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Artificial Intelligence, Fundamental Motives, and Evolutionary Mismatch

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In recent years, the intersection of artificial intelligence (AI) and psychology has garnered unprecedented attention, particularly following the advent of generative AI tools in 2022. These tools, capable of producing human-like text, images, and even deepening our understanding of cognitive processes, have not only captured the public imagination but also sparked new concerns and debates within the psychological community. While AI has been a subject of research for decades, the emergence of its generative capabilities has truly thrust AI into the spotlight. This article explores how these advancements are reshaping our understanding of human cognition and behavior, as well as their potential implications for psychological practice and research. Through a critical examination of current AI technologies and their psychological impacts, we aimed to bridge the gap between technological innovation and the intricate workings of the human mind.

Public Significance Statement
Adopting an evolutionary mismatch framework, this article delineates how certain characteristics of artificial intelligence align (match) with our evolved motivational systems, facilitating the pursuit of fundamental goals such as mating or gaining access to job and status opportunities, while other characteristics of artificial intelligence are misaligned (mismatch) and could result in negative outcomes like stress and poorer mental health or fraud and political unrest.

Keywords: evolutionary mismatch, artificial intelligence, human–artificial intelligence interaction, fundamental motives

The significance of technology is rooted in how it has progressively enhanced human capabilities over time. Through each technological revolution from stone and metal devices to modern machinery, technology has enabled people to expand their physical capabilities by amplifying physical labor through simple tools, then by eliminating the need for physical effort by utilizing machines, and finally relieving people from having to manage machinery functions with automation (Bloomfield, 1993).

The 21st century is characterized by technologies that offer unprecedented connectivity, advanced analytics and automation, cyber-physical systems,

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and intelligent computers (Jabrane & Bousmah, 2021; QuantumBlack By McKinsey, 2022). Robotics enhance manufacturing capabilities by performing repetitive tasks with precision and speed. Internet of Things devices connect everyday objects to the internet, allowing them to communicate and processes to be automated. Modern computing tools enable people to process information faster while cloud systems enhance distributed and shared cognition with larger pools of real-time data, information, and knowledge (Yong, Park, & Spitzmuller, 2021). These technologies are designed to perform specific tasks with the aim of streamlining operations and improving efficiency (Javaid et al., 2022). These disruptive technologies[1] have significantly altered the way that consumers, industries, or businesses operate, how we communicate, how media is consumed, and how people generally interact with technology, setting new industry standards and reshaping consumer expectations. "The way we work as teams today, geographically dispersed all around the world, would be unthinkable to people who lived before the internet age" (Yong, Park, & Spitzmuller, 2021, pp. 54–55).

Of the many disruptive technologies introduced in the 21st century, artificial intelligence (AI) is perhaps the one disruptive technology that has been the most controversial. Unlike technologies that are task-specific—programmed to follow predefined instructions, automate routine functions, or handle large data sets with computational power (e.g., Internet of Things and robotics; Rejeb et al., 2022)—AI is engineered to carry out tasks that usually require human intelligence (e.g., problem-solving) and language processing (e.g., language recognition and translation), such as the voice assistant feature in smartphones. AI systems operate on decision trees that simulate human decision-making processes; their diverse algorithms and capacity to detect underlying patterns in data allow them to perform specific tasks effectively, replicating human logic and reasoning (Sarker, 2022).

The controversy surrounding AI has been thrust into the spotlight with the introduction of Generative AI in November 2022. Unlike earlier AI systems and general technologies that depend on preset algorithms or rigid, rule-based logic, these AI technologies can learn from extensive data sets, efficiently gather information, and create new content or solutions without the need for specific programming. This capability enables AI to produce human-like text, generate artwork, compose music, and even write software code by recognizing patterns and grasping context (Gupta et al., 2024). Since its introduction, people have reported concerns about AI and hold negative attitudes toward it, even if they might recognize its benefits (Cave et al., 2019).

With the inevitable integration of AI in most aspects of our lives, it is imperative to understand how AI technologies might interact with our evolved psychology, for better or worse. However, studies on the potential consequences of AI often lack an overarching framework that addresses a wide spectrum of AI-related problems in an integrated manner and reveals why such problems arise. For instance, some choose to focus on the social impact of AI (Khogali & Mekid, 2023) while others look at the cognitive and emotional aspects (e.g., Ahmad et al., 2023; Dergaa et al., 2024; Kyung & Kwon, 2022), but absent is a fundamental approach that explains how these various psychosocial issues come about. In this article, we adopt an evolutionary mismatch perspective (Li et al., 2018, 2020) to understand why and how AI affects our psychology and potentially brings about both positive and negative consequences. The evolutionary mismatch perspective contrasts how we are motivated to think, feel, and behave due to stimuli present in modern times with the way humans lived and operated in the ancestral past where such evolutionary novelty was absent. This perspective has been applied to several areas including technological usage (Sbarra et al., 2019), physical health (Lea et al., 2023), mental health (Brenner et al., 2015; Montgomery, 2018), and mating and reproduction (Goetz et al., 2019; Yong et al., 2024), thus promising useful insights in the context of AI with the potential to guide interventions that address problems at the root. We propose that certain characteristics of AI align (match) with our evolved motivational systems, facilitating the pursuit of fundamental goals, while other characteristics of AI are misaligned (mismatch) and could result in negative outcomes (e.g., poorer mental health states) to the extent that stress and anxiety

[1] Disruptive technology is an innovation that significantly alters the way that consumers, industries, or businesses operate and how we communicate, consume media, and interact with technology, setting new industry standards and reshaping consumer expectations. Not all innovation is considered disruptive technology. For instance, automobiles (cars) are not disruptive; they are simply a more luxurious means of transportation (QuantumBlack By McKinsey, 2022).

mechanisms are maladaptively activated by evolutionary mismatches (Brenner et al., 2015; Lieberman, 2014).

This article is structured to first introduce the fundamental motivations that emerged over human evolutionary time, followed by a section delineating the evolutionary mismatch framework. The next section applies the evolutionary mismatch framework to AI, outlining how different characteristics of AI are matched or mismatched to our evolved motivational systems, thereby influencing our psychobehavioral outcomes in the age of AI. In the concluding section, we discuss potential lines of research that can facilitate the development of interventions to mitigate the undesirable consequences of AI.

Fundamental Motivations

People's thoughts, feelings, and behaviors—both conscious and nonconscious—are largely motivated by goals and need states (e.g., Bargh, 1990). From an evolutionary perspective, our fundamental goals (e.g., affiliation, self-protection, social status, mate acquisition and retention, and child-rearing; Kenrick et al., 2010) were shaped over the long course of our species' existence in the environment of evolutionary adaptedness (EEA) as the successful pursuit of these goals led to greater survival and reproduction (Tooby & Cosmides, 1990). Thus, our motivational systems evolved to regulate functionally specific behavior, including interactions with other individuals, organisms, and the external environment (Schaller et al., 2017), in ways that facilitate fundamental goal pursuit. Recent work within this framework (Brown et al., 2015; Huelsnitz et al., 2020; Ko et al., 2020; Krems et al., 2017; Morse et al., 2015; Neel & Lassetter, 2019; Neel et al., 2016; Pirlott & Cook, 2018) has identified at least seven fundamental social motives: self-protection, disease avoidance, affiliation, social status, mate seeking, mate retention, and kin care. Affiliation, status, mate seeking and retention, and kin care apply to specific domains of social life. Self-protection and disease avoidance are less directly related to the social realm, but because other people are potential sources of infection or harm, these two motives can also regulate social cognitions and interactions (Murray & Schaller, 2016; Neuberg et al., 2011).

Each motivational state is distinct because it evolved in response to the unique selective pressures associated with specific adaptive problems (Barrett & Kurzban, 2006; Tooby & Cosmides, 2008). Accordingly, individuals behave differently depending on which fundamental motive system is active. External cues (i.e., stimulus inputs from the immediate environment) inform appraisals (e.g., is it a threat?) which trigger specific fundamental motivation systems and elicit specific sets of goal-directed perceptions, cognitions, and behaviors. As such, people interpret incoming information differently, leading them to act upon the same information in different ways (Bargh, 2006; Griskevicius, Goldstein, et al., 2009; Griskevicius, Tybur, et al., 2009; Maner et al., 2007). Here, we provide a general overview of five fundamental motives that we consider to be most pertinent to AI, with the aim of demonstrating in later sections how AI might produce evolutionary mismatches in these adaptive areas.

Self-Protection

Danger existed in many forms—predators, strangers, and other precarious situations—in the ancestral environment. A well-established body of research suggests that stimuli signaling danger, such as snakes and spiders (Öhman & Mineka, 2001), angry expressions (Fox et al., 2001), unfamiliar men (Becker et al., 2007), out-group members (Ackerman et al., 2006), and dark alleyways (Schaller et al., 2003), trigger the self-protection motivation system comprising perceptions, cognitive processes, and behaviors aimed at heightening vigilance and reacting to threat. For example, when self-protective motives were activated, participants erroneously inferred anger in their faces with neutral expressions, especially those of men and ethnic out-group members (Maner et al., 2005). This finding reflects a heightened attention to functionally specific categories of people, in particular those who are stereotypically viewed as more likely to pose a threat. Similarly, under conditions of ambient darkness, people were likely to evaluate out-group members unfavorably and associate them with stereotypic traits relevant to threat (e.g., Black and criminal), but not stereotypic traits irrelevant to threat (e.g., Black and lazy; Schaller et al., 2003).

The self-protection motive also prompts actions that increase group cohesion. When people feel

endangered, they are more likely to imitate the behaviors and preferences of others (Griskevicius, Goldstein, et al., 2009; Kugihara, 2005; van Vugt et al., 2007), prefer to keep to the status quo (Jost & Hunyady, 2005), and take fewer risks (Lerner & Keltner, 2001). Not drawing attention to oneself and avoiding being seen as standing out in a group serves a safety-enhancing function (Dijksterhuis et al., 2000). People also experience a greater desire to affiliate with similar others when they perceive death as salient (Pyszczynski et al., 1997; Wisman & Koole, 2003; see also terror management theory: Greenberg et al., 1986; Pyszczynski et al., 2015).

Mate Acquisition

Finding and acquiring mates is necessary for reproductive success. Mate acquisition motives are triggered in the real and imagined presence of potential mates signaling reproductive opportunities (Yong et al., 2025). This motive, in turn, drives perceptions, cognitions, and behaviors associated with greater mating success in ancestral environments (Maner et al., 2005; Wilson & Daly, 2004). When the mate acquisition system is activated, people become more attuned to information concerning the mating desirability of both themselves and others. Due to sexual selection and differential parental investment (Trivers, 1972), men and women evolved to pay attention to different qualities associated with potential partners (Griskevicius et al., 2006; Kenrick et al., 1996; Singh, 1993). For instance, the high obligatory investment of women in the processes of reproduction (e.g., gestation and lactation), particularly in harsh ancestral contexts devoid of welfare support systems, renders it important that their mating partners provide sufficient resources and protection to them and their offspring (Buss & Schmitt, 1993). Accordingly, women are attuned to indicators of social status, resources, and physical strength when evaluating potential partners (Li et al., 2002; Singh, 1993; Yong et al., 2022).

In contrast, as men's reproductive success is determined more by women's fertility which is more limited than men's over the lifespan (Clutton-Brock, 1988; Trivers, 1972), men pay greater attention to fertility cues such as youth and health (Kenrick & Keefe, 1992; Li et al., 2002; Singh, 1993; Yong et al., 2022). When mating motives were activated, men demonstrated enhanced visual attention to attractive faces of the opposite sex (Duncan et al., 2007) and could remember the faces of attractive women better (Becker et al., 2005). Additionally, given that relative to women, the costs of poor mating decisions weigh less for men and that men can increase their reproductive success by having more partners, men tend to be more receptive to mating opportunities (Buss & Schmitt, 1993; Haselton & Buss, 2000; Kenrick et al., 1990) and express more regret over missed sexual opportunities than over sexual actions (Roese et al., 2006). In the presence of attractive members of the opposite sex, men are also more likely than women to erroneously perceive sexual arousal (but not other emotional states) and take behavioral risks (Maner et al., 2005; Ronay & von Hippel, 2010).

