

Generative Artificial Intelligence and the Emergence of Creative Displacement Anxiety

Commentary

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Abstract

Generative Artificial Intelligence (AI), a subset of AI that can generate novel content such as images, text, and music, has the unique transformative potential of augmenting human creativity, offering tools that can enhance creative expression and open unprecedented avenues for innovation. However, alongside its remarkable capabilities, the inevitable pervasive integration of this technology in every aspect of human life, including creative fields, involves the risk of giving rise to unforeseen psychological challenges for our society. This article discusses the potential emergence of a novel psychological phenomenon consisting in the multifaceted response to the perceived overshadowing of human creativity by AI-driven tools. Specifically, the article introduces the term “Creative Displacement Anxiety” (CDA), describe its foundation, and discuss its relationships with established psychological and psychosocial models, theories, constructs, and diagnoses such as technostress, impostor syndrome, cognitive dissonance, and economic anxiety. The article conceptualizes and elucidates the potential root causes, symptoms, and implications of CDA. Additionally, it discusses how some of the possible negative mental health outcomes could potentially be mitigated. Our work emphasizes the need for interventions that raise awareness on generative AI, support individuals in accepting and incorporating AI as a creative tool and companion and helps them navigate this new landscape. Finally, by offering a view of the interplay between AI advancements and the human creative psyche, our research aims at fostering the discussion around embracing the positive contribution of generative AI to our society.

Key Words: generative AI, creativity, mental health, anxiety, stress, depression.

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Introduction

Historically, technology has played a pivotal role in extending human capabilities. From the printing press to the Internet, each technological innovation has sparked a renaissance of creativity. However, the advancement of any type of technology always presents a double-edged sword: while it introduces remarkable opportunities for progress, it also has the potential to serve humanity in ways that are both beneficial and detrimental and introduces new challenges that require deliberate

navigation¹. Such dichotomy in technological impact is inherent in any technology, but especially evident with paradigm-shifting innovations that are also pervasive to every human activity. For instance, the dawn of the digital age has not only transformed the way humans communicate, collaborate, and create, but it has also prompted a reconsideration of the boundaries between human and machine capabilities, increasingly resulting not only in human-machine co-evolution, but in a proper human-machine symbiosis². This is especially true for Artificial Intelligence and, specifically, generative AI.



Generative AI refers to a class of AI models and systems capable of producing new, previously unseen content, such as images, text, music, or even complex data patterns. By learning from vast amounts of data, these algorithms can mimic and replicate certain patterns, styles, or structures, allowing them to generate creations that are often indistinguishable from those made by humans. Applications range from art and music creation to drug discovery and predictive modeling, positioning generative AI at the forefront of innovation and expanding the boundaries of machine-driven creativity. As generative AI emerges at the forefront of technological revolutions, it is crucial to investigate the breadth and significance of the ripple effects of its integration into society and their subsequent implications, particularly concerning human creativity³.

Traditionally, machines and algorithms were tools that artists and creators employed to enhance their work⁴. On the contrary, the opportunities presented by generative AI are manifold. For instance, artists and creators can now tap into algorithms to brainstorm and generate ideas, receive feedback and refine their designs, or explore new art forms that would be otherwise unattainable⁵, leading to resulting in a co-evolutionary hybrid intelligence⁶. This is playing an increasing role in all creative industries, from entertainment to architecture, where these tools can be harnessed to expedite creative processes, offering novel solutions and products at an unprecedented pace. Furthermore, several authors argue that AI can democratize creative opportunities, allowing those who might lack traditional training in a domain to produce work of substantial quality⁷ or augment their work without incurring considerable additional costs. An example showcasing the opportunity in this partnership is the realm of music composition. Musicians can now collaborate with AI, which suggests chord progressions or melodic structures based on vast datasets, potentially leading to unique fusion genres⁸. However, as with every major technological shift, the challenges that arise are equally profound. Central among these challenges is the potential loss of jobs⁹. Although every technology has resulted in an upward shift in the quality of human labor, the automation of roles previously deemed safe from technological encroachment, particularly in creative sectors, presents potential economic upheavals¹⁰. For instance, as algorithms become adept at tasks ranging from writing journalistic articles to composing music, the professional landscape for human creatives becomes increasingly uncertain.

Generative AI takes these challenges one step further: beyond the impact on human labor, at the heart of the discussion of this article is the relationship between generative AI and human creativity. Algorithms trained on vast databases of paintings can now produce artworks that emulate the styles of great masters, sometimes with such accuracy that even experts can be fooled¹¹. Several pivotal moments have underscored this shift. The art world, for instance, witnessed a moment of reckoning when an artwork created by an AI algorithm was auctioned at Christie's for a substantial sum¹². Similarly, literary spheres were set abuzz with AI-driven poetry and narratives that challenge the boundaries of human authorship. Therefore, Generative AI does not merely extend human creativity; it mimics, and in some instances, outperforms human creative endeavors. Also, the present scenario diverges from the past in a significant way. This poses questions about the authenticity of art, the value of human touch, and the very essence of what it means to create. Furthermore, generative AI has resulted in an unparalleled surge in the production of art at negligible costs and swift timelines. The "democratization" holds the promise of amplifying creativity, making art accessible and diversifying its range. However, it also brings into question the traditional dynamics of supply and demand in the art domain¹³. As the market is inundated with an exponential volume of artwork, this might lead to artistic inflation, diluting the perceived value of individual creations as well as the overall experience of creative production and consumption.

