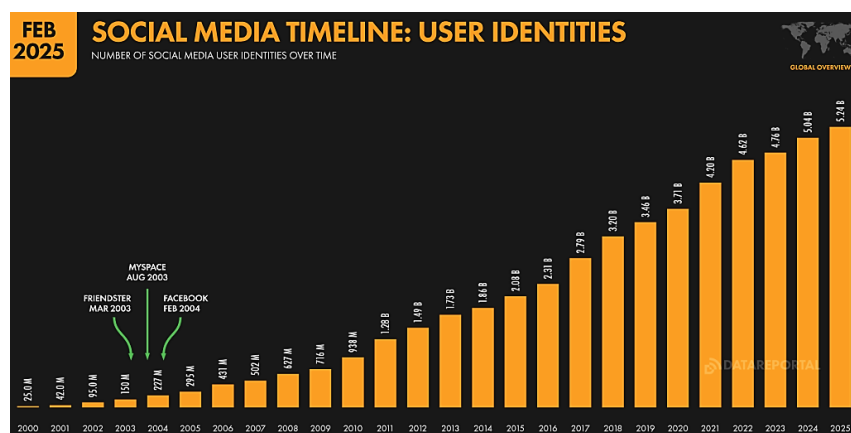


Figure 1: Global Social Media User Identities Worldwide

Source: Adapted from DataReportal. Digital 2025 Global Overview Report. 2025. Slide 348, Global social media user identities.

Given the scale and ubiquity of social media use, these findings support the argument that military personnel are embedded within the same digital ecosystems as civilians, making them similarly exposed to algorithmically curated content, information overload, and upward social comparison. More specifically, platforms such as Twitter, Instagram, and Facebook rely on algorithmic curation systems designed to maximize user engagement, often prioritizing emotionally salient and attention-grabbing content, a phenomenon described by media and communication researcher Taina Bucher as “algorithmic power” [2]. Frequent social media use has been linked to increased levels of psychological distress, as well as lower levels of subjective wellbeing and life satisfaction [3]. Similarly, the high-volume and complexity of information characteristic of digital environments have been shown to contribute to information overload, ultimately increasing cognitive and emotional demands [4].

The emotional strain generated by continuous exposure to socially comparative and emotionally salient content ultimately contributes to the amplification of anxiety, while the overwhelming and often conflicting nature of digital information environments, characterized by the presence of inconsistent and opposing information, fosters incomprehensibility. In this respect, social media platforms do not merely reflect BANI conditions, but they also actively reinforce them through their structural and algorithmic design.

3. Social Media and Memeplexes

The notion of “meme,” first introduced by evolutionary biologist Richard Dawkins, refers to a unit of cultural transmission which spreads rapidly through processes of imitation and replication [5]. In this regard, memes can be thought of as a set of ideas, behaviours, or symbols which circulate within a social system and compete for persistence in a manner analogous to genes in biological evolution [5]. Building upon this conceptualization, memeplexes can be

understood as clusters of interconnected memes that mutually reinforce one another, thus increasing their likelihood of dissemination and persistence.

Transposing Dawkins’ theory from the realm of evolutionary biology into that of psychology and modern digital environments, memeplexes can be thought of as viral patterns of content, including images, narratives, and trends which spread rapidly across social media platforms. The previously mentioned tendency of memeplexes to spread through processes of imitation and reinforcement [5] may be further amplified by algorithmic curation systems that prioritize content based on user engagement and interaction patterns [2]. Consequently, users are repeatedly exposed to similar types of content, giving rise to self-reinforcing informational environments that may limit a user’s exposure to alternative perspectives. The repeated exposure to such emotionally salient content may also intensify affective responses, shaping how users perceive and emotionally interpret reality.

In this context, memeplexes can be thought of as mechanisms of amplification within digital ecosystems, which are actively shaping users’ perceptions, emotions, and interpretations of reality. When considered within Jamais Cascio’s BANI framework, these clusters of information circulating on social media may contribute to higher levels of emotional reactivity, anxiety, and uncertainty. Similarly, the rapid dissemination and transformation of social media content can make it increasingly difficult for individuals to construct stable and coherent understandings of their environment. As a result, memeplexes may reinforce both the “anxious” and “incomprehensible” dimensions of BANI environments by sustaining psychological arousal while making coherent meaning increasingly difficult to construct.

4. Psychological Mechanisms of Social Media Exposure

4.1. Upward Social Comparison

Social Comparison Theory, which was first proposed by social psychologist Leon Festinger in 1954, highlights that every individual has an innate desire to evaluate the correctness of their own opinions and abilities by comparing themselves to others [6]. The term “upward social comparison,” also coined by Festinger, describes an individual’s tendency to compare themselves to others whom they perceive as superior in a particular area [6].