Mating motives drive courtship behaviors directed at making oneself desirable and attractive to the opposite sex. Because women prioritize status and resources in men, men engage in behaviors that draw attention to their social status and the resources they are willing to provide. For example, putting men in a mating mindset made them more likely to spend on luxury products (Griskevicius et al., 2007), associate themselves with expensive brands (Sundie et al., 2012), and act in ways that signal social dominance, heroism, and charitability (Campbell et al., 2003; Griskevicius et al., 2007; Iredale et al., 2008). In contrast, women engage in behaviors that advertise physical attractiveness and youth (Kenrick & Keefe, 1992), such as by investing effort and money on their physical appearance (e.g., clothes and accessories, make-up, and cosmetic procedures; Hudders et al., 2014), and behaving in ways suggesting cooperativeness and helpfulness (Griskevicius et al., 2006, 2007).

Mate Retention

Mate acquisition alone does not guarantee reproductive success because mating partners can leave the relationship (Buss, 1988; Hazan & Diamond, 2000). As such, humans evolved a mate retention system designed to maintain existing relationship bonds and manage threats from romantic competitors (Campbell & Ellis, 2005; Yong et al., 2025). For instance, both men and women participate in gift-giving during celebratory occasions (e.g., birthdays and Christmas) to reciprocate a partner's gift or to reconcile after a

fight (Saad & Gill, 2003), all of which serve to reinforce romantic pair-bonds. Conversely, the presence of desirable and available opposite-sex individuals can undermine people's commitment to existing partners (Guttentag & Secord, 1983; Kenrick et al., 1989, 1994). Specifically, studies have shown that both men and women judged the quality of their relationships less favorably after being exposed to attractive opposite-sex individuals (Kenrick et al., 1994). Men also rated their partner as less attractive after being exposed to female nudity (Kenrick et al., 1989).

The presence of desirable competitors also triggers the mate retention system to facilitate mate guarding, such as jealous reactions (Yong & Li, 2018). Evolutionary theories of mate preferences suggest that men face pronounced risks from investing in unrelated offspring, whereas women are more at risk of losing access to resources provided by their partners (Buss et al., 1992). As such, men are likely to be more jealous over sexual infidelity while women are likely to be more jealous over emotional infidelity (Sagarin, 2005). When confronted with mating threats, both men and women can experience heightened motivation to be more vigilant over their partners and compete more intensely. For example, women flaunt luxury products to signal to other women that their partners are committed (Wang & Griskevicius, 2014) while men derogate other men on the basis of status and wealth to make competitors appear less desirable (Fisher & Wade, 2023). Nevertheless, when individuals in strong and satisfied relationships are presented with extrapair mating opportunities, they tend to disregard those opportunities by devaluing alternative potential mates and emphasizing their commitment to the relationship (Lydon et al., 2003).

Social Status

Being held in high regard by others has important adaptive benefits including access to material resources and social alliances (van Vugt & Tybur, 2015). Particularly for men, high social status additionally confers access to mating opportunities as women tend to prefer romantic partners with sufficient status (Kenrick et al., 1994; Townsend, 1992). At the same time, it can also be crucial for women to have status in cultures that place a premium on social standing (Yong et al., 2022) or have strong social class homogamy (Yong et al., 2024). Activation of the status system is brought about by cues of dominance, prestige, or competition (e.g., rivals, other high-status individuals, and accomplishments of others). When active, the status motive attunes individuals to their standing in the status hierarchy and heightens aspirations for higher status (Krems et al., 2017).

The dominance-prestige framework (Maner et al., 2007; Winegard et al., 2014) delineates two pathways by which status can be gained. On the one hand, individuals can obtain higher status by enforcing deference from others using physical strength and coercion. As such, when the status motive is triggered, people may exhibit aggressive behaviors in a bid to overpower others (Griskevicius, Tybur, et al., 2009). On the other hand, higher status can be obtained through prestige, where deference is freely conferred to individuals exhibiting competence and seniority (Deci & Ryan, 2000). Status motives also increase people's inclinations to get close to and associate with those who have high status. In particular, deferring to and performing favors for high-status individuals facilitates avoidance of physical conflict in a dominance context and increases the odds of learning from and modeling the behavior of high-status individuals in a prestige context (Boyd & Richerson, 1985; Henrich & Boyd, 1998; Henrich & Gil-White, 2001).

Given the importance of status as a basis of mate value for men, men are more concerned about losing status than are women. For instance, compared to women, men are more attentive to loss of status in relation to neighbors (Daly & Wilson, 1988; Gutierres et al., 1999) and are more willing to take risks to attain more resources and status (Ermer et al., 2008). These status concerns and behaviors are especially pronounced in the presence of other men (Griskevicius, Tybur, et al., 2009) or when mating motives are primed (Daly & Wilson, 2001; Griskevicius et al., 2006; Griskevicius, Tybur, et al., 2009; Wilson & Daly, 1985).

Affiliation

Humans are a group-oriented species (Lancaster, 1975). Living in groups, including forming coalitions and getting along with other group members, shielded ancestral humans against threats (e.g., resource competition, diseases, predators, and enemies) and harsh conditions (e.g., starvation and extreme weather) and offered benefits

such as sharing of knowledge, resources, and caretaking responsibilities (Henrich & Boyd, 1998; Hill & Hurtado, 1989). Therefore, humans evolved an affiliation system that functions to build and maintain relations with others (Baumeister & Leary, 1995). The affiliation system is sensitive to information about other potentially friendly individuals and our own inclusionary status (i.e., whether or not we are accepted or rejected from our group), in turn prompting behaviors aimed at making new friends and maintaining existing ones (Maner et al., 2007). For instance, people are more willing to purchase gifts and spend more money on products that can be enjoyed with others than on products that can only be consumed alone (Mead et al., 2011; Ward & Broniarczyk, 2011).

The affiliation system is also triggered when inclusionary status is threatened, such as when a person is socially rejected or ostracized (see sociometer theory; Leary & Baumeister, 2000; Leary et al., 1998). People's self-esteem decreases as a function of rejection and exclusion, which then motivates relationship-restoring behaviors (Gerber & Wheeler, 2009; Leary, 2005; Leary & Baumeister, 2000; Leary et al., 1995, 1998), such as investing more effort into group tasks, conforming more to group norms, and engaging in compensatory cooperation and prosocial behaviors (Lanser & Eisenberger, 2023; Ouwerkerk et al., 2005; Williams & Sommer, 1997; Williams et al., 2000). The strong demand for products and services that allow consumers to interact with friends and loved ones and fulfill affiliation needs, such as Facebook and smartphones with unlimited minutes for talking and texting, underscores the importance that people place on forming and maintaining cooperative alliances.

Evolutionary Mismatch Theory

A tenet of evolutionary psychology is that the human mind is, just like the physical body, a product of natural and sexual selection. Over evolutionary time, these selective processes produce and retain physical and psychological traits that allow us to address problems to survival and reproduction more consistently and effectively than alternative phenotypic designs (Buss, 1995; Lewis et al., 2017; Tooby & Cosmides, 1990, 1992). Psychological adaptations are mechanisms that receive inputs from the environment through sensory stimuli, after which these inputs are processed by algorithmic decision rules to generate outputs in the form of cognition, emotion, attitudes, and behaviors (Buss, 1995; Lewis et al., 2017). As adaptive mechanisms evolve with their respective EEA, our evolved psychology is well adapted to specific conditions associated with the vast majority of the 200,000 years that *Homo sapiens* have existed, characterized by life in small, egalitarian, and kin-based nomadic tribes on the African Savannah (von Rueden, 2020; Woodburn, 1982).

However, the present environment that modern humans live in dramatically differs from that of our ancestors. An evolutionary mismatch occurs when the environment changes more rapidly than the time required for psychological mechanisms to adapt (i.e., adaptive lag), causing those mechanisms to detect either missing or substantially distinct inputs and generating outputs that are misaligned to their original evolutionary function (Li et al., 2018, 2020).

When the environment is deprived of naturally occurring stimuli or cues, a forced mismatch occurs when evolutionarily novel environments are unnaturally imposed upon inhabitant organisms (Li et al., 2018). For instance, certain night-active insects rely on moonlight as a navigational cue, but this previously adaptive instinct is disrupted by the widespread use of artificial lighting (Málnás et al., 2011). In humans, social media forces users to process an exponentially large volume of social information with questionable utility, which is a stark departure from the low-quantity yet high-quality social information provided by in-group members in ancestral times. As a result, evolved psychological mechanisms that attend to social information (e.g., one's inclusionary status) are excessively triggered, resulting in maladaptive outputs such as fear of missing out and excessive social media use (Lim & Tan, 2024).

Alternatively, evolutionary mismatch can occur when novel cues hijack our psychological mechanisms such that the novel stimulus is favored over the stimulus that the mechanism originally evolved to process. A classic example of a hijacked mismatch is our preference for high-calorie foods (e.g., sweet food). While such a preference is well suited for an ancestral environment where calories are scarce (Eaton et al., 1996), it now leads people to overconsume sugar in modern environments where manufactured sugar is

abundant in food, resulting in lifestyle diseases such as diabetes (Gluckman & Hanson, 2006).

Evolutionary mismatch can also occur because the adaptiveness of the output changes. For example, leadership is often based on physical prowess as group activities carrying important fitness implications in ancestral contexts, such as hunting, warfare, and group defense, had to be executed and led by physically strong individuals. Therefore, natural selection favored a preference for leaders who displayed features associated with physical prowess, such as height, strength, and dominance (Spisak et al., 2012). Modern organizations, however, need different types of leaders who can navigate novel, complex environments where physical strength is less relevant as a useful quality. With their superior verbal memory, empathy, and social skills compared to men (van Vugt, 2006), women should perform better as leaders given that such competencies are more important today. Yet, even as the male-biased leadership preference loses its adaptive value due to evolutionary novelties of the modern workplace, women continue to be overlooked as leaders (van Vugt & Ronay, 2014).

The impact of technology can be similarly understood within this evolutionary mismatch context (Li et al., 2020; Lim & Tan, 2024; Sbarra et al., 2019; van Vugt et al., 2024). Although humans (and other tool-using animals) have been documented to use simple technological devices in premodern times, the use of advanced, man-made technology (e.g., machines, computers, and AI) over the last 500 years (Osterhammel, 2014) represents less than 1% of human evolutionary history (Rogers & Jorde, 1995). The introduction and presence of advanced technology has diverged modern humanity vastly from its past hunter-gatherer lifestyle, creating evolutionary mismatches in our everyday lives (Giphart & van Vugt, 2018; Lim & Tan, 2024; van Vugt et al., 2024). For instance, people in the modern digital age are constantly exposed to remote issues such as natural and economic disasters occurring elsewhere, in stark contrast to ancestral living where exposure to information is limited to the local ecology due to geographical limits of the EEA. Consequently, current levels of input can overload our evolved cognitive system, generating stress and decreased performance and well-being (Hughes et al., 2024). Indeed, evolutionary mismatches have been linked to a number of problematic outcomes in modern society, including physical health problems like high blood pressure, diabetes, and obesity, as well as mental health issues related to chronic stress, burnout, and depression (Brenner et al., 2015; Li et al., 2020), which are rare in existing hunter-gatherer societies (Marlowe, 2010).

In the following sections, we aim to apply the logic of evolutionary mismatch to discuss how various aspects of AI might affect our evolved psychology, which in turn influences the way people think, feel, and behave in the age of AI. More specifically, we will consider how AI interacts with the fundamental motivation systems described in the preceding section to produce misalignments while also examining possible avenues for alignment, thus informing the ways that the psychosocial outcomes of AI can be mitigated or harnessed depending on their fitness costs and benefits.