Indeed, the key point is that the advent of generative AI has thrust us into uncharted territory: for the first time, machines not only replicate manual human labor but also mimic a fundamental human attribute – creativity^{14, 15}. This evolution is especially significant because creativity is not just an economic commodity; it lies at the core of human identity, serving as a medium of expression, connection, and meaning making¹⁶. While much focus has been given to the technological marvels of our era, the psychosocial ramifications of rapid technological advancements have received less scholarly attention. Nonetheless, the broad integration of generative AI into creative domains can lead to distress, particularly when individuals perceive their creative identities as being threatened or overshadowed. This distress, characterized by anxiety, doubt, and a crisis of professional and personal identity, has profound implications for mental well-being.

Although some diagnoses described in the Diagnostic and Statistical Manual of Mental Disorders¹⁷ touch upon the stress induced by technological disruptions, no terminology fully encapsulates the unique and nuanced psychological implications resulting from the confluence of generative AI and human creativity. Nevertheless, it is paramount to



identify and outline a definition for this new type of these psychological implications because the proliferating use of generative AI across diverse creative arenas could increasingly trigger a wave of introspection, anxiety, and depression, among creative professionals and enthusiasts as well as the general audience.

This paper introduces the concept of “Creative Displacement Anxiety” (CDA), a term coined to define the psychological state arising from the perceived displacement of human creativity by advanced generative AI technologies. The present article details the origin of the term, discusses the relationship of CDA with established theories, and highlights the differences that make CDA a specific diagnosis. By examining the facets of CDA, it also aims to offer a comprehensive understanding, providing avenues for further research, mitigation strategies, and policy recommendations.

Related Work

Historically, the introduction of technologies such as the printing press, the telegraph, and even the television stirred similar concerns about job displacement and cognitive changes¹⁸. Many of these inventions were met with skepticism and a fear that they might change societal constructs¹⁹. As anxiety towards new technologies is not a novel sentiment, a large body of literature explores the broader framework of behavioral, cognitive, and emotional responses to evolving technologies.

In the advent of the digital age, “technostress” emerged as a pivotal concept, characterized by the stress and anxiety individuals experience due to the adoption of new technologies²⁰. Ragu-Nathan et al. expanded on this concept, examining how technostress creators lead to various strains, affecting not only individuals’ well-being but also organizational commitment²¹. Their findings emphasized the importance of understanding how technological evolution could inadvertently contribute to heightened stress levels and diminished job satisfaction. In his seminal work “The Shallows”, Carr argued that the Internet might be diminishing our capacity for concentration and contemplation²². His assertions sparked research into the cognitive consequences of technological reliance. Subsequently, with the introduction of social media, concerns shifted from societal structures to individual mental health. Studies have indicated a potential correlation between increased screen time and a decline in cognitive functions, especially among the younger generation²³. Additionally, excessive use of digital platforms has been linked to depression, anxiety, and other mental health issues²⁴.

Similarly, anxiety stemming from the potential of AI has been analyzed by numerous studies. Several authors focused on negative feelings that result from the displacement of human jobs. For instance, Arntz et al. explored the potential jobs at risk²⁵, concluding that while certain tasks within jobs could be automated, fewer jobs in entirety would be replaced by AI. Brynjolfsson and McAfee discussed the transformative influence of digital technologies and presented a more concerning view, positing that AI advancements might lead to significant labor market polarization, fostering potential economic and societal disruptions²⁶. Several studies explored the concerns regarding the pervasive impact of AI and automation on employment²⁷. A comprehensive review by Bessen²⁸ also addressed the paradox of how technology, while increasing productivity, might be contributing to declining wages. Beyond job-related anxieties, the intrusion of AI into daily lives has raised concerns regarding psychological impacts. Focusing on AI, Gunkel²⁹ explored the ethical considerations surrounding AI interactions, raising crucial questions about autonomy, responsibility, and the potential implications on human identity. Also, several studies have investigated the interplay between interaction with AI content and anxiety. In this context, Mori’s work on the “uncanny valley”³⁰ hypothesized that as robots become more human-like, a point is reached where the similarity in their form causes discomfort and eeriness, inducing a form of anxiety. The concept could also be applied to artifacts created by AI, though many would argue that generative AI has already overcome the uncanny valley and has become completely human-like. In fact, other studies focus on the consequences of AI systems becoming increasingly able to mimic or even replicate human emotions. Turkle investigates the emotional attachments formed between individuals and robotic entities, arguing that while such technologies might offer the facade of companionship, they are not able to provide the empathetic connection intrinsic to human relationships³¹. This brings additional ethical implications, with scholars arguing that AI’s imitation of emotions might blur the lines of authenticity in human interactions³².