Although Festinger’s theories were developed long before the onset of the digital age, they remain highly relevant in contemporary society, where individuals are exposed to a constant stream of social stimuli, facilitated by the immediate availability of information about other people’s lives via social media.

The current digital environment thus acts as a catalyst for the psychological processes described by Festinger, ultimately transforming upward social comparison into an omnipresent mechanism in the world of social media platforms. Unlike traditional social environments, social media eliminates spatial and temporal barriers, allowing for instant comparison with a virtually unlimited number of other social media users. Furthermore, interaction with social media content that focuses on the image of an ideal life may contribute to increasingly unrealistic social standards, as individuals compare themselves to idealized representations of others [6]. Consequently, social media users may internalize these idealized representations as benchmarks for self-assessment, leading to frustration and feelings of inadequacy. Within the BANI

framework, such processes contribute to heightened anxiety, as individuals experience increased emotional strain in response to perceived discrepancies between their own lives and idealized standards, ultimately reinforcing a fragile sense of self that is vulnerable to ongoing comparison.

4.2. Information Overload and Cognitive Strain

In addition to social comparison processes, information overload represents a central mechanism through which digital environments impact psychological functioning. More specifically, social media platforms generate continuous streams of high-volume and rapidly changing information, which often exceed an individual’s cognitive processing capacities. The above-mentioned informational overload not only reduces social media users’ ability to effectively filter, prioritize, and interpret incoming information, but also contributes to cognitive strain, mental fatigue, and increased stress levels [4].

It is important to note that this reduced processing capacity is largely due to the fact that informational overload limits one’s ability to organize information into coherent mental representations, thus leading to cognitive biases, reduced decision-making efficiency, and overall lower cognitive performance [4]. As illustrated in Figure 2, decision-making performance improves with increasing information load only up to an optimal threshold (L^*), after which excessive informational input leads to cognitive overload and a progressive decline in decision quality.

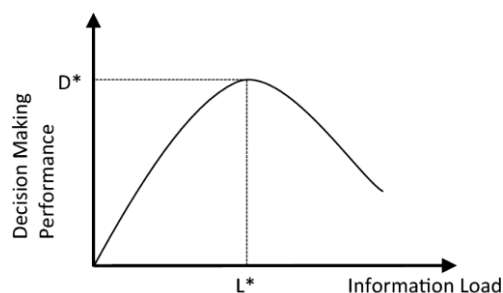


Figure 2: Relationship Between Information Load and Decision-Making Performance

Source: Roetzel P.G. Information overload in the information age: A review of the literature. *Bus Res.* 2019;12(2):483

In military operational environments, where rapid and accurate decisions are essential, the above-mentioned decline may significantly impair judgment accuracy, and response efficiency.

In this context, incomprehensibility, as defined within the BANI framework, does not arise solely from the presence of large volumes of information, but also from the individual's reduced capacity to integrate fragmented and often conflicting informational inputs encountered on social media platforms into a coherent understanding of reality. Building upon this notion, information overload can be understood as a key mechanism through which digital environments transform informational abundance into psychological incomprehensibility, thereby reinforcing the "incomprehensible" dimension of BANI environments. Similarly, this persistent difficulty in constructing coherent meaning from available information may also contribute to the "anxious" dimension of BANI, as individuals experience heightened uncertainty and reduced perceived control,

the latter showing a strong negative association with trait anxiety in adult samples ($ESr = -0.579$) [7].

5. Impact on Psychological Functioning and Resilience

5.1. Anxiety Amplification

The cumulative effects of upward social comparison, information overload, and repeated exposure to emotionally salient content contribute to a sustained state of psychological arousal, thereby intensifying anxiety in modern-day digital environments. This relationship is further supported by findings illustrated in Figure 3, which show that interacting with Facebook (now Meta) during one time period predicted feeling worse later the same day ($.08$, $p < .001$), while average Facebook use across the 14-day sampling period predicted decreases in overall life satisfaction over time ($\beta = -0.12$, $p < .05$), ultimately suggesting that prolonged exposure to social media environments may negatively influence emotional functioning and overall psychological resilience [3].