Evolutionary Mismatches With AI

Because each motivational system is designed to regulate functionally specific psychobehavioral responses, they are attuned to particular cues in the environment and drive individuals to behave according to the fundamental motive system that is active. More specifically, people can act on the same information differently depending on whether they have been primed with self-protection cues (e.g., they recently read a news story about a murder), mate-search cues (e.g., they recently saw an attractive opposite-sex individual), status cues (e.g., they recently heard about a promotion), or affiliation cues (e.g., they were recently socially rejected), triggering a cascade of perceptions, cognitions, and behaviors relevant to addressing the fundamental need or goal that is primed (Bargh, 2006; Griskevicius, Goldstein, et al., 2009; Griskevicius, Tybur, et al., 2009; Maner et al., 2005). Similarly, in the context of AI, people also use different rules to handle distinct psychosocial dynamics pertaining to friends and allies (affiliation), dangerous and threatening others (self-protection), competitors and superiors (status), opposite-sex coworkers (mate search), and spouses (mate retention).

Self-Protection

Anthropomorphism, or the attribution of human-like characteristics to nonhuman animals,

objects, and natural phenomena (e.g., the weather), serves several functions including more efficient learning and enhanced predictability by applying familiar social cognition mechanisms to understand the environment more effectively (Epley et al., 2007; Waytz et al., 2010). The inclination to anthropomorphize is especially strong when nonhuman entities possess features and traits that resemble humans (Epley et al., 2007). This bias enhanced survival by reducing the risk of harm from real threats (Varella, 2018). For example, if early humans saw a predator (e.g., a tiger) and imagined it as capable of human-like intent, such as stalking or planning, they would be more likely to avoid the predator and act defensively, rather than assuming it posed no danger. In ancient societies, natural phenomena (e.g., storms, floods, and volcanic eruptions) were often anthropomorphized as the actions of gods or spirits capable of anger, vengeance, or favor. By seeing natural forces as acting with intent, people developed rituals, practices, and behaviors aimed at appeasing these forces or avoiding "offending" them.

As AI technology advances and begins mimicking human speech and emotion, humans are likely to start perceiving AI as a living entity (Caporusso, 2023; Guingrich & Graziano, 2024; see also Hyperactive Agency Detection Device; Modern, 2016). The evolutionarily novel nature of AI may cause it to be interpreted as an out-group person, which signals threat and activates self-protective motivations. Thus, to the extent that humanness is a feature of AI technology, the evolutionary mismatch perspective predicts self-protective attitudes and reactions against AI, manifesting as distrust and suspicion against their use, particularly when there is a sense of uncertainty surrounding its "intentions."

Cognitive, affective, and behavioral responses specific to self-protection have been observed when people interact with AI technologies. People feel threatened by machines with human-like agentic abilities (Ferrari et al., 2016; Stein et al., 2020; Złotowski et al., 2017), with many reporting feelings of unease when interacting with AI technologies (Shank et al., 2019). Such beliefs induce anxiety in people (Frank et al., 2023), especially when people harbor sentiments that AI will be humanity's "biggest existential threat" given the uncertain risks that accompany its capabilities (Piper, 2019). People also exhibit greater group cohesion and cooperation with humans than with robots in group games involving human and robot teammates and display more unfavorable out-group sentiments (e.g., noise blasts) toward out-group robots than out-group humans (Fraune, 2020). In economic games involving payoffs, participants allocated higher payoffs when they knew that the receiver of the payoffs was human than when the receiver was a machine or one that was operated by a human (von Schenk et al., 2025). In games involving the distribution of wealth between those of similar social status and an AI algorithm, people distributed the lowest amount of wealth to AI (Weiß et al., 2020).

Although humans and AI algorithms are often matched in decision-making capability and, moreover, AI agents have surpassed human-level performance in a range of tasks (Schrittwieser et al., 2020; Silver et al., 2017), people remain less trusting of AI decision-makers than of actual humans. For instance, people are more likely to believe that they understand decisions made by humans than those made by the advanced algorithms behind AI, even if there is no difference in their objective understanding of the decisions made between the two (Cadario et al., 2021), thus reflecting lower levels of confidence and higher levels of skepticism toward AI technologies (e.g., self-driving cars; Shariff et al., 2021).

Despite suspicions against AI and resistance against its adoption, the likely future reality is that AI will be increasingly integrated in people's daily lives. The evolutionary mismatch hypothesis suggests that reducing perceptions of AI's out-group identity can reduce self-protective defenses against AI technologies. Thus, measures aimed at aligning the social identities of AI technologies with ours could be undertaken to achieve this goal. Existing research suggests that people can be cooperative with AI technology (Nielsen et al., 2022). People are more empathetic toward robots, can exhibit a greater sense of groupness with them, and are less likely to be competitive with in-group robots than out-group humans when they are identified as being on the same team (Haring et al., 2014; von Schenk et al., 2025).

Mate Acquisition

Mate acquisition motives are triggered upon the presence of both real and imagined potential mates (Ronay & von Hippel, 2010; Yong et al.,

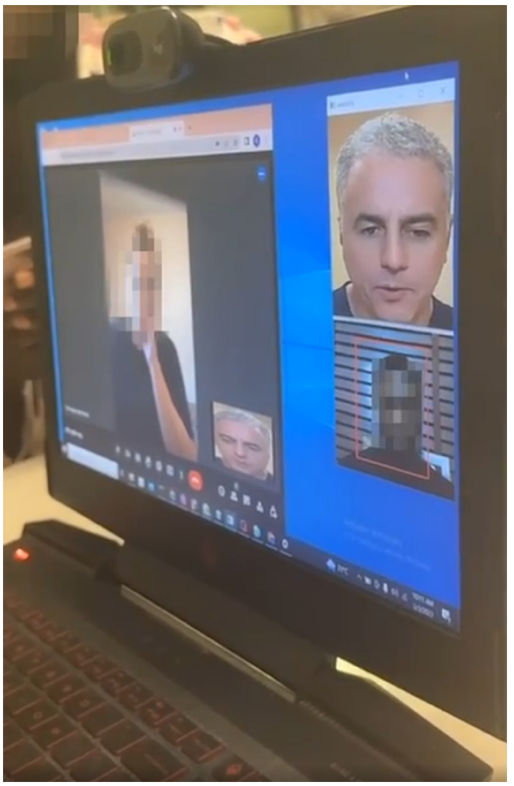
2025), thereby shifting people's attention to information concerning the mating desirability of both others and their own (Li, 2007; Townsend, 1992). AI allows several content types to be manipulated and generated easily, such as realistic images of individuals who do not actually exist, and it is also capable of taking existing images and generating new high-resolution versions with details that were not present in the original (Whittaker et al., 2020).

As such, AI-generated content can realistically mimic inputs that hijack evolved mating-related mechanisms, such as those suggesting the availability of desirable mates. When the influx of AI-generated images of highly attractive individuals is coupled with social media and online dating apps, people can be exposed to a large number of perceived mating options (i.e., hundreds or even thousands) in short spans of time, which is a huge contrast to the experience of ancestral humans who would have encountered only a few dozen potential mates in their lifetime (Marlowe, 2005). As virtual reality did not exist in the EEA, the mind is poorly equipped to distinguish between real people and virtual images of people (Kanazawa, 2002; Yong et al., 2016). These evolutionarily novel cues of virtual individuals lead our psychology to believe that a large pool of mating options exists, even though the actual mating ecology of individuals has not changed (Goetz et al., 2019). The resultant paradox of choice is that people are reporting increased difficulties in finding love and establishing healthy romantic relationships, as it increasingly feels like "the one" is just one more swipe away and people do not want to rush into commitment (Thomas et al., 2023).

Another trend that inadvertently expands the perceived pool of mates with valued qualities is the growing use of AI to enhance one's dating profile and increase the odds of matching with desirable individuals (Kane, 2024). When provided with the right prompts, ChatGPT—which is powered by AI—can summarize the desired features sought by certain target groups and create highly tailored dating profiles, including the types of photos and captions to include, to entice interest from particular targets. For instance, Aleksandr Zhadan reportedly used ChatGPT to talk to over 5,000 women on Tinder, eventually leading to his engagement with one of the women he connected with (Zeff, 2024). While this can help to boost one's perceived mate value and perhaps improve the odds of mating success, the flipside is that our evolved mate preference mechanisms may fail to discount the evolutionarily novel attractiveness cues in artificially enhanced profiles, thus undermining people's ability to evaluate and accurately select mating partners. Research has shown that even when people know that AI was involved in the generation of a dating profile, it only affected the perceived trustworthiness of the individual in the profile and not their perceived attractiveness (Wu & Kelly, 2020). Nevertheless, there is a paucity of studies that have systematically examined the psychological impact of AI use on dating apps on users. As it remains unclear how the use of AI-generated content would impact the quality of matches on dating apps, especially for users interacting with AI-generated profiles or messages, this area represents a fruitful direction for future research.

While Zhadan's experience appears to represent a success story in the use of AI to find love, the capabilities of AI can be leveraged for far more malicious purposes by exploiting people's mate acquisition motives. For instance, the capability of AI to create realistic deepfakes—highly realistic fabricated images, videos, or audio—has been exploited in dating apps to not only enhance appearance, leading to catfishing expeditions, but also fabricate identities and prey on people's desires (Fletcher et al., 2024; Healey, 2023). For instance, deepfake technology has been used by scammers to pose as attractive individuals, grooming victims by fostering a sense of intimacy before conning them into making bogus investments (Yeung, 2024). Real-time deepfake video calls have also been reportedly used by fraud syndicates to further enhance the believability of efforts to romantically defraud victims. In particular, scammers are reportedly creating false identities using AI-powered deepfake technology capable of mimicking facial expressions and mouth movements over video calls to interact with would-be victims in real time (Figure 1; Burgess, 2024). They would show affection, compliment the appearance of would-be victims, and share bogus personal stories as a social engineering tactic to build trust before tricking them into parting with thousands of dollars. The mate acquisition motive can be so strongly activated that victims sometimes continue to give money to their scammers even in the face of evidence that they have been scammed (Whitty, 2013).

Figure 1
The Use of Deepfake Technology During Video Calls in a Romance Fraud



Note. Screenshot of a video showing a Nigerian scam syndicate, the *Yahoo Boys*, using the likeness of a Caucasian man in a romance scam attempt over a video call (Burgess, 2024). See the online article for the color version of this figure.

Mate Retention

As AI affords the creation of content and profiles that exaggerate the availability of desirable individuals, the resultant perception of an abundance of alternative mating options can contribute to relationship dissatisfaction and insecurity. Studies have shown that the presence of attractive and available mates can undermine commitment to existing partners (Guttentag & Secord, 1983; Kenrick et al., 1994). In particular, men who were briefly exposed to just 10 photos of physically attractive female faces reported lower levels of commitment to their long-term partners; likewise, women evaluated their relationships less favorably when they were exposed to men with higher status or resource potential. By driving partner choice overload, AI can hijack informational inputs relevant to relationship maintenance and cause people to become less satisfied with their current partners. Moreover, technologies driven by AI are now capable of engaging users socially, emotionally, and even physically (i.e., simulated reality and teledildonics; Prochazka & Brooks, 2024). A study on Replika, an AI chatbot that can learn the needs and desires of users, observed that users were interacting with it in ways that resembled a romantic relationship despite being aware that they were communicating with a for-profit, nonhuman product (Pan & Mou, 2024). In turn, people can feel threatened by AI as a romantic competitor and feel more insecure about their relationship. For instance, women have reported feeling jealous if they knew that their partners spent time and money on female-like robots (Szczuka & Krämer, 2018). These reactions are not unfounded as research has shown that individuals who are addicted to cybersex can lose sexual interest in their real spouses, and people often view themselves in a less favorable light as compared to their virtual mating rivals (Schneider, 2003). Thus, AI can potentially undermine relationships and hijack our psychology to respond as if an actual relationship threat is present.