With specific regard to the impact of AI on human creativity, McCormack et al.³³ explored the creative ability of generative AI, reviewing algorithms that generate art, music, and even literary content. Furthermore, several studies discussed the potential of generative AI to create art that is indistinguishable from human-created pieces¹¹ whereas others raised questions in terms of ownership³⁴. While some authors view these advancements solely as tools augmenting human creativity³⁵, others expressed the fear that generative AI might overshadow or even replace innate



human creative processes³⁶. Rainie and Anderson further highlighted that experts are deeply divided on how advancing AI technologies might impact the broader aspects of human well-being³⁷. Beyond individual responses, several research works explored societal reactions to AI. Bostrom discussed the concept of the emergence of a “superintelligent” AI, raising concerns about its long-term safety and implications for humanity³⁸. This theoretical exploration aligns with broader concerns about AI in terms of governance, ethics, and its potential societal disruptions³⁹. Winfield and Jirotko underscored the urgent need for ethical governance in AI, stressing transparency and accountability as technology intertwines with human affairs⁴⁰. This sentiment was echoed by Floridi et al.⁴¹, who called for a concerted effort to ensure that the development of AI technology is aligned with societal values and promotes human welfare. Amid the extensive exploration of anxieties and apprehensions, researchers have also turned their attention to adaptation mechanisms. How societies, and individuals within, adapt and cope with rapid technological changes remains an area of keen interest. Aligned with this is the exploration of how education systems might evolve to equip individuals with the necessary cognitive tools to navigate an AI-driven landscape²⁷.

Creative Displacement Anxiety

This article introduces Creative Displacement Anxiety, a new term that identifies the specific psychological condition that might be resulting from the perceived threat or actual replacement of human creativity by advanced generative AI technologies. CDA is different from existing definitions of technology-induced psychological distress in that it encompasses a range of emotional, cognitive, and behavioral reactions (detailed below) that could arise as a response to the rapid advancement and integration of AI into traditionally human-centric creative domains. The definition of Creative Displacement Anxiety aims to capture the feelings of distress or unease potentially experienced when traditional human creativity feels overshadowed in any capacity by the capabilities of generative AI. Specifically, it stems from a loss of meaning, identity, and purpose of human creativity, where the word “creativity” is utilized in this context to refer to the broader spectrum of human productivity, not limited to the arts.

There are four key factors that distinguish this new wave of technology different from the others and that renders CDA different from other technology-related mental health conditions and more profound and pervasive than what humanity has experienced so far:

- Generative AI taps into a new area of Maslow’s hierarchy of needs. Historically, machines and technology have primarily addressed the lower tiers of Maslow’s pyramid, such as physiological needs (e.g., mechanization of agriculture) safety needs (e.g., security systems), and belonging and self-esteem needs (e.g., social media). Even traditional AI and Machine Learning, from home automation to spam filters, from route-finding to medical decision support tools, address more basic human needs. Instead, for the first time in history, generative AI technology is able to explore realms of creativity and self-expression in unprecedented ways, probing into the pinnacle of Maslow’s hierarchy of needs, that is, self-actualization. The emergence of social media platforms, while transformative, tapped into different aspects of Maslow’s model. Predominantly, they appeal to social belongingness and esteem tiers, facilitating connection, validation, and recognition on a global scale. The desire for likes, shares, and comments reflects an innate human need for acknowledgment and affirmation from one’s peers. However, where social media amplifies the external validation loop, generative AI potentially challenges the internal validation process inherent to creative endeavors. This represents a paradigm shift; for the first time, technology directly interfaces and interferes with the uppermost human need, enhancing and competing with individuals’ intrinsic motivations to create, innovate, and express uniquely human aspects of self.
- Generative AI stands distinctively apart from other technological innovations in both its purpose and implications. While previous waves of technological advancement primarily sought to augment human capabilities or address specific needs, generative AI presents a nuanced but significant shift. Mechanization, for instance, arose as a response to the demand for efficiency and the need to replace tedious, repetitive, and hazardous tasks that were beyond sustainable human capacity. Safety technologies fortified our innate desire for security, while platforms like social media aimed at amplifying human connection, communication, and the pursuit of esteem through online recognition. Each of these technological waves, while transformative, could only work in tandem with human capabilities, serving as extensions or enhancers rather than replacements. Generative AI, on the other hand, does not merely augment but has the potential to emulate and, in some cases, surpass human capabilities in the realm of creativity. While it can be leveraged to enhance human creativity through collaborative means, its very essence also harbors the potential to replicate creative outputs independently, challenging the exclusivity once believed inherent to human creativity. This represents a profound paradigm shift, as no longer is technology just a tool (as described in previous research³⁵), but it becomes the potential craftsman itself, as postulated by other authors³⁶.



