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Published online: 07 Feb 2025.

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Glory or darkness? An empirical examination of understanding users' adoption of ChatGPT via the coping theory: the moderating effect of mindfulness

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ABSTRACT

Based on the coping theory and coping model of user adaptation, this research explores the impact of users' ChatGPT technostress on cognitive appraisal, coping process, and behaviour. A survey using Amazon's Mechanical Turk was developed to collect data on 10 occupations that may be replaced by ChatGPT in the U.S., with a total of 277 actual ChatGPT users. This study employs the software SmartPLS4.2 to evaluate the measurement model and the structural model. The results show that concerns over coolness and posthuman capabilities significantly affect users' challenge appraisal of ChatGPT, whereas privacy, ethics, and security concerns significantly impact users' threat appraisal of ChatGPT. Challenge and threat appraisals have a significantly positive impact on users' problem-focused coping and emotion-focused coping, which themselves significantly predict users' continuous use of ChatGPT. Mindfulness negatively moderates the influence on emotion-focused coping and continued use intention after ChatGPT adoption. The main theoretical contributions of this research include investigating users' ChatGPT technostress and coping process by professional workers who may be replaced by ChatGPT. The evidence regarding the moderating role of mindfulness presented herein is novel, because the relationship between coping strategies and continued behaviour intention has not been previously examined.

1. Introduction

The share of artificial intelligence (AI) in the marketing industry is rapidly increasing, in particular generative AI (such as ChatGPT), with up to 90% of commercial leaders planning to adopt generative AI solutions in the next two years (Dilmegani 2024). Generative AI (GAI) primarily operates through the generative pre-trained transformer (GPT) approach and undergoes training with an extensive amount of unannotated, unstructured data through a process called self-supervised learning, resulting in the development of a foundational model (Pham, Duong, and Nguyen 2024). GAI possesses benefits such as automation, high speed, and accuracy. For instance, ChatGPT, based on input prompts, can automatically generate articles as well as copy, code, and design proposals, graphics, or images. AI and human-machine fusion generally help employees to benefit from greater productivity, creativity, and freedom (OpenAI 2023), but AI technology can negatively impact employee well-being. Business Insider compiled a list of ten jobs that ChatGPT could replace in 2023, including tech, media, legal industry, market research analyst, teaching, finance, trading, graphic designer, accounting, and customer service (Zinkula and Mok 2024). While 49% of respondents still harboured worries about AI replacing their jobs, 70% were still willing to delegate a majority of their tasks to AI in order to alleviate their workloads (Tech Informed 2023). When employees discover that the knowledge and skills they have cultivated over the years may be replaced by AI, they can experience both anxiety and great psychological pressure (Kong et al. 2021). Many people are struggling to cope with automation risks and job replacement fears due to AI technology – a condition known as GAI stress.

Four salient features characterise the extant literature on the GAI of ChatGPT. First, most research focuses on ChatGPT in different sectors (Catherine, Towfek, and Abdelhamid 2023; Ivanov and Soliman 2023; Pham, Duong, and Nguyen 2024; Ren et al. 2023) and how it can help to make customer service more efficient and effective for businesses (George, George, and Martin 2023; Korzynski et al. 2023). Second, the quantitative analysis of evaluating ChatGPT's understanding ability

(Lu et al. 2023; Zhong et al. 2023). Third, related research based on the technology acceptance model (TAM) has aimed to understand users' attitudes and acceptance of ChatGPT usage (Polyportis and Pahos 2024; Tiwari et al. 2023). Fourth, most research considers the impact of psychological outcomes (psychological well-being and self-esteem) on users and the role of ChatGPT in shaping individual attitudes towards it (Salah et al. 2023).

Although ChatGPT is increasingly popular and transformative, academic research on the user coping of ChatGPT technostress is quite limited, especially relative to the available literature in the area. One dark side of ChatGPT is users' heightened fears about its negative effects. While scholars and experts have discussed users' growing concerns about job replacement and the privacy risks of ChatGPT (Ritala, Ruokonen, and Ramaul 2023), no definitive research to date has examined the impact of ChatGPT technostress enablers and inhibitors on users' behavioural. Therefore, empirical examination impact of users' ChatGPT technostress on cognitive, process, and behaviour becomes relevant. GAI technologies both positively and negatively impact organisations and individuals in different ways (Zhao, Xia, and Huang 2020), this study draws firmly from coping theory (Lazarus and Folkman 1984), which can explain how a person evaluates and copes with stressful events (Oakland and Ostell 1996). Coping strategies are a collection of possible responses to stressful situations. Primary and secondary appraisals are formed by evaluating potential outcomes of a stressful event. There are two main coping strategies: problem-focused coping and emotion-focused coping (Folkman and Lazarus 1988). The problem-focused coping (PFC) strategy is akin to an approach style, while the emotion-focused coping (EFC) strategy is akin to an avoidance style (Srivastava and Tang 2018). Beaudry and Pinsonneault (2005) based on coping theory proposed coping model of user adaptation (CMUA). The CMUA framework can be applied to assess consumers' adaptation in the light of their growing concerns about ChatGPT. For this purpose, we rely on a sample of 277 actual ChatGPT users from 10 occupations that may be replaced by ChatGPT in the US and use structural equation modelling.

Since mindfulness can assist users in coping with the stress induced by information systems (Pflügner, Maier, and Weitzel 2021). The literature has empirically established the relationship between mindfulness and coping behaviour for technostress (Tuan 2022). Mindfulness refers to deliberately paying attention to the present moment from an accepting stance, and individuals with a flexible disposition tend to sustain their life experiences (Tuan 2022). Mindfulness contributes to emotional regulation, alleviates stress, and enhances psychological well-being (Cheng et al. 2022; Guidetti et al. 2019). This study analyzes the moderating effect of mindfulness on users' coping strategies and post-adoption continuation intentions in a ChatGPT usage context. To the best of our knowledge, no study has examined the moderating role of mindfulness in this relationship.

The presence of GAI represents a dilemma for companies or workers due to its advantages and disadvantages. In particular, there has been limited analysis from a stress and psychological perspective regarding users' concerns about GAI and how actions are taken to address the sources of stress brought about it. The purpose of the present study is to use the coping theory and coping model of user adaptation to explore whether users' ChatGPT technostress enables and/or inhibits their cognitive appraisal (i.e. challenge appraisal and threat appraisal) and type of coping strategies (i.e. problem – or emotion-focused coping), and whether those coping strategies increase the likelihood of continued use intention after adoption. In addition, we investigate the moderating role of users' mindfulness in continued use intention after adoption. Thus, our research questions are as follows.

RQ1. What are the roles of enablers and inhibitors of ChatGPT technostress by users on their cognitive appraisal?

RQ2. How do consumers evaluate and cope with the stress resulting from the effects of the enablers and inhibitors of ChatGPT technostress?

RQ3. How do users' problem-focused and emotion-focused coping strategies impact their continued use intention after adoption?

RQ4. How does the moderating variable of mindfulness influence users' coping strategies and continued use intention after adoption?

This research makes several contributions to the literature on technology interaction and