With the advent of technologies that are capable of simulating human-like conversations and providing companionship and support (e.g., AI chatbots; Pan & Mou, 2024), there is growing concern that AI will breed greater isolation as people may end up preferring virtual relationships over real ones (Laestadius et al., 2024; Xie & Pentina, 2022). Nonetheless, some recent findings demonstrate that interacting with AI can instead promote actual, real relationships. For instance, romantically attached individuals who engaged in a flirtatious virtual encounter desired their partners more and devalued those virtual alternatives (Birnbaum et al., 2023), while incels who interacted with AI experienced an improvement in socializing skills (Reynaud, 2024). More research on the contexts that moderate the costs and benefits of AI in maintaining relationships is warranted.

Social Status

Jobs are an important source of status and resource acquisition in modern economies

(Yong et al., 2019). AI triggers people's status motives by interfering with employment opportunities in the job market in at least two ways. Similar to how AI can induce self-protective responses as it becomes uncannily human-like, AI can also rouse status and resource competition concerns when people see AI as not just a tool but also an entity that is capable of replacing them (Caporusso, 2023; Guingrich & Graziano, 2024; Modern, 2016). In particular, AI can mimic human cognition, execute complex tasks, and in many cases outperform humans (Quaquebeke & Gerpott, 2023), prompting people to be increasingly worried about losing their sources of income and status when AI "takes over" (Frank et al., 2023). Examples of jobs that are being replaced by AI include customer service agents, financial traders, and travel advisors (Urwin, 2024), and this list is likely to grow. A body of research reflects the sentiment that AI is perceived as a direct threat to people's social status and the positions they have established in their workplaces (Jussupow et al., 2018). For instance, the introduction of AI in organizations has been found to create the sense that changes are being made to employees' work roles and is predictive of work identity threat (Mirbabaie et al., 2022). An experiment also demonstrated that people experienced status threat from intelligent technologies, especially those that have been shown to outperform humans in tasks that require agency and experience (Grundke, 2024).

The second, less direct way that AI interferes with the job market and threatens status is its role in democratizing expertise, allowing individuals to enter industries where highly specialized knowledge was once needed (Frank et al., 2019). For instance, taxi services used to be provided by experienced drivers who knew how to find their way around labyrinthine cities, but AI-powered global positioning system tools now enable a large number of less experienced drivers to enter the taxi market and provide such services. Similarly, people are using AI tools like ChatGPT to generate professional marketing blurbs or programming code, allowing them to accomplish tasks that would have otherwise required competencies that took time to build. The widespread access to expertise coupled with the advanced capabilities of AI have heightened competition for reduced jobs across industries, affecting low-wage and moderately skilled workers alike (Gallego & Kurer, 2022). As this "skill creep" will cause once-competitive skills to become obsolete, people may experience anxiety from having to constantly learn new skills or innovate to stay competitive. While there is a dearth of research on this recent phenomenon, studies examining the impact of competition for limited occupations and social status anxiety have noted that people may spend a longer amount of time trying to accumulate resources and status, which may undermine the pursuit of important goals such as maintaining social relationships or starting a family, and in some cases lead to the abandonment of those goals altogether when they seem impossible to reach (Yong et al., 2019, 2024).

Affiliation

AI can hijack our motive to affiliate and result in the transmission of biased or false information due to difficulties in discerning the origins and veracity of AI-generated content. Although people tend to perceive content negatively if they are known to be created by AI (Arango et al., 2023), people generally struggle to distinguish between AI-generated and human-generated content (Kreps et al., 2022; Park et al., 2024). For instance, when participants were presented with social media content without awareness of how they were produced, it was found that AI-generated content was rated as similar in credibility, attractiveness, and quality as those created by human influencers, and better in quality than those created by the general population (Park et al., 2024). These preliminary findings are consistent with the evolutionary mismatch prediction that people would face difficulties processing evolutionarily novel stimuli (e.g., Yong et al., 2016). Misinformation can end up being propagated due to this inability to carefully assess AI content as well as our bias toward information that coheres with our group identity and supports our affiliative needs (Baumeister & Leary, 1995; Yong, Li, & Kanazawa, 2021). For instance, analyses of Twitter/X data show that AI content drives the amplification of political polarization as users often fail to assess the truth value of messages and repost only the messages that support their own group's political views (Ricker et al., 2024). Experimental studies manipulating the presentation of political content from actual news organizations (e.g., *The Huffington Post*, *Associated Press*, and *Fox*

News) and AI-generated text mimicking news content from those organizations showed that readers judged AI-generated content to be as credible as content from actual news organizations (Kreps et al., 2022). Instead, the perceived credibility of the content, whether AI-generated or actual, was determined more by the alignment between the news organization's political leanings and people's political orientations. AI-generated content extends beyond text to include videos, including deepfakes where political leaders' likeness, facial expressions, patterns of mouth movement, and reverse-engineered speeches are stitched together to drive misinformation and disinformation with high persuasive power (Momeni, 2025). The abuse of AI for political purposes exemplifies how AI can leverage our affiliative needs to propagate carefully curated, biased messages. Although current evidence suggests that AI-generated misinformation is not more deceptive than human-generated misinformation (Barari et al., 2025), there is a growing concern that AI-generated content is becoming "more human than human" (Jakesch et al., 2023, p. 1), which will further undermine people's ability to evaluate such content. Several global efforts are underway to further humanize AI-generated content (e.g., Ayub et al., 2024).

Computer security experts have warned that malicious actors can leverage AI capabilities and the general human amenability toward information that tends to our affiliative needs to drive social engineering (Schmitt & Flechais, 2024). Not only does AI generate hyperrealistic content, but it can also scrape and analyze information on one's affiliation, online presence, and online behavior, allowing attackers to customize their approach to specific targets. Figure 2 below presents a real-world instance of a spear phishing attack—deceptive emails that are designed to manipulate victims into granting hackers their security credentials or access to their systems—reported by the Better Business Bureau of Wisconsin. By invoking prospective victims' associations with their company and implying negative consequences, attackers can induce a sense of urgency to manipulate victims into granting them confidential information. AI can further facilitate this process with enhanced realism via generated content, advanced personalization, and even automation of these processes, thereby enabling attackers to carry out large-scale phishing campaigns.

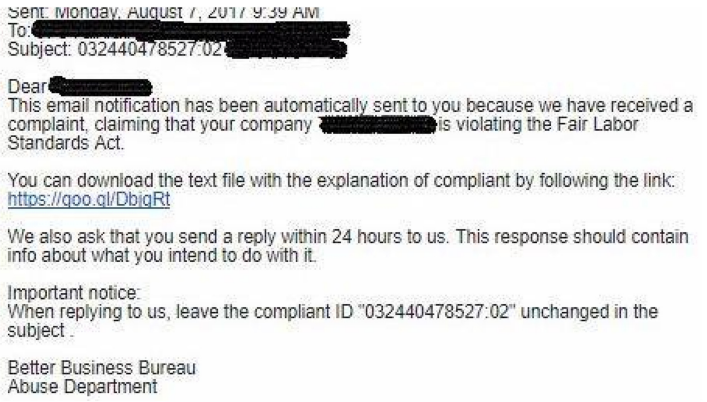
Implications and Future Considerations

The current article presented a way to understand the impact of AI through the lens of evolutionary mismatch. In particular, we described several ways that AI might interfere with our evolved psychology because of its evolutionarily novel inputs, for better or worse. Specifically, certain characteristics of AI align (match) with our evolved motivational systems, facilitating the pursuit of fundamental goals such as mating or gaining access to job and status opportunities, while other characteristics of AI are misaligned (mismatch) and could result in negative outcomes like stress and poorer mental health or fraud and political unrest.

Beyond the domain-specific examples of the effects of evolutionary mismatch caused by AI that we outlined above, it is also important to consider more broadly how the overall lives of human beings might change as the world inevitably marches on toward greater digitization and adoption of AI in everyday life. It is likely that people will grow increasingly reliant on AI to do things that, just a few years ago, had to be done manually, such as creating resumes, developing programming code, writing research reports, and even deejaying and producing music. The impact will be somewhat similar to when new technologies like washing machines and calculators were introduced. Once we have those tools, it becomes not only unappealing to wash clothes by hand or do calculations manually but also impractical because of the inefficiency and limited productivity of earlier methods. Younger generations will be born into a world where it is taken for granted that AI should be used to remove the effort needed to know how things work at a deep level. The dominant skill set will shift toward knowing how to use AI to do ever more complex things, such as generating more complex programming code but at the expense of knowing what the code really means. It is perhaps difficult to know exactly where humans are headed in this regard, but it is possible to envision a future where people are residing in increasingly virtual, AI-powered, mismatched worlds and losing touch with the basic skills needed to be human, such as going outdoors, meeting potential romantic partners at real social events, knowing how to navigate in new environments, and receiving services from actual people rather than automated staff. However, it is also possible that countermovements promoting

Figure 2

An Example of a Spear Phishing Attack via Email


Sent: Monday, August 7, 2017 9:39 AM
To: [redacted]
Subject: 032440478527:02[redacted]

Dear [redacted]
This email notification has been automatically sent to you because we have received a complaint, claiming that your company [redacted] is violating the Fair Labor Standards Act.

You can download the text file with the explanation of compliant by following the link:
https://goo.gl/DbjgRt

We also ask that you send a reply within 24 hours to us. This response should contain info about what you intend to do with it.

Important notice:
When replying to us, leave the compliant ID "032440478527:02" unchanged in the subject .

Better Business Bureau
Abuse Department

Note. Example reported by the Better Business Bureau of Wisconsin. See the online article for the color version of this figure.

the deliberate avoidance of AI and advanced technologies (e.g., Collins, 2018; McQuillan, 2022) may arise in response to the need for more humanness in such a world.

People are set to encounter a range of outcomes, both positive and negative, from interacting with AI as it permeates various facets of daily life. To gain a comprehensive understanding of the effects of AI on human psychology, future research can measure and compare various indices of people's well-being across time and societies with different AI adoption rates. Importantly, not every individual would experience these evolutionary mismatches to the same degree. For instance, individuals with higher levels of IQ tend to be able to deal with evolutionary novelty better as general intelligence may have evolved to solve evolutionarily novel problems. Indeed, individuals with higher IQ reported higher life satisfaction in evolutionarily novel conditions compared to their lower IQ counterparts (Kanazawa & Li, 2018). Accordingly, more intelligent people might be more receptive to the use of AI tools and harness them to achieve better outcomes in life and be shielded from the stress and decreased well-being that often results from being in a mismatched environment. Demographic factors, such as age, may also moderate the effects of certain mismatches. For instance, younger people who are born and raised in conditions of mismatches tend to be more receptive to AI as they are less aware of "less novel" options. Being more nimble in this new environment, younger adults are also more capable of discriminating between human and AI speech compared to older adults (Herrmann, 2023).

An individual's life history strategy describes the temporal orientation of people toward their energy expenditures and desired payoffs (Ellis et al., 2009). Individuals who grew up in harsh and unpredictable environments tend to adopt a "fast" life strategy and focus their energy and efforts on living in the here and now. In contrast, individuals who grew up in stable and predictable environments tend to develop a "slow" life strategy where they tend to be more focused on the future. Compared to slow strategists, fast strategists may benefit more from the opportunities provided by AI, such as short-term mating. When individuals' expectations, based on their life history strategies, are mismatched with the conditions in their work environments, they may experience significant distress (Kavanagh & Kahl, 2018). Future research on the relationship between life history strategies and the well-being derived from interacting with AI promises to be illuminating.

Conclusion

With the impending integration of AI in most aspects of daily functioning, it is imperative to understand how AI might affect us in both positive and negative ways. Preparations to deal with AI, such as protocols on safeguards and how to integrate it with schools, workplaces, and other settings, can benefit greatly from insights derived

from an evolutionary mismatch perspective where anticipating the extent to which AI introduces evolutionary novelty will allow us to make better guesses of its consequences. It is hoped that the current review will engender further discussions on the use of AI and guide the design of interventions that account for our evolved psychology.