- Accelerated adoption rate and unparalleled content production capacity. In 2023, ChatGPT reached the milestone of one million users in a mere five days. Historical trajectories of technological adoption offer revealing comparisons. For instance, Instagram, launched in 2010, took approximately 3.5 months to attain the same number of users, while Facebook, introduced in 2004, required 10 months to reach this benchmark. Such an expedited rate of adoption speaks not just to the interconnectedness of the digital age but also to the perceived utility and appeal of generative AI platforms. Furthermore, the content production capabilities of generative AI are also unprecedented. Recent statistics report that within a single year text-to-image AI generated an astonishing 15 billion images, almost equivalent to the number of photographs taken over a span of 150 years, that is, since photography was invented. Combined with its adoption rate, this output has profound implications for the dynamics of supply and demand. With such a vast array of content available, the paradox of choice becomes glaringly relevant, potentially leading to decision paralysis or decreased satisfaction among consumers due to the overwhelming abundance of options. Additionally, the sheer volume of content challenges traditional signal-to-noise ratio dynamics in content consumption. With an unprecedented quantity of AI-generated material, discerning quality becomes increasingly intricate. As the digital landscape burgeons with content, humans might grapple with the task of sifting through this vast expanse to locate and consume material that meets their standards of quality and relevance, thereby completely reshaping the paradigms of content consumption in the digital age.
- Artificial Superintelligence. While it is imperative to underscore that the patterns of machine intelligence diverge significantly from human cognitive modalities, generative AI displays proficiency at or beyond human-level across numerous tasks. A recent study⁴² subjected GPT-4 to the Scholastic Aptitude Test (SAT) and found that the AI model achieved a verbal score of 710, a math score of 690, and a cumulative score of 1400. Contextualized within U.S. norms, these results translate to a verbal Intellectual Quotient (IQ) of 126, a math IQ of 126, and a holistic full-scale IQ of 124. In essence, GPT-4's performance surpasses 95% of the average human population in standardized aptitude examinations. Also, while the process behind generative text-to-image AI is not human-like and does not involve feelings in the traditional sense, AI-generated images might display or elicit emotions, thanks to patterns learned from training sets. These achievements has significant implications for creativity, which has historically been considered as a distinctly human endeavor, intertwined with emotion, experience, and intuition. AI's capacity to outperform in tests designed to measure humans underscores a paradigm where artificial intelligence is no longer confined to algorithmic tasks but is breaching new territories historically reserved for humans. While GPT-4's intelligence patterns may not mirror human cognition, or text-to-image models (e.g., Stable Diffusion, MidJourney, and Dall-e) are not capable of human-like feelings, the resulting artifacts can demonstrate high IQ levels or display or trigger emotions.

Indeed, CDA can apply to both domains of production and consumption of creative artifacts, as individuals involved in either space can experience similar feelings due to the increasing infusion of AI in all realms of creativity. Indeed, CDA could be experienced differently by the creators and by the consumers of creative artifacts, due to the inherently different reasons that motivate each group to be engaged with creative activities and works. Furthermore, each group could exhibit CDA through the manifestation of dissimilar signs and symptoms. However, both groups would share a similar experience in terms of types of psychological distress and decreased mental well-being.

Producers of creative artifacts

On the one hand, producers of creative artifacts such as artists, writers, musicians, designers, researchers, developers, and other creative professionals might increasingly find themselves contending with AI tools that can mimic, replicate, or even innovate artistic content. This ability of AI not only poses a direct challenge to the unique human capacity for original creation but also raises questions about the value and identity of human-made art. A painter might struggle with the idea that a computer program can generate paintings that resonate emotionally with viewers, leading to feelings of redundancy or devaluation of their skillset. Similarly, a writer might experience CDA upon discovering AI-generated literature that rivals their human creativity in depth and coherence. Furthermore, unfair competition. Furthermore, the so-called democratization brought by generative AI translates in the tangible risk of a potentially unfair competition from a number of non-artists who can now produce creative artifacts with little or no creative and financial attribution. It is important to highlight that due to the democratization brought by generative AI, the group of “creative producers” would also include individuals who use generative AI in any capacity to produce creative artifacts, who without generative AI would be part of the “consumers” group, only.

CDA could be experienced by producers of creative artifacts as follows:



- Loss of identity and purpose: as creativity is a fundamental aspect of human identity, the perception of generative AI taking over creative tasks would induce individuals to question their self-worth.
- Imposter syndrome: artists using generative AI tools might feel they are not genuinely creating, leading to feelings of fraudulence, even if they are using AI as just another tool among many.
- Decreased motivation: if AI can create art, music, or literature faster and potentially better than humans, some might question the need of their own creative endeavors, which, in turn can result in decreased motivation to pursue any creative projects.
- Weakened cathartic experience: as generative AI enters the picture, a portion of the creative process is delegated to algorithms, which inevitably diminishes or completely removes the creative's ability to release and get relief from strong or repressed emotions.
- Skills atrophy: as a result of a reduced motivation to create, an individual's artistic skills would deteriorate over time, which would then lead to a downwards spiral.
- Diminishing artistic references: a decrease in artistic activities would also lead to a decline in the number of individuals who pursue creative endeavors and possibly to a consequent regression in terms of the quantity and quality of human artistic references, with a ripple effect on training datasets for generative AI algorithms.
- Economic anxiety: challenges in job markets would then lead to financial stress and additional related psychological consequences.