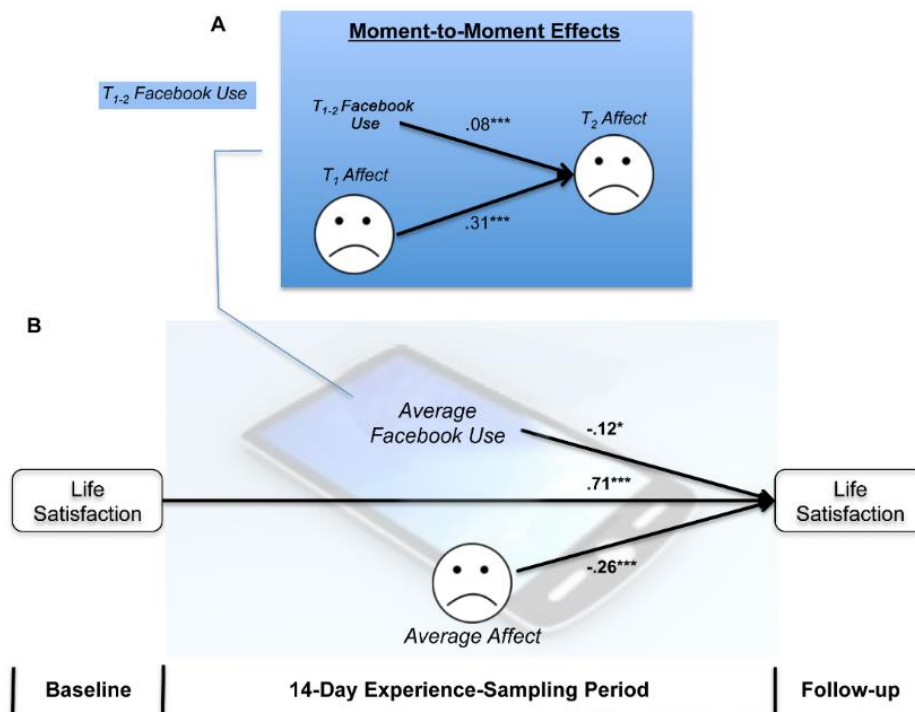


Figure 3: Facebook Use Predicts Declines in Affect and Life Satisfaction

Source: Kross E., Verduyn P., Demiralp E., Park J., Lee D.S., Lin N., Shablack H., Jonides J., Ybarra O. Facebook Use Predicts Declines in Subjective Well-Being in Young Adults. PLOS ONE. 2013;8(8):e69841. Available at: <https://doi.org/10.1371/journal.pone.0069841.g001>

Rather than operating as isolated processes, the above-mentioned effects interact to create a persistent state of heightened vigilance, in which individuals remain continuously responsive to potential discrepancies, uncertainties, and socially relevant cues. Within BANI environments, such as those encountered in military operational contexts, where uncertainty and unpredictability are already heightened, these processes further amplify anxiety by sustaining elevated levels of arousal over time, making it increasingly difficult for individuals to disengage from stress-inducing stimuli. As a result, anxiety becomes not only more frequent, but also more persistent, reflecting a shift from situational responses to a more generalized state of emotional strain.

5.2. Maladaptive Coping Mechanisms

Building upon the heightened anxiety and reduced perceived control outlined above, prolonged exposure to digital environments may also contribute to a diminished repertoire of coping mechanisms. In this respect, rather than engaging in adaptive coping strategies, such as problem-solving or reappraisal, social media users have been found to rely increasingly on passive consumption behaviours, such as continuous scrolling, as a means of distraction from everyday stressors, with social media addiction being shown to directly increase psychological anxiety ($\beta = 0.78, p < 0.001$) and significantly reduce self-efficacy ($\beta = -0.73, p < 0.001$) [8]. In this regard, excessive social media use may promote a shift towards avoidance-oriented coping strategies, such as using digital platforms to escape real-life stressors, while maladaptive coping styles themselves accounted for 20.32% of the total effect on anxiety, reinforcing emotional dependence, reducing self-regulation, and heightening anxious symptoms [8]. Consequently, this reliance on avoidance-based coping may also weaken effective stress regulation and further increase vulnerability to anxiety. In the context of BANI environments, where

unpredictability is inherent, reduced coping capacity reinforces maladaptive cycles of distress, as individuals rely on short-term strategies to reduce immediate discomfort rather than address underlying stressors. As a result, anxiety is sustained over time, and individuals may become more dependent on external sources of stimulation, such as continuous content consumption, rather than developing adaptive, internally driven coping strategies.

6. Implications for Resilience in BANI Environments

6.1. Civilian Context

The mechanisms outlined above, particularly upward social comparison and information overload, have significant implications for psychological resilience in civilian populations. In BANI environments, characterized by brittleness and heightened anxiety [1], repeated exposure to algorithmically curated content [2] may increase reliance on passive coping strategies, such as avoidance or continuous content consumption [8].