References

Ackerman, J. M., Shapiro, J. R., Neuberg, S. L., Kenrick, D. T., Becker, D. V., Griskevicius, V., Maner, J. K., & Schaller, M. (2006). They all look the same to me (unless they're angry): From out-group homogeneity to out-group heterogeneity. *Psychological Science*, *17*(10), 836–840. https://doi.org/10.1111/j.1467-9280.2006.01790.x

Ahmad, S. F., Han, H., Alam, M. M., Rehmat, M. K., Irshad, M., Arraño-Muñoz, M., & Ariza-Montes, A. (2023). Impact of artificial intelligence on human loss in decision making, laziness and safety in education. *Humanities and Social Sciences Communications*, *10*(1), Article 311. https://doi.org/10.1057/s41599-023-01787-8

Arango, L., Singaraju, S. P., & Niininen, O. (2023). Consumer responses to AI-generated charitable giving ads. *Journal of Advertising*, *52*(4), 486–503. https://doi.org/10.1080/00913367.2023.2183285

Ayub, T., Ahmad Malla, R., Khan, M. Y., & Ganaie, S. A. (2024). The art of deception: Humanizing AI to outsmart detection. *Global Knowledge, Memory and Communication*. Advance online publication. https://doi.org/10.1108/GKMC-03-2024-0133

Barari, S., Munger, K., & Lucas, C. (2025). Political deepfakes are as credible as other fake media and (sometimes) real media. *The Journal of Politics*, *87*(2), 510–526. https://doi.org/10.1086/732990

Bargh, J. A. (1990). Auto-motives: Preconscious determinants of social interaction. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 93–130). Guilford Press.

Bargh, J. A. (2006). Agenda 2006: What have we been priming all these years? On the development, mechanisms, and ecology of nonconscious social behavior. *European Journal of Social Psychology*, *36*(2), 147–168. https://doi.org/10.1002/ejsp.336

Barrett, H. C., & Kurzban, R. (2006). Modularity in cognition: Framing the debate. *Psychological Review*, *113*(3), 628–647. https://doi.org/10.1037/0033-295X.113.3.628

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Becker, D. V., Kenrick, D. T., Guerin, S., & Maner, J. K. (2005). Concentrating on beauty: Sexual selection and sociospatial memory. *Personality and Social Psychology Bulletin*, *31*(12), 1643–1652. https://doi.org/10.1177/0146167205279583

Becker, D. V., Kenrick, D. T., Neuberg, S. L., Blackwell, K. C., & Smith, D. M. (2007). The confounded nature of angry men and happy women. *Journal of Personality and Social Psychology*, *92*(2), 179–190. https://doi.org/10.1037/0022-3514.92.2.179

Birnbaum, G. E., Chen, Y. R., Zholtack, K., Giron, J., & Friedman, D. (2023). Biting the forbidden fruit: The effect of flirting with a virtual agent on attraction to real alternative and existing partners. *Current Research in Ecological and Social Psychology*, *4*, Article 100084. https://doi.org/10.1016/j.cresp.2022.100084

Bloomfield, M. (1993). *The automated society: A view of the distant past, the present and the far future*. Masefield Books.

Boyd, R., & Richerson, P. J. (1985). *Culture and the evolutionary process* (pp. viii, 331). University of Chicago Press.

Brenner, S. L., Jones, J. P., Rutanen-Whaley, R. H., Parker, W., Flinn, M. V., & Muehlenbein, M. P. (2015). Evolutionary mismatch and chronic psychological stress. *Journal of Evolutionary Medicine*, *3*, Article 235885. https://doi.org/10.4303/jem/235885

Brown, N. A., Neel, R., & Sherman, R. A. (2015). Measuring the evolutionarily important goals of situations: Situational affordances for adaptive problems. *Evolutionary Psychology*, *13*(3), Article 1474704915593662. https://doi.org/10.1177/1474704915593662

Burgess, M. (2024, April 18). The real-time deepfake romance scams have arrived. *Wired*. https://www.wired.com/story/yahoo-boys-real-time-deepfake-scams/

Buss, D. M. (1988). From vigilance to violence: Tactics of mate retention in American undergraduates. *Ethology and Sociobiology*, *9*(5), 291–317. https://doi.org/10.1016/0162-3095(88)90010-6

Buss, D. M. (1995). Evolutionary psychology: A new paradigm for psychological science. *Psychological Inquiry*, *6*(1), 1–30. https://doi.org/10.1207/s15327965pli0601_1

Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science*, *3*(4), 251–256. https://doi.org/10.1111/j.1467-9280.1992.tb00038.x

Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review*, *100*(2), 204–232. https://doi.org/10.1037/0033-295X.100.2.204

Cadario, R., Longoni, C., & Morewedge, C. K. (2021). Understanding, explaining, and utilizing medical artificial intelligence. *Nature Human Behaviour*,

5(12), 1636–1642. https://doi.org/10.1038/s41562-021-01146-0

Campbell, L., & Ellis, B. J. (2005). Commitment, love, and mate retention. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 419–442). John Wiley & Sons

Campbell, L., Simpson, J. A., Stewart, M., & Manning, J. (2003). Putting personality in social context: Extraversion, emergent leadership, and the availability of rewards. *Personality and Social Psychology Bulletin*, *29*(12), 1547–1559. https://doi.org/10.1177/0146167203256920

Caporusso, N. (2023). Generative artificial intelligence and the emergence of creative displacement anxiety: Review. *Research Directs in Psychology and Behavior*, *3*(1), 1–12. https://doi.org/10.53520/rdpb2023.10795

Cave, S., Coughlan, K., & Dihal, K. (2019). *'Scary Robots': Examining public responses to AI*. Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society (pp. 331–337). https://doi.org/10.1145/3306618.3314232

Clutton-Brock, T. H. (1988). *Reproductive success: Studies of individual variation in contrasting breeding systems*. University of Chicago Press.

Collins, G. (2018). *Living off the grid: What to expect while living the life of ultimate freedom and tranquility*. Second Nature Publishing.

Daly, M., & Wilson, M. (1988). *Homicide* (pp. xii, 328). Aldine de Gruyter.

Daly, M., & Wilson, M. (2001). Risk-taking, intrasexual competition, and homicide. In J. A. French, A. C. Kamil, & D. W. Leger (Eds.), *Evolutionary psychology and motivation* (pp. 1–36). University of Nebraska Press.

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Dergaa, I., Saad, H. B., Glenn, J. M., Amamou, B., Aissa, M. B., Guelmami, N., Fekih-Romdhane, F., & Chamari, K. (2024). From tools to threats: A reflection on the impact of artificial-intelligence chatbots on cognitive health. *Frontiers in Psychology*, *15*, Article 1259845. https://doi.org/10.3389/fpsyg.2024.1259845

Dijksterhuis, A., Bargh, J. A., & Miedema, J. (2000). Of men and mackerels: Attention, subjective experience, and automatic social behavior. In H. Bless & J. P. Forgas (Eds.), *The message within: The role of subjective experience in social cognition and behavior* (pp. 37–51). Psychology Press.

Duncan, L. A., Park, J. H., Faulkner, J., Schaller, M., Neuberg, S. L., & Kenrick, D. T. (2007). Adaptive allocation of attention: Effects of sex and sociosexuality on visual attention to attractive opposite-sex faces. *Evolution and Human Behavior*, *28*(5), 359–364. https://doi.org/10.1016/j.evolhumbehav.2007.05.001

Eaton, S. B., Eaton, S. B., Konner, M. J., & Shostak, M. (1996). An evolutionary perspective enhances understanding of human nutritional requirements. *The Journal of Nutrition*, *126*(6), 1732–1740. https://doi.org/10.1093/jn/126.6.1732

Ellis, B. J., Figueredo, A. J., Brumbach, B. H., & Schlomer, G. L. (2009). Fundamental dimensions of environmental risk. *Human Nature*, *20*(2), 204–268. https://doi.org/10.1007/s12110-009-9063-7

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review*, *114*(4), 864–886. https://doi.org/10.1037/0033-295X.114.4.864

Ermer, E., Cosmides, L., & Tooby, J. (2008). Relative status regulates risky decision-making about resources in men: Evidence for the co-evolution of motivation and cognition. *Evolution and Human Behavior: Official Journal of the Human Behavior and Evolution Society*, *29*(2), 106–118. https://doi.org/10.1016/j.evolhumbehav.2007.11.002

Ferrari, F., Paladino, M. P., & Jetten, J. (2016). Blurring human–machine distinctions: Anthropomorphic appearance in social robots as a threat to human distinctiveness. *International Journal of Social Robotics*, *8*(2), 287–302. https://doi.org/10.1007/s12369-016-0338-y

Fisher, M. L., & Wade, T. J. (2023). Competitor derogation. In T. K. Shackelford (Ed.), *Encyclopedia of sexual psychology and behavior* (pp. 1–5). Springer International Publishing. https://doi.org/10.1007/978-3-031-08956-5_209-1

Fletcher, R., Tzani, C., & Ioannou, M. (2024). The dark side of Artificial Intelligence—Risks arising in dating applications. *Assessment and Development Matters*, *16*(1), 17–23. https://doi.org/10.53841/bpsadm.2024.16.1.17

Fox, E., Russo, R., Bowles, R., & Dutton, K. (2001). Do threatening stimuli draw or hold visual attention in subclinical anxiety? *Journal of Experimental Psychology: General*, *130*(4), 681–700. https://doi.org/10.1037/0096-3445.130.4.681

Frank, M. R., Ahn, Y.-Y., & Moro, E. (2023). *AI exposure predicts unemployment risk* (No. arXiv:2308.02624). arXiv. https://doi.org/10.48550/arXiv.2308.02624

Frank, M. R., Autor, D., Bessen, J. E., Brynjolfsson, E., Cebrian, M., Deming, D. J., Feldman, M., Groh, M., Lobo, J., Moro, E., Wang, D., Youn, H., & Rahwan, I. (2019). Toward understanding the impact of artificial intelligence on labor. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(14), 6531–6539. https://doi.org/10.1073/pnas.1900949116

Fraune, M. R. (2020). Our robots, our team: Robot anthropomorphism moderates group effects in human–robot teams. *Frontiers in Psychology*, *11*,

Article 1275. https://doi.org/10.3389/fpsyg.2020.01275

Gallego, A., & Kurer, T. (2022). Automation, digitalization, and Artificial Intelligence in the workplace: Implications for political behavior. *Annual Review of Political Science*, *25*(1), 463–484. https://doi.org/10.1146/annurev-polisci-051120-104535

Gerber, J., & Wheeler, L. (2009). On being rejected: A meta-analysis of experimental research on rejection. *Perspectives on Psychological Science*, *4*(5), 468–488. https://doi.org/10.1111/j.1745-6924.2009.01158.x

Giphart, R., & van Vugt, M. (2018). *Mismatch: How our Stone Age brain deceives us every day (and what we can do about it)*. Hachette UK.

Gluckman, P., & Hanson, M. (2006). *Mismatch: Why our world no longer fits our bodies*. Oxford University Press.