Furthermore, producers of creative artifacts could experience several emotional, cognitive, and behavioral responses as a result of CDA. Emotional responses could include: (1) anxiety and worry, involving the constant concern about one's creative relevance in the face of AI advancements; (2) feelings of inadequacy, that is, believing that one's creativity is inferior compared to AI-generated content; (3) jealousy and resentment towards creators who might be better leveraging AI or gaining more recognition due to AI-augmented work as well as towards AI in general, for its perceived impact on human creativity; (4) loss of identity and despair, which includes feeling a diminished sense of self-worth because creativity, a previously defining human trait, seems less unique; and (5) depression, as a result of the prolonged sadness stemming from a perceived lack of purpose or value in one's creative endeavors. Furthermore, CDA can manifest in the following cognitive responses: (1) rumination, that is, obsessive thinking about AI's impact on one's creative career or passions, with a consequent paralysis by analysis; (2) constant state of doubt resulting from questioning the authenticity and value of one's work, especially if aided by AI tools; (3) hypercriticism, including overanalyzing personal creations to find elements that distinguish them from AI-generated artifacts, potentially to a fault; (4) cognitive narrowing, which would translate in focusing excessively on specific niches or styles, wrongly believing they are safe from the influence of AI, leading to stifled and stagnant creativity; and (5) overall pessimism, fostered by the belief that AI will inevitably overshadow human creativity in every aspect. Finally, CDA can include the following behavioral responses: (1) avoidance and withdrawal, that is, avoiding creative pursuits due to fear of comparison with AI; (2) over-reliance: leaning too heavily on AI tools for creative tasks, which would then lead to skill atrophy; (3) overcompensation: trying to differentiate oneself excessively from AI outputs, which may lead to forced or inauthentic creations; (4) rejection, that is, refusing to acknowledge or engage with AI tools, even when they might be beneficial; and (5) isolation, which can manifest in avoiding discussions, forums, or collaborations that involve AI-based creativity, potentially leading to missed opportunities.

Consumers of creative artifacts

On the other hand, consumers of creative artifacts might also experience CDA. Traditionally, consumers have revered art for its capacity to channel human emotion, cultural contexts, and unique perspectives. With AI stepping into the creative playground, these consumers face an overabundance of artistic sources and content. Although the plethora of tools and sources offers variety and accessibility^{7, 13}, it also challenges and might diminish the value of artistic authorship (i.e., the "who" of the creative artifact), background (i.e., the "how" of the creative artifact), and overall value of the experience (i.e., the "what" of the creative artifact, whether produced by a human or by generative AI). Also, the current abundance of generative AI tools and creative artifacts generated by or using AI could trigger the "paradox of choice", where too many options can lead to reduced satisfaction or even decision paralysis. Additionally, understanding that a deeply resonant piece of music or a touching poem might be the result of an algorithm rather than human experience could lead to feelings of alienation or disillusionment. The traditional bond between consumer and creator, built on shared human experience and emotion, might get disrupted, potentially diminishing the personal and societal value attributed to creative endeavors and their outcomes. It is important to highlight that creative producers are inherently part of the group of consumers.

Consumers of creative artifacts could experience CDA as follows:



- Increased dependency and over-reliance on technology: the feeling that generative AI results in better creative outcomes can lead to a diminished sense of human efficacy, making individuals feel helpless without technology.
- Erosion of cultural diversity: besides the fact that AI algorithms can often be biased towards dominant cultures or trends, if AI is perceived to dominate creativity, individuals might feel a loss in terms of global cultural expression and might perceive the world as more homogenized.
- Challenges in authentic connection: art and creativity are mediums through which humans connect, empathize, and share experiences. Consumers might perceive creative artifacts generated by or produced using AI as lacking the nuances and imperfections that make human creations relatable, which could potentially impact the overall experience of creative consumption, including interpersonal connection.
- Shift in value systems: society might begin to value algorithmic perfection over human touch, leading to a redefinition of what is considered “good” or “valuable” in creative works.
- Fear of Missing Out (FOMO), that is, an individual’s apprehension that they are not able to experience enough of what is available. The acceleration provided by generative AI is already leading resulting in the impossibility of being able to keep up with the inflated supply of creative artifacts.

Furthermore, consumers of creative artifacts could experience several emotional, cognitive, and behavioral responses as a result of CDA. Emotional responses could include: (1) feeling alienated or less emotionally connected to creativity if it involves AI-generated content; (2) confusion derived to the struggle of reconciling personal reactions to creative works, whether with the knowledge of its AI origins or especially in lack of information about its authorship attribution; (3) skepticism and disenchantment, including doubting the authenticity or soul behind any kind of creative artifact, whether generated by or using AI or not; (4) frustration as a result of the overwhelming by the sheer volume of available AI-generated content, making it harder to explore it or to find value in the scarcity of uniqueness; (5) ambivalence of positioning, that is, feeling unsure about the value or place of AI-generated content in the broader cultural landscape; and (6) indifference and apathy towards new creative content, believing that AI proliferation has “watered down” the uniqueness of human creativity. Furthermore, CDA can manifest in the following cognitive responses: (1) reconsideration of authenticity, as a result of reflecting upon what constitutes genuine creativity and the significance of human touch in creative artifacts; (2) overwhelm due to the “paradox of choice” due to the sheer exponential volume of AI-generated content available, leading to cognitive fatigue; (3) reevaluation of expectations after realizing that not every piece they resonate with may have human origins and reconfiguring their perceptions accordingly; (4) increased critical analysis, which involves being more discerning about the consumption of creative artifacts, seeking to understand their origin and context; (5) reductive thinking and skepticism against any artifact involving AI-generated content, even when it possesses merit, believing that if an artifact is AI-generated, it lacks depth, emotion, or genuine creativity, even when it not the case; and (6) nostalgia of past eras of creativity, based on an idealized and biased view that they were better due to lack of AI influence. Finally, CDA can include the following behavioral responses: (1) deliberate and selective consumption of human-made artifacts over AI-generated ones (or vice-versa) based on prejudice, preference, or principle; (2) avoidance of platforms, galleries, or media that showcase any form of creativity because it could potentially include AI-generated content; (3) refusing to engage with or purchase AI-generated artifacts, regardless of their quality; (4) actively speaking against or protesting the growth of AI in the art domain; and (5) retro consumption, that is, only seeking out older artifacts, which could be considered as “safe”, avoiding contemporary creations altogether.