The above-mentioned processes may impair not only an individual's ability to engage in adaptive cognitive processing under conditions of information overload [4], but also their capacity to regulate emotional responses [8]. More specifically, higher levels of social media dependence have also been associated with diminished critical thinking abilities, thus suggesting further constraints on cognitive functioning [9]. As a result of the above-mentioned processes, digital environments may contribute to a persistent state of psychological strain, ultimately characterized by reduced reports of subjective wellbeing [3] and an increase in anxiety-related symptoms [8].

In military settings, the previously discussed dynamics extend beyond individual wellbeing and may have tangible consequences for operational effectiveness. The rapid dissemination of emotionally salient and fragmented information via social media may interfere with decision-

making and the accurate interpretation of complex informational environments. This becomes particularly relevant in high-stakes contexts characterized by time pressure, uncertainty, and high cognitive demands, where increased cognitive and informational load may reduce decision-making performance, judgment accuracy, attention levels, and contribute to decision-related confusion and delays [4].

In the same vein, exposure to information-saturated environments, such as those encountered on social media platforms, has not only been associated with reduced subjective wellbeing [3], but it has also been found to increase reliance on maladaptive coping strategies, which may further constrain adaptive responses under conditions of uncertainty [8]. Taken together, the above-mentioned effects of social media use ultimately suggest that prolonged exposure to high-density information environments may not only impair immediate performance, but also reduce an individual's capacity to effectively respond to rapidly evolving operational demands.

6.2. Towards Digital Resilience

In light of the challenges outlined in this paper, the concept of "resilience" must be expanded beyond the capacity to withstand traditional stressors to include adaptation to digital social media environments characterized by memplex-driven dynamics, information overload, and emotionally salient content. Within BANI environments, where brittleness and anxiety are amplified by unstable and overwhelming information flows [1], one practical approach to enhancing resilience may include the implementation of structured psychoeducational programs aimed at increasing awareness of how digital environments influence military personnel's cognitive and emotional processes.

More specifically, such programs may focus on how algorithmic systems curate and amplify social media content, shape perceived reality, and reinforce selective

exposure to information [2], while also addressing the impact of upward social comparison [6], particularly how exposure to idealized or distorted representations of others' lives may influence self-perception and emotional responses.

Educational interventions may include training on recognizing the symptoms of information and cognitive overload, as well as its effects on attention, decision-making, and overall cognitive functioning [4]. Such strategies may ultimately help mitigate the effects of nonlinear and rapidly evolving information environments characteristic of BANI systems.

By targeting the cognitive and emotional mechanisms underlying digital exposure, such psychoeducational approaches may support the development of more adaptive responses to digitally mediated stressors, thereby contributing to improved decision-making, emotional stability, and overall performance in high-demand operational environments. In this regard, the development of digital resilience skills may function as a key adaptive capacity for navigating the instability and complexity inherent in BANI environments.

7. Limitations and Future Directions

This paper is conceptual in nature, and the relationships between memplex exposure and psychological outcomes are theoretically inferred rather than empirically tested. Although upward social comparison and information overload are discussed as separate constructs, in reality they often occur simultaneously and may interact with one another, making it difficult to determine the specific contribution of each mechanism to the observed psychological outcomes.

Future research may focus on empirical and experimental designs in order to test these relationships more directly, including controlled exposure to different types of social media content and longitudinal approaches to assess their impact over time. Further investigation into coping mechanisms may also provide valuable

insights into how individuals can better adapt to BANI-type digital environments.

8. Conclusion

This paper has examined the impact of memplex-driven content within digital environments through the lens of the BANI framework, highlighting how information overload, anxiety amplification, maladaptive coping, and upward social comparison interact to shape cognitive and emotional processes, contributing to psychological distress, reduced wellbeing, and impaired cognitive performance.

By applying these findings to high-demand environments, this paper argues that these effects extend beyond civilian contexts and carry implications for military personnel, particularly in relation to decision-making, attentional capacity, and operational effectiveness. In response, the concept of “resilience” has been expanded to include adaptation to digital environments, emphasizing cognitive and emotional self-regulation and the development of digital resilience through psychoeducational strategies that increase awareness of algorithmic influences, mitigate upward

social comparison, and reduce information overload.

Overall, this paper contributes to the growing body of literature on digital environments and psychological resilience by offering a framework that links memplex dynamics, cognitive processes, and performance outcomes within BANI contexts. As digital systems continue to shape how individuals perceive, process, and respond to information, understanding these mechanisms becomes increasingly important for maintaining psychological wellbeing and effective performance in complex environments.

Despite the range of mechanisms addressed in this paper, given the conceptual nature of this analysis, the proposed relationships mentioned throughout this work require further empirical validation. In this regard, future research may seek to employ experimental and longitudinal designs to examine the impact of memplex-driven content on military personnel’s cognitive performance, decision-making, and operational effectiveness, as well as the role of coping mechanisms in digital resilience.

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