Goetz, C. D., Pillsworth, E. G., Buss, D. M., & Conroy-Beam, D. (2019). Evolutionary mismatch in mating. *Frontiers in Psychology*, *10*, Article 2709. https://doi.org/10.3389/fpsyg.2019.02709

Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 189–212). Springer. https://doi.org/10.1007/978-1-4613-9564-5_10

Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Cialdini, R. B., & Kenrick, D. T. (2006). Going along versus going alone: When fundamental motives facilitate strategic (non)conformity. *Journal of Personality and Social Psychology*, *91*(2), 281–294. https://doi.org/10.1037/0022-3514.91.2.281

Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Sundie, J. M., Cialdini, R. B., & Kenrick, D. T. (2009). Fear and loving in Las Vegas: Evolution, emotion, and persuasion. *Journal of Marketing Research*, *46*(3), 384–395. https://doi.org/10.1509/jmkr.46.3.384

Griskevicius, V., Tybur, J. M., Gangestad, S. W., Perea, E. F., Shapiro, J. R., & Kenrick, D. T. (2009). Aggress to impress: Hostility as an evolved context-dependent strategy. *Journal of Personality and Social Psychology*, *96*(5), 980–994. https://doi.org/10.1037/a0013907

Griskevicius, V., Tybur, J. M., Sundie, J. M., Cialdini, R. B., Miller, G. F., & Kenrick, D. T. (2007). Blatant benevolence and conspicuous consumption: When romantic motives elicit strategic costly signals. *Journal of Personality and Social Psychology*, *93*(1), 85–102. https://doi.org/10.1037/0022-3514.93.1.85

Grundke, A. (2024). If machines outperform humans: Status threat evoked by and willingness to interact with sophisticated machines in a work-related context*. *Behaviour & Information Technology*, *43*(7), 1348–1364. https://doi.org/10.1080/0144929X.2023.2210688

Guingrich, R. E., & Graziano, M. S. A. (2024). Ascribing consciousness to artificial intelligence: Human-AI interaction and its carry-over effects on human-human interaction. *Frontiers in Psychology*, *15*, Article 1322781. https://doi.org/10.3389/fpsyg.2024.1322781

Gupta, R., Nair, K., Mishra, M., Ibrahim, B., & Bhardwaj, S. (2024). Adoption and impacts of generative artificial intelligence: Theoretical underpinnings and research agenda. *International Journal of Information Management Data Insights*, *4*(1), Article 100232. https://doi.org/10.1016/j.jjimei.2024.100232

Gutierres, S. E., Kenrick, D. T., & Partch, J. J. (1999). Beauty, dominance, and the mating game: Contrast effects in self-assessment reflect gender differences in mate selection. *Personality and Social Psychology Bulletin*, *25*(9), 1126–1134. https://doi.org/10.1177/01461672992512006

Guttentag, M., & Secord, P. F. (1983). *Too many women?: The sex ratio question*.

Haring, K. S., Mougenot, C., Ono, F., & Watanabe, K. (2014). Cultural differences in perception and attitude towards robots. *International Journal of Affective Engineering*, *13*(3), 149–157. https://doi.org/10.5057/ijae.13.149

Haselton, M. G., & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology*, *78*(1), 81–91. https://doi.org/10.1037/0022-3514.78.1.81

Hazan, C., & Diamond, L. M. (2000). The place of attachment in human mating. *Review of General Psychology*, *4*(2), 186–204. https://doi.org/10.1037/1089-2680.4.2.186

Healey, J. (2023, May 11). Real-time deepfakes are a dangerous new threat. How to protect yourself. *Los Angeles Times*. https://www.latimes.com/business/technology/story/2023-05-11/realtime-ai-deepfakes-how-to-protect-yourself

Henrich, J., & Boyd, R. (1998). The evolution of conformist transmission and the emergence of between-group differences. *Evolution and Human Behavior*, *19*(4), 215–241. https://doi.org/10.1016/S1090-5138(98)00018-X

Henrich, J., & Gil-White, F. J. (2001). The evolution of prestige: Freely conferred deference as a mechanism for enhancing the benefits of cultural transmission. *Evolution and Human Behavior*, *22*(3), 165–196. https://doi.org/10.1016/S1090-5138(00)00071-4

Herrmann, B. (2023). The perception of artificial-intelligence (AI) based synthesized speech in younger and older adults. *International Journal of Speech Technology*, *26*(2), 395–415. https://doi.org/10.1007/s10772-023-10027-y

Hill, K., & Hurtado, A. M. (1989). Hunter-gatherers of the New World. *American Scientist*, *77*(5), 436–443.

Hudders, L., De Backer, C., Fisher, M., & Vyncke, P. (2014). The rival wears Prada: Luxury consumption as a female competition strategy. *Evolutionary Psychology*, *12*(3), 570–587. https://doi.org/10.1177/147470491401200306

Huelsnitz, C. O., Neel, R., & Human, L. J. (2020). Accuracy in perceptions of fundamental social motives: Comparisons to perceptions of big five traits and associations with friendship quality. *Personality and Social Psychology Bulletin*, *46*(1), 3–19. https://doi.org/10.1177/0146167219838546

Hughes, I. M., Keith, M. G., Lee, J., & Gray, C. E. (2024). Working, scrolling, and worrying: Doomscrolling at work and its implications for work engagement. *Computers in Human Behavior*, *153*, Article 108130. https://doi.org/10.1016/j.chb.2023.108130

Iredale, W., van Vugt, M., & Dunbar, R. (2008). Showing off in humans: Male generosity as a mating signal. *Evolutionary Psychology*, *6*(3), 386–392. https://doi.org/10.1177/147470490800600302

Jabrane, K., & Bousmah, M. (2021). A new approach for training cobots from small amount of data in Industry 5.0. *International Journal of Advanced Computer Science and Applications*, *12*(10), 634–646. https://doi.org/10.14569/IJACSA.2021.0121070

Jakesch, M., Hancock, J. T., & Naaman, M. (2023). Human heuristics for AI-generated language are flawed. *Proceedings of the National Academy of Sciences of the United States of America*, *120*(11), Article e2208839120. https://doi.org/10.1073/pnas.2208839120

Javaid, M., Haleem, A., Singh, R. P., Suman, R., & Gonzalez, E. S. (2022). Understanding the adoption of Industry 4.0 technologies in improving environmental sustainability. *Sustainable Operations and Computers*, *3*, 203–217. https://doi.org/10.1016/j.susoc.2022.01.008

Jost, J. T., & Hunyady, O. (2005). Antecedents and consequences of system-justifying ideologies. *Current Directions in Psychological Science*, *14*(5), 260–265. https://doi.org/10.1111/j.0963-7214.2005.00377.x

Jussupow, E., Spohrer, K., Heinzl, A., & Link, C. (2018, December 15). *I am; we are—Conceptualizing professional identity threats from information technology*. Thirty-ninth International Conference on Information Systems.

Kanazawa, S. (2002). Bowling with our imaginary friends. *Evolution and Human Behavior*, *23*(3), 167–171. https://doi.org/10.1016/S1090-5138(01)00098-8

Kanazawa, S., & Li, N. P. (2018). The Savanna theory of happiness. In R. L. Hopcroft (Ed.), *Oxford Handbook of evolution, biology, and society* (pp. 171–194). Oxford University Press.

Kane, R. (2024, June 20). How to use AI to snag your dream partner on dating apps. *CNET*. https://www.cnet.com/tech/services-and-software/how-to-use-ai-to-snag-your-dream-partner-on-dating-apps/

Kavanagh, P. S., & Kahl, B. L. (2018). Are expectations the missing link between life history strategies and psychopathology? *Frontiers in Psychology*, *9*, Article 89. https://doi.org/10.3389/fpsyg.2018.00089

Kenrick, D. T., Gutierres, S. E., & Goldberg, L. L. (1989). Influence of popular erotica on judgments of strangers and mates. *Journal of Experimental Social Psychology*, *25*(2), 159–167. https://doi.org/10.1016/0022-1031(89)90010-3

Kenrick, D. T., & Keefe, R. C. (1992). Age preferences in mates reflect sex differences in human reproductive strategies. *Behavioral and Brain Sciences*, *15*(1), 75–91. https://doi.org/10.1017/S0140525X00067595

Kenrick, D. T., Keefe, R. C., Gabrielidis, C., & Cornelius, J. S. (1996). Adolescents' age preferences for dating partners: Support for an evolutionary model of life-history strategies. *Child Development*, *67*(4), 1499–1511. https://doi.org/10.2307/1131714

Kenrick, D. T., Neuberg, S. L., Griskevicius, V., Becker, D. V., & Schaller, M. (2010). Goal-driven cognition and functional behavior: The fundamental-motives framework. *Current Directions in Psychological Science*, *19*(1), 63–67. https://doi.org/10.1177/0963721409359281

Kenrick, D. T., Neuberg, S. L., Zierk, K. L., & Krones, J. M. (1994). Evolution and social cognition: Contrast effects as a function of sex, dominance, and physical attractiveness. *Personality and Social Psychology Bulletin*, *20*(2), 210–217. https://doi.org/10.1177/0146167294202008

Kenrick, D. T., Sadalla, E. K., Groth, G., & Trost, M. R. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *Journal of Personality*, *58*(1), 97–116. https://doi.org/10.1111/j.1467-6494.1990.tb00909.x

Khogali, H. O., & Mekid, S. (2023). The blended future of automation and AI: Examining some long-term societal and ethical impact features. *Technology in Society*, *73*, Article 102232. https://doi.org/10.1016/j.techsoc.2023.102232

Ko, A., Pick, C. M., Kwon, J. Y., Barlev, M., Krems, J. A., Varnum, M. E. W., Neel, R., Peysha, M., Boonyasiriwat, W., Brandstätter, E., Crispim, A. C., Cruz, J. E., David, D., David, O. A., de Felipe, R. P., Fetvadjiev, V. H., Fischer, R., Galdi, S., Galindo, O., … Kenrick, D. T. (2020). Family matters: Rethinking the psychology of human social motivation. *Perspectives on Psychological Science*, *15*(1), 173–201. https://doi.org/10.1177/1745691619872986

Krems, J. A., Kenrick, D. T., & Neel, R. (2017). Individual perceptions of self-actualization: What functional motives are linked to fulfilling one's full potential? *Personality and Social Psychology*

Bulletin, *43*(9), 1337–1352. https://doi.org/10.1177/0146167217713191

Kreps, S., McCain, R. M., & Brundage, M. (2022). All the news that's fit to fabricate: AI-generated text as a tool of media misinformation. *Journal of Experimental Political Science*, *9*(1), 104–117. https://doi.org/10.1017/XPS.2020.37

Kugihara, N. (2005). Effects of physical threat and collective identity on prosocial behaviors in an emergency. In J. P. Morgan (Ed.), *Psychology of aggression* (pp. 45–67). Nova Science Publishers.

Kyung, N., & Kwon, H. E. (2022). Rationally trust, but emotionally? The roles of cognitive and affective trust in laypeople's acceptance of AI for preventive care operations. *Production and Operations Management*, 1–20. https://doi.org/10.1111/poms.13785

Laestadius, L., Bishop, A., Gonzalez, M., Illenčík, D., & Campos-Castillo, C. (2024). Too human and not human enough: A grounded theory analysis of mental health harms from emotional dependence on the social Chatbot Replika. *New Media & Society*, *26*(10), 5923–5941. https://doi.org/10.1177/14614448221142007

Lancaster, J. B. (1975). *Primate behavior and the emergence of human culture*. Holt, Rinehart and Winston. https://cir.nii.ac.jp/crid/1130282269132590976

Lanser, I., & Eisenberger, N. I. (2023). Prosocial behavior reliably reduces loneliness: An investigation across two studies. *Emotion*, *23*(6), 1781–1790. https://doi.org/10.1037/emo0001179

Lea, A. J., Clark, A. G., Dahl, A. W., Devinsky, O., Garcia, A. R., Golden, C. D., Kamau, J., Kraft, T. S., Lim, Y. A. L., Martins, D. J., Mogoi, D., Pajukanta, P., Perry, G. H., Pontzer, H., Trumble, B. C., Urlacher, S. S., Venkataraman, V. V., Wallace, I. J., Gurven, M., … Ayroles, J. F. (2023). Applying an evolutionary mismatch framework to understand disease susceptibility. *PLOS Biology*, *21*(9), Article e3002311. https://doi.org/10.1371/journal.pbio.3002311

Leary, M. R. (2005). Sociometer theory and the pursuit of relational value: Getting to the root of self-esteem. *European Review of Social Psychology*, *16*(1), 75–111. https://doi.org/10.1080/10463280540000007

Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 32, pp. 1–62). Academic Press. https://doi.org/10.1016/S0065-2601(00)80003-9

Leary, M. R., Haupt, A. L., Strausser, K. S., & Chokel, J. T. (1998). Calibrating the sociometer: The relationship between interpersonal appraisals and the state self-esteem. *Journal of Personality and Social Psychology*, *74*(5), 1290–1299. https://doi.org/10.1037/0022-3514.74.5.1290

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, *68*(3), 518–530. https://doi.org/10.1037/0022-3514.68.3.518

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, *81*(1), 146–159. https://doi.org/10.1037/0022-3514.81.1.146

Lewis, D. M. G., Al-Shawaf, L., Conroy-Beam, D., Asao, K., & Buss, D. M. (2017). Evolutionary psychology: A how-to guide. *American Psychologist*, *72*(4), 353–373. https://doi.org/10.1037/a0040409

Li, N. P. (2007). Mate preference necessities in long- and short-term mating: People prioritize in themselves what their mates prioritize in them. *Acta Psychologica Sinica*, *39*(3), 528–535.

Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology*, *82*(6), 947–955. https://doi.org/10.1037/0022-3514.82.6.947

Li, N. P., van Vugt, M., & Colarelli, S. M. (2018). The evolutionary mismatch hypothesis: Implications for psychological science. *Current Directions in Psychological Science*, *27*(1), 38–44. https://doi.org/10.1177/0963721417731378

Li, N. P., Yong, J. C., & van Vugt, M. (2020). Evolutionary psychology's next challenge: Solving modern problems using a mismatch perspective. *Evolutionary Behavioral Sciences*, *14*(4), 362–367. https://doi.org/10.1037/ebs0000207

Lieberman, D. (2014). *The story of the human body: Evolution, health, and disease*. Vintage.

Lim, A. J., & Tan, E. (2024). Social media ills and evolutionary mismatches: A conceptual framework. *Evolutionary Psychological Science*, *10*(3), 212–235. https://doi.org/10.1007/s40806-024-00398-z

Lydon, J. E., Fitzsimons, G. M., & Naidoo, L. (2003). Devaluation versus enhancement of attractive alternatives: A critical test using the calibration paradigm. *Personality and Social Psychology Bulletin*, *29*(3), 349–359. https://doi.org/10.1177/0146167202250202

Málnás, K., Polyák, L., Prill, É., Hegedüs, R., Kriska, G., Dévai, G., Horváth, G., & Lengyel, S. (2011). Bridges as optical barriers and population disruptors for the mayfly *Palingenia longicauda*: An overlooked threat to freshwater biodiversity? *Journal of Insect Conservation*, *15*(6), 823–832. https://doi.org/10.1007/s10841-011-9380-0

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the 'porcupine problem'. *Journal of Personality and Social Psychology*, *92*(1), 42–55. https://doi.org/10.1037/0022-3514.92.1.42

Maner, J. K., Kenrick, D. T., Becker, D. V., Robertson, T. E., Hofer, B., Neuberg, S. L., Delton, A. W., Butner, J., & Schaller, M. (2005). Functional projection: How fundamental social motives can bias

interpersonal perception. *Journal of Personality and Social Psychology*, *88*(1), 63–78. https://doi.org/10.1037/0022-3514.88.1.63

Marlowe, F. W. (2005). Hunter-gatherers and human evolution. *Evolutionary Anthropology: Issues, News, and Reviews*, *14*(2), 54–67. https://doi.org/10.1002/evan.20046

Marlowe, F. W. (2010). *The Hadza: Hunter-gatherers of Tanzania* (1st ed.). University of California Press. https://doi.org/10.1525/j.ctt1pp17z

McQuillan, D. (2022). *Resisting AI: An anti-fascist approach to artificial intelligence*. Policy Press.

Mead, N. L., Baumeister, R. F., Stillman, T. F., Rawn, C. D., & Vohs, K. D. (2011). Social exclusion causes people to spend and consume strategically in the service of affiliation. *Journal of Consumer Research*, *37*(5), 902–919. https://doi.org/10.1086/656667

Mirbabaie, M., Brünker, F., Möllmann Frick, N. R. J., & Stieglitz, S. (2022). The rise of artificial intelligence–understanding the AI identity threat at the workplace. *Electronic Markets*, *32*(1), 73–99. https://doi.org/10.1007/s12525-021-00496-x

Modern, J. (2016). The hyperactive agency detection device. *Material Religion*, *12*(1), 102–103. https://doi.org/10.1080/17432200.2015.1120087

Momeni, M. (2025). Artificial intelligence and political deepfakes: Shaping citizen perceptions through misinformation. *Journal of Creative Communications*, *20*(1), 41–56. https://doi.org/10.1177/09732586241277335

Montgomery, J. (2018). Evolutionary mismatch, emotional homeostasis, and "emotional addiction": A unifying model of psychological dysfunction. *Evolutionary Psychological Science*, *4*(4), 428–442. https://doi.org/10.1007/s40806-018-0153-9

Morse, P. J., Neel, R., Todd, E., & Funder, D. (2015). Renovating situation taxonomies: Exploring the construction and content of fundamental motive situation types. *Journal of Personality*, *83*(4), 389–403. https://doi.org/10.1111/jopy.12111

Murray, D. R., & Schaller, M. (2016). The behavioral immune system: Implications for social cognition, social interaction, and social influence. In J. M. Olson & M. P. Zanna (Eds.), *Advances in experimental social psychology* (pp. 75–129). Elsevier Academic Press.

Neel, R., Kenrick, D. T., White, A. E., & Neuberg, S. L. (2016). Individual differences in fundamental social motives. *Journal of Personality and Social Psychology*, *110*(6), 887–907. https://doi.org/10.1037/pspp0000068

Neel, R., & Lassetter, B. (2019). The stigma of perceived irrelevance: An affordance-management theory of interpersonal invisibility. *Psychological Review*, *126*(5), 634–659. https://doi.org/10.1037/rev0000143

Neuberg, S. L., Kenrick, D. T., & Schaller, M. (2011). Human threat management systems: Self-protection and disease avoidance. *Neuroscience and Biobehavioral Reviews*, *35*(4), 1042–1051. https://doi.org/10.1016/j.neubiorev.2010.08.011

Nielsen, Y. A., Pfattheicher, S., & Keijsers, M. (2022). Prosocial behavior toward machines. *Current Opinion in Psychology*, *43*, 260–265. https://doi.org/10.1016/j.copsyc.2021.08.004

Öhman, A., & Mineka, S. (2001). Fears, phobias, and preparedness: Toward an evolved module of fear and fear learning. *Psychological Review*, *108*(3), 483–522. https://doi.org/10.1037/0033-295X.108.3.483

Osterhammel, J. (2014). *The transformation of the world: A global history of the nineteenth century* (P. Camiller, Trans.). Princeton University Press.

Ouwerkerk, J. W., Kerr, N. L., Gallucci, M., & Van Lange, P. A. M. (2005). Avoiding the social death penalty: Ostracism and cooperation in social dilemmas. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 321–332). Psychology Press.

Pan, S., & Mou, Y. (2024). Constructing the meaning of human–AI romantic relationships from the perspectives of users dating the social chatbot Replika. *Personal Relationships*, *31*(4), 1090–1112. https://doi.org/10.1111/pere.12572

Park, J., Oh, C., & Kim, H. Y. (2024). AI vs. human-generated content and accounts on Instagram: User preferences, evaluations, and ethical considerations. *Technology in Society*, *79*, Article 102705. https://doi.org/10.1016/j.techsoc.2024.102705

Piper, K. (2019, February 12). The case that AI threatens humanity, explained in 500 words. *Vox*. https://www.vox.com/future-perfect/2019/2/12/18202466/ai-artificial-intelligence-humanity-threat

Pirlott, A. G., & Cook, C. L. (2018). Prejudices and discrimination as goal activated and threat driven: The affordance management approach applied to sexual prejudice. *Psychological Review*, *125*(6), 1002–1027. https://doi.org/10.1037/rev0000125

Prochazka, A., & Brooks, R. C. (2024). Digital Lovers and Jealousy: Anticipated emotional responses to emotionally and physically sophisticated sexual technologies. *Human Behavior and Emerging Technologies*, *2024*(1), Article 1413351. https://doi.org/10.1155/2024/1413351

Pyszczynski, T., Greenberg, J., & Solomon, S. (1997). Why do we need what we need? A terror management perspective on the roots of human social motivation. *Psychological Inquiry*, *8*(1), 1–20. https://doi.org/10.1207/s15327965pli0801_1

Pyszczynski, T., Solomon, S., & Greenberg, J. (2015). Chapter one—Thirty years of terror management theory: From genesis to revelation. In J. M. Olson & M. P. Zanna (Eds.), *Advances in experimental*

social psychology (Vol. 52, pp. 1–70). Academic Press. https://doi.org/10.1016/bs.aesp.2015.03.001

QuantumBlack By McKinsey. (2022). *The state of AI in 2022—And a half decade in review* (p. 20). McKinsey & Company.

Quaquebeke, N. V., & Gerpott, F. H. (2023). The now, new, and next of digital leadership: How Artificial Intelligence (AI) will take over and change leadership as we know it. *Journal of Leadership & Organizational Studies*, *30*(3), 265–275. https://doi.org/10.1177/15480518231181731

Rejeb, A., Suhaiza, Z., Rejeb, K., Seuring, S., & Treiblmaier, H. (2022). The Internet of Things and the circular economy: A systematic literature review and research agenda. *Journal of Cleaner Production*, *350*, Article 131439. https://doi.org/10.1016/j.jclepro.2022.131439

Reynaud, A. (2024). *A new wave of technology: Examining interactions between incels and AI girlfriends*. Mount Royal University.

Ricker, J., Assenmacher, D., Holz, T., Fischer, A., & Quiring, E. (2024). *AI-generated faces in the real world: A large-scale case study of Twitter profile images*. Proceedings of the 27th International Symposium on Research in Attacks, Intrusions and Defenses (pp. 513–530). https://doi.org/10.1145/3678890.3678922

Roese, N. J., Pennington, G. L., Coleman, J., Janicki, M., Li, N. P., & Kenrick, D. T. (2006). Sex differences in regret: All for love or some for lust? *Personality and Social Psychology Bulletin*, *32*(6), 770–780. https://doi.org/10.1177/0146167206286709

Rogers, A. R., & Jorde, L. B. (1995). Genetic evidence on modern human origins. *Human Biology*, *67*(1), 1–36.

Ronay, R., & von Hippel, W. (2010). The presence of an attractive woman elevates testosterone and physical risk taking in young men. *Social Psychological and Personality Science*, *1*(1), 57–64. https://doi.org/10.1177/1948550609352807

Saad, G., & Gill, T. (2003). An evolutionary psychology perspective on gift giving among young adults. *Psychology & Marketing*, *20*(9), 765–784. https://doi.org/10.1002/mar.10096

Sagarin, B. J. (2005). Reconsidering evolved sex differences in Jealousy: Comment on Harris (2003). *Personality and Social Psychology Review*, *9*(1), 62–75. https://doi.org/10.1207/s15327957pspr0901_5

Sarker, I. H. (2022). AI-based modeling: Techniques, applications and research issues towards automation, intelligent and smart systems. *SN Computer Science*, *3*(2), Article 158. https://doi.org/10.1007/s42979-022-01043-x

Sbarra, D. A., Briskin, J. L., & Slatcher, R. B. (2019). Smartphones and close relationships: The case for an evolutionary mismatch. *Perspectives on Psychological Science*, *14*(4), 596–618. https://doi.org/10.1177/1745691619826535

Schaller, M., Kenrick, D. T., Neel, R., & Neuberg, S. L. (2017). Evolution and human motivation: A fundamental motives framework. *Social and Personality Psychology Compass*, *11*(6), Article e12319. https://doi.org/10.1111/spc3.12319

Schaller, M., Park, J. H., & Mueller, A. (2003). Fear of the dark: Interactive effects of beliefs about danger and ambient darkness on ethnic stereotypes. *Personality and Social Psychology Bulletin*, *29*(5), 637–649. https://doi.org/10.1177/0146167203029005008

Schmitt, M., & Flechais, I. (2024). Digital deception: Generative artificial intelligence in social engineering and phishing. *Artificial Intelligence Review*, *57*(12), Article 324. https://doi.org/10.1007/s10462-024-10973-2

Schneider, J. (2003). The impact of compulsive cybersex behaviours on the family. *Sexual and Relationship Therapy*, *18*(3), 329–354. https://doi.org/10.1080/146819903100153946