Potential mental health consequences

Ultimately, the underpinnings of CDA in both producers and consumers of creative artifacts can be traced back to the intrinsic human need for purpose, identity, connection, and catharsis. For producers, creativity is often an extension of self-identity and a medium of communication. When generative AI predominantly enters this domain, it could inadvertently challenge their purpose and voice. For consumers, art consumption goes beyond mere appreciation: it is a form of connection, understanding, and reflection of human society. When AI-generated art pervades this space, it could leave consumers grappling with questions about authenticity, relatability, and the very essence of what makes art valuable as a human experience.

In both scenarios, individuals might suffer from potential mental health consequences including increased levels of stress, anxiety, and depression as follows:

- Stress. For artists, creators, and enthusiasts, whether seasoned or novice, the knowledge that a machine could replicate or surpass their creativity might lead to a chronic stress state. What distinguishes the stress emanating from CDA from other types of technology-related mental health consequences (e.g., technostress) is its root



cause. Technostress pivots around the challenges stemming from the ubiquity of technology, its incessant demands on attention, and the pressure to constantly adapt to its evolving nature. In contrast, Creative Displacement Anxiety taps into a more nuanced psychological realm, particularly tethered to the essence of human identity and self-worth as creators. While technostress focuses on the broader implications of technology encroachment and its associated demands, CDA centers on the existential threat posed by generative AI to human creativity. The sense of displacement emphasized by CDA is not merely about adapting to or integrating technology, but rather confronting the unsettling proposition that an intrinsic human attribute, that is, creativity, might be replicated, or even surpassed, by machine intelligence. This subtle but profound distinction makes CDA a more specific and profound form of technology-induced distress. CDA-related stress would manifest in a way similar to technostress, with symptoms ranging from cognitive overload to burnout. Furthermore, this constant feeling of inadequacy can amplify typical stress responses and their accompanying symptoms, and chronic exposure to stressors without adequate coping mechanisms can lead to additional negative health outcomes, both physical and mental.

- **Anxiety.** By definition, CDA encompasses a unique subset of anxieties centered around the rapid evolution of AI in the creative sphere and its impact on human creativity. This form of anxiety is typified by fears of obsolescence, the erosion of one's unique creative identity, and concerns about various aspects of the future, from economic security in creative professions to the progressive erosion of foundational pillars of human intelligence, emotion, and identity. Unlike general anxiety, which might be triggered by a range of stimuli, CDA belongs to the family of technology-related anxieties, which have very specific roots. For instance, "nomophobia", that is, the fear of being without one's mobile phone, emerged from our relationship with smartphones and the constant connectivity they offer. Similarly, "cyberchondria" refers to heightened health anxiety due to excessive online symptom-checking, reveals the paradoxical nature of information accessibility. However, CDA stands apart from these technology-induced anxieties in its breadth, depth, and implications. While most technology-induced anxieties are linked to usage patterns, access, or the sheer volume of information, CDA grapples with the existential and identity challenges posed by AI's incursion into the realm of creativity challenging the uniqueness of human creative expression. This fundamental difference situates CDA not merely as a byproduct of the pervasiveness of technology but as a reflection of deeper philosophical and identity-related questions stemming from the advances in generative AI.
- **Depression.** Various technology-related psychological ramifications have emerged in the past decades, with depression being a salient concern. For example, one particularly recognized form of depression stems from excessive or maladaptive social media use, which results from unfavorable social comparisons, feelings of inadequacy due to curated online personas, the paradox of perceived social isolation despite increased online connectivity, and intensifying feelings of inferiority, exclusion, or missed experiences. This form of depression arises from the disparity between one's lived reality and the hyper-idealized online world, culminating in feelings of despondency and reduced self-worth. In contrast, CDA-induced depression is anchored in a different facet of the human-technology relationship and can be described as a profound sense of loss, including loss of purpose, identity, and value in one's or in human creativity altogether. While social media depression deals with external comparisons and their impact on self-worth, CDA depression stems from an internal displacement and is intimately tied to feelings of inadequacy from confrontation with the seemingly boundless capabilities of AI. Furthermore, especially when individuals, especially those deeply invested in creative professions, feel that their skills are becoming redundant or less valued due to AI-generated content, they might experience a deep sense of purposelessness. This is not merely about economic displacement but an existential crisis about and individual's place and value in society.