Schrittwieser, J., Antonoglou, I., Hubert, T., Simonyan, K., Sifre, L., Schmitt, S., Guez, A., Lockhart, E., Hassabis, D., Graepel, T., Lillicrap, T., & Silver, D. (2020). Mastering atari, go, chess and shogi by planning with a learned model. *Nature*, *588*(7839), 604–609. https://doi.org/10.1038/s41586-020-03051-4

Shank, D. B., Graves, C., Gott, A., Gamez, P., & Rodriguez, S. (2019). Feeling our way to machine minds: People's emotions when perceiving mind in artificial intelligence. *Computers in Human Behavior*, *98*, 256–266. https://doi.org/10.1016/j.chb.2019.04.001

Shariff, A., Bonnefon, J.-F., & Rahwan, I. (2021). How safe is safe enough? Psychological mechanisms underlying extreme safety demands for self-driving cars. *Transportation Research Part C: Emerging Technologies*, *126*, Article 103069. https://doi.org/10.1016/j.trc.2021.103069

Silver, D., Schrittwieser, J., Simonyan, K., Antonoglou, I., Huang, A., Guez, A., Hubert, T., Baker, L., Lai, M., Bolton, A., Chen, Y., Lillicrap, T., Hui, F., Sifre, L., van den Driessche, G., Graepel, T., & Hassabis, D. (2017). Mastering the game of go without human knowledge. *Nature*, *550*(7676), 354–359. https://doi.org/10.1038/nature24270

Singh, D. (1993). Adaptive significance of female physical attractiveness: Role of waist-to-hip ratio. *Journal of Personality and Social Psychology*, *65*(2), 293–307. https://doi.org/10.1037/0022-3514.65.2.293

Spisak, B. R., Homan, A. C., Grabo, A., & Van Vugt, M. (2012). Facing the situation: Testing a biosocial contingency model of leadership in intergroup relations using masculine and feminine faces. *The Leadership Quarterly*, *23*(2), 273–280. https://doi.org/10.1016/j.leaqua.2011.08.006

Stein, J.-P., Appel, M., Jost, A., & Ohler, P. (2020). Matter over mind? How the acceptance of digital entities depends on their appearance, mental prowess, and the interaction between both. *International Journal of Human-Computer Studies*, *142*, Article 102463. https://doi.org/10.1016/j.ijhcs.2020.102463

Sundie, J. M., Cialdini, R. B., Griskevicius, V., & Kenrick, D. T. (2012). The world's (truly) oldest profession: Social influence in evolutionary perspective. *Social Influence*, *7*(3), 134–153. https://doi.org/10.1080/15534510.2011.649890

Szczuka, J. M., & Krämer, N. C. (2018). Jealousy 4.0? An empirical study on jealousy-related discomfort of women evoked by other women and gynoid robots. *Paladyn, Journal of Behavioral Robotics*, *9*(1), 323–336. https://doi.org/10.1515/pjbr-2018-0023

Thomas, M. F., Binder, A., Stevic, A., & Matthes, J. (2023). 99+ matches But a spark ain't one: Adverse psychological effects of excessive swiping on dating apps. *Telematics and Informatics*, *78*, Article 101949. https://doi.org/10.1016/j.tele.2023.101949

Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology & Sociobiology*, *11*(4–5), 375–424. https://doi.org/10.1016/0162-3095(90)90017-Z

Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 19–136). Oxford University Press.

Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 114–137). Guilford Press.

Townsend, N. W. (1992). *Paternity attitudes of a cohort of men in the United States: Cultural values and demographic implications*. University of California, Berkeley.

Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man* (pp. 137–179). Aldine.

Urwin, M. (2024, July 19). *Will AI replace jobs? Or create new ones?* Built In. https://builtin.com/artificial-intelligence/ai-replacing-jobs-creating-jobs

van Vugt, M. (2006). Evolutionary origins of leadership and followership. *Personality and Social Psychology Review*, *10*(4), 354–371. https://doi.org/10.1207/s15327957pspr1004_5

van Vugt, M., Colarelli, S. M., & Li, N. P. (2024). Digitally connected, evolutionarily wired: An evolutionary mismatch perspective on digital work. *Organizational Psychology Review*, *14*(3), 403–424. https://doi.org/10.1177/20413866241232138

van Vugt, M., De Cremer, D., & Janssen, D. P. (2007). Gender differences in cooperation and competition: The male-warrior hypothesis. *Psychological Science*, *18*(1), 19–23. https://doi.org/10.1111/j.1467-9280.2007.01842.x

van Vugt, M., & Ronay, R. (2014). The evolutionary psychology of leadership: Theory, review, and roadmap. *Organizational Psychology Review*, *4*(1), 74–95. https://doi.org/10.1177/2041386613493635

van Vugt, M., & Tybur, J. M. (2015). The evolutionary foundations of status hierarchy. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 1–22). John Wiley & Sons https://doi.org/10.1002/9781119125563.evpsych232

Varella, M. A. C. (2018). The biology and evolution of the three psychological tendencies to anthropomorphize biology and evolution. *Frontiers in Psychology*, *9*, Article 1839. https://doi.org/10.3389/fpsyg.2018.01839

von Rueden, C. (2020). Making and unmaking egalitarianism in small-scale human societies. *Current Opinion in Psychology*, *33*, 167–171. https://doi.org/10.1016/j.copsyc.2019.07.037

von Schenk, A., Klockmann, V., & Köbis, N. (2025). Social preferences toward humans and machines: A systematic experiment on the role of machine payoffs. *Perspectives on Psychological Science*, *20*(1), 165–181. https://doi.org/10.1177/17456916231194949

Wang, Y., & Griskevicius, V. (2014). Conspicuous consumption, relationships, and rivals: Women's luxury products as signals to other women. *Journal of Consumer Research*, *40*(5), 834–854. https://doi.org/10.1086/673256

Ward, M. K., & Broniarczyk, S. M. (2011). It's not me, it's you: How gift giving creates giver identity threat as a function of social closeness. *Journal of Consumer Research*, *38*(1), 164–181. https://doi.org/10.1086/658166

Waytz, A., Morewedge, C. K., Epley, N., Monteleone, G., Gao, J.-H., & Cacioppo, J. T. (2010). Making sense by making sentient: Effectance motivation increases anthropomorphism. *Journal of Personality and Social Psychology*, *99*(3), 410–435. https://doi.org/10.1037/a0020240

Weiß, M., Rodrigues, J., Paelecke, M., & Hewig, J. (2020). We, them, and it: Dictator game offers depend on hierarchical social status, artificial intelligence, and social dominance. *Frontiers in Psychology*, *11*, Article 541756. https://doi.org/10.3389/fpsyg.2020.541756

Whittaker, L., Kietzmann, T. C., Kietzmann, J., & Dabirian, A. (2020). "All around me are synthetic faces": The mad world of AI-generated media. *IT Professional*, *22*(05), 90–99. https://doi.org/10.1109/MITP.2020.2985492

Whitty, M. T. (2013). The Scammers Persuasive Techniques Model: Development of a Stage Model to

Explain the Online Dating Romance Scam. *British Journal of Criminology*, *53*(4), 665–684. https://doi.org/10.1093/bjc/azt009

Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, *79*(5), 748–762. https://doi.org/10.1037/0022-3514.79.5.748

Williams, K. D., & Sommer, K. L. (1997). Social ostracism by coworkers: Does rejection lead to loafing or compensation? *Personality and Social Psychology Bulletin*, *23*(7), 693–706. https://doi.org/10.1177/0146167297237003

Wilson, M., & Daly, M. (1985). Competitiveness, risk taking, and violence: The young male syndrome. *Ethology & Sociobiology*, *6*(1), 59–73. https://doi.org/10.1016/0162-3095(85)90041-X

Wilson, M., & Daly, M. (2004). Do pretty women inspire men to discount the future? *Proceedings Biological Sciences*, *271*(suppl_4), S177–S179. https://doi.org/10.1098/rsbl.2003.0134

Winegard, B. M., Winegard, B., & Geary, D. C. (2014). Eastwood's brawn and Einstein's brain: An evolutionary account of dominance, prestige, and precarious manhood. *Review of General Psychology*, *18*(1), 34–48. https://doi.org/10.1037/a0036594

Wisman, A., & Koole, S. L. (2003). Hiding in the crowd: Can mortality salience promote affiliation with others who oppose one's worldviews? *Journal of Personality and Social Psychology*, *84*(3), 511–526. https://doi.org/10.1037/0022-3514.84.3.511

Woodburn, J. (1982). Egalitarian societies. *Man*, *17*(3), 431–451. https://doi.org/10.2307/2801707

Wu, Y., & Kelly, R. M. (2020). *Online dating meets Artificial Intelligence: How the perception of algorithmically generated profile text impacts attractiveness and trust*. Proceedings of the 32nd Australian Conference on Human-Computer Interaction (pp. 444–453). https://doi.org/10.1145/3441000.3441074

Xie, T., & Pentina, I. (2022, January 4). *Attachment theory as a framework to understand relationships with social Chatbots: A case study of Replika*. https://doi.org/10.24251/HICSS.2022.258

Yeung, J. (2024, October 15). Deepfake romance scam raked in $46 million from men across Asia, police say. *CNN*. https://www.cnn.com/2024/10/15/asia/hong-kong-deepfake-romance-scam-intl-hnk/index.html

Yong, J. C., Aziz, I. A. S., Xiao, H., & Li, N. P. (2025). Interactive effects of intrasexual competitiveness, same-sex competition, and physical attractiveness on temporal discounting. *Personality and Individual Differences*, *232*, Article 112843. https://doi.org/10.1016/j.paid.2024.112843

Yong, J. C., & Li, N. P. (2018). The adaptive functions of jealousy. In H. C. Lench (Ed.), *The function of emotions: When and why emotions help us* (pp. 121–140). Springer International Publishing/Springer Nature.

Yong, J. C., Li, N. P., Jonason, P. K., & Tan, Y. W. (2019). East Asian low marriage and birth rates: The role of life history strategy, culture, and social status affordance. *Personality and Individual Differences*, *141*, 127–132. https://doi.org/10.1016/j.paid.2019.01.009

Yong, J. C., Li, N. P., & Kanazawa, S. (2021). Not so much rational but rationalizing: Humans evolved as coherence-seeking, fiction-making animals. *American Psychologist*, *76*(5), 781–793. https://doi.org/10.1037/amp0000674

Yong, J. C., Li, N. P., Valentine, K. A., & Smith, A. R. (2016). Female virtual intrasexual competition and its consequences: An evolutionary mismatch perspective. In M. L. Fisher (Ed.), *The Oxford handbook of women and competition* (pp. 657–680). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199376377.013.38

Yong, J. C., Lim, A. J., & Li, N. P. (2024). When social status gets in the way of reproduction in modern settings: An evolutionary mismatch perspective. *Culture and Evolution*, *20*(1), 59–76. https://doi.org/10.1556/2055.2022.00028

Yong, J. C., Park, G., & Spitzmuller, M. (2021). From the savannah to the corporate office: The evolution of teams. *Small Group Research*, *52*(1), 33–67. https://doi.org/10.1177/1046496420960516

Yong, J. C., Tan, Y. W., Li, N. P., & Meltzer, A. L. (2022). Looks and status are still essential: Testing the mate preference priority model with the profile-based experimental paradigm. *Journal of Personality*, *90*(6), 821–845. https://doi.org/10.1111/jopy.12699

Zeff, M. (2024, February 7). *This guy used ChatGPT to talk to 5,000 women on Tinder and met his wife*. Gizmodo. https://gizmodo.com/guy-used-chatgpt-talk-5-000-women-tinder-met-his-wife-1851228179

Złotowski, J., Yogeeswaran, K., & Bartneck, C. (2017). Can we control it? Autonomous robots threaten human identity, uniqueness, safety, and resources. *International Journal of Human-Computer Studies*, *100*, 48–54. https://doi.org/10.1016/j.ijhcs.2016.12.008

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