Furthermore, a common stressor that can cause anxiety and depression is stigma. The creative domain, historically, has been a space for human authenticity and expression. The incorporation of AI into this sphere can be perceived as a dilution of genuine human effort, leading to a derisive view of those who choose to blend technology and artistry. This stigma, rooted deeply in the traditional constructs of creativity, can exacerbate feelings of inadequacy and isolation from both producers and consumers towards both those who integrate AI in their processes and those who enjoy AI-generated artifacts. On the one hand, reliance on or collaboration with AI could be perceived as a crutch, indicative of an individual's creative insufficiencies, further deepening the chasm of CDA. On the other hand, the enjoyment of artifacts that involve generative AI can be regarded as non-legitimate form of creative consumption, leading to manifestations of cognitive dissonance.

Certain demographics might be particularly predisposed to the mental health implications of Creative Displacement Anxiety. Indeed, creative professionals, who derive their identity, purpose, and often, livelihood from their creative



endeavors, are notably susceptible. Another vulnerable group might comprise individuals with limited education or understanding of AI. Unfamiliarity with the mechanisms, dynamics, and capabilities of generative AI can amplify the sense of displacement, resulting in feelings of helplessness or obsolescence. This demographic might harbor exaggerated fears about its capabilities. Additionally, individuals already predisposed to stress, anxiety, and depression, such as those with pre-existing mental health conditions, traumatic experiences, or enduring personal and professional pressures, might find the cognitive and emotional weight of CDA exacerbating their challenges. Moreover, younger generations might be uniquely susceptible to CDA, as the omnipresence of generative AI in creative aspects of life can pose profound challenges to the development of their self-identity: if generative AI consistently produces outputs that match or surpass their creative endeavors, it might inadvertently suppress their confidence and growth, especially in a world where the fusion of their digital and physical identities can amplify feelings of inadequacy or redundancy.

Exploring CDA through the lens of existing psychological models and grounding it in those constructs provides additional context to its specificity. Also, existing theories provide insight on its potential causes, proactive countermeasures, and remedies to address its symptoms reactively. For instance, the relationship between education and CDA can be explained by the Dunning-Kruger effect⁴³, which posits that individuals with limited knowledge or expertise in a domain often overestimate their competence and understanding of subjects. This may be applicable to populations with rudimentary understanding of AI, who might prematurely dismiss or undervalue their creative abilities in the face of AI, not fully grasping the technology's scope and limitations; simultaneously, amplifying the potential of generative AI could lead to an increased perceived threat. Also, the Cognitive Load Theory⁴⁴, which emphasizes the finite nature of working memory in processing information, suggests that the sheer volume of AI-generated content, coupled with fears surrounding displacement, could overwhelm individuals, diminishing their cognitive efficiency and confidence in navigating the creative domain. Furthermore, frameworks including the Self-Determination Theory⁴⁵, which emphasizes autonomy, competence, and relatedness as foundational to motivation, can shed light on how CDA impacts intrinsic motivation, with AI potentially challenging perceptions of autonomy and competence in creative pursuits.

Discussion

As humanity is potentially just entering a new era in which the use of generative AI is predominant, the actual number of individuals who could experience CDA and its ramifications are currently unknown. However, it is fundamental to begin engaging a multitude of stakeholders in proactively understanding CDA, raising awareness about its manifestations, and identifying ways to address its causes and the potential negative mental health implications with a multifaceted approach.

Education about the nature and limitations of AI is paramount in demystifying this type of technology, reducing associated fears, facilitating a more balanced perspective, and equipping current and future generations with the knowledge and skills to coexist confidently alongside AI. This might entail engaging in courses that elucidate the workings of AI, joining communities where human-AI collaboration is celebrated, or even setting deliberate boundaries where one disconnects from technology to engage in purely human-driven creative acts. Also, education is key in fostering an understanding that every era has its challenges and in accepting that generative AI is probably here to stay. As a result, individuals would be more open to actively experiment and engage with AI-generated content to understand and enjoy its capacity and place in the creative world, as well as entertain constructive conversations about the implications and future of AI in the art domain. Furthermore, education would contribute to avoiding societal stigma against the use of AI in creative endeavors. Addressing this facet requires a shift in societal dialogue, embracing a deeper understanding of the novel nuances that creativity will acquire in the age of AI. Cultivating spaces where experts, producers, and consumers of creative artifacts, can openly discuss their synergistic approach with AI tools, would help normalize the blend of man and machine that contemporary society is beginning to witness. Moreover, transparent conversations can serve as educational platforms to dismantle unfounded biases, reach a common ground between polarized views, and frame generative AI and its use in a constructive way. In turn, lowering the risk of stigma would facilitate honest and transparent conversations about AI attribution and authorship in the context of artifacts produced with or by generative AI. Also, positive reactions would include concerted efforts to support creators, through purchases, commissions, or platforms that value human or artificial creativity appropriately.

Mental health professionals play a key role in encouraging conversations about the topic, understanding and recognizing CDA's distinct characteristics, and developing tailored interventions that can be implemented within therapeutic settings to specifically address CDA's unique stressors, mitigate its factors of anxiety, and prevent more severe mental health outcomes. While coping mechanisms can be viable for addressing CDA, professional help could



be required to provide different individuals or populations with additional tools to manage their specific anxieties. For instance, cognitive-behavioral therapy (CBT) can be employed to challenge and rectify cognitive distortions related to perceived inadequacy in comparison to AI capabilities, and to accept the evolving landscape, and embrace change, and build resilience. Finally, mental health professionals can foster discussion or therapy groups that offer a safe space for sharing experiences with others facing similar challenges.

Individuals engaged in artistic pursuits (in the broader sense) should understand that the symbiotic potential of collaboration with AI can be empowering and be reassured that instead of being a competitor generative AI can be harnessed as a tool, a muse, or even a critic. Workshops and training sessions emphasizing the augmentative capabilities of AI, rather than its substitutive ones, can help individuals become familiar with generative AI tools and reconceptualize their relationship with the technology. Peer support groups can also be a venue for sharing strategies to mitigate feelings of inadequacy and cultivate resilience in the face of rapid technological advancements. Organizations, and particularly businesses at the forefront of developing and distributing generative AI, bear a significant responsibility. Ethical guidelines and best practices should be established and adopted to promote ethical consumption of human creative artifacts, responsible adoption of AI in creative tasks, and fair competition with human endeavors. Furthermore, at a policy level, governments can institute reforms that fund research into the societal implications of generative AI, ensuring that strategies to counteract potential psychological harms are evidence-based and effective. Regulatory bodies can also consider guidelines that ensure a balance between human and machine roles in creative industries. Finally, personal agency remains a potent weapon against the onset of CDA. Technology has always challenged individuals to adaptively navigate the evolving landscape of innovation. Mindfulness practices can also aid in grounding individuals, helping them find equilibrium amidst the whirlwind of technological change.

The focus of this article is the negative response to generative AI in terms of mental health. However, the potential contributions of generative AI to the domain of creativity can be manifold. Its scalability and efficiency allows for a broader exploration of creative landscapes in reduced time frames. Specifically, its efficiency is not merely quantitative but can also be qualitative: AI can introduce diverse and novel perspectives, prompting human creators to rethink and refine their ideas. Moreover, AI can play a positive role in mitigating cognitive biases, offering outputs that might transcend established human patterns of thought. Additionally, for tasks that are laborious or repetitive, AI can handle the groundwork, freeing up human cognitive resources for more nuanced and intricate aspects of the creative process. Furthermore, the intersection of AI and human creativity can elicit a spectrum of positive emotions and sentiments and produce mental health outcomes that are mostly positive. As an example, witnessing the capabilities of technology can inspire individuals to deepen their knowledge, diversify their skillsets, or improve their technical abilities. Collaborative human-machine synergy and symbiosis can also foster a sense of enablement, enhanced competence, augmented potential, and co-evolution. Several studies show that when humans view AI not as a competitor but as a collaborator, it can pave the way for increased self-efficacy, a deepened sense of purpose, and an enriched appreciation for the boundless horizons of collective, symbiotic creativity. Therefore, while this article critically examines the multifaceted negative implications of generative AI on human creativity, its authors are proponents of its adoption as a tool and companion that can enhance the overall experience of the production of creative artifacts and even extend the boundaries of human creativity. The authors believe that, when harnessed judiciously, generative AI can be a tool of remarkable utility, amplifying human capacities rather than undermining them. In fact, generative models played a role in assisting with elements of this manuscript.

Conclusions

In the history of humanity, the most important waves of technological evolution have introduced both societal advancement and challenges. Similarly, as generative AI represents a paradigm shift, while offering unprecedented opportunities for enhancing and complementing human creativity, it might also surface as a catalyst for a unique set of mental health implications that demand new cognitive frameworks, coping mechanisms, educative measures, and psychological support.

This paper focused on the potential negative mental health consequences specific to the introduction of generative AI, and introduced the concept of Creative Displacement Anxiety, or CDA, a new term designed to describe the psychological stress or anxiety that might arise in individuals when they perceive that AI-driven generative technologies are replacing or overshadowing human creativity. While stress, anxiety, and depression are well-known mental health challenges, the emergence of CDA underscores the intricate ways in which technological advancements intersect with human psychology and affects mental health with very specific emotional, cognitive, and behavior dynamics. To this



end, the article highlighted aspects that distinguish the stress emanating from CDA from other types of technology-related mental health consequences (e.g., technostress). Also, the paper presented some possible manifestations of CDA within the demographics of both producers and consumers of creative artifacts. As the development of Generative AI might have just introduced a completely new era for mankind, understanding the nuances of CDA and its unique manifestations is crucial for healthcare professionals, policymakers, and individuals in general. To this end, it is crucial to continue the discussion introduced by this paper to develop potential interventions and keep suggesting adaptive strategies that a multitude of stakeholders can implement to address and alleviate the potential consequences of CDA.

Indeed, as in the case of other types of disruptive innovations, generative AI might not be a transient phenomenon but instead, a persistent component of our contemporary and future reality. While the primary focus has been on delineating the potential challenges and adverse effects of generative AI, this paper also highlighted how informed understanding, adoption, and adaptation might help mitigate negative mental health consequences. Furthermore, the article described how education, public and private policies, open conversations, and therapy might prevent the stigma against the use or enjoyment of AI-generated content, which, in turn, might lead to a more honest and constructive dialogue about the topic and, simultaneously, might lessen the impact and severity of CDA.

Finally, this article intentionally avoided any discussion about topics such as ownership, copyright, and the broader legal ramifications inherent to creative artifacts produced with or by generative AI. Although these themes are crucial in the contemporary dialogue surrounding the role of AI in creative endeavors, they are beyond the scope of this paper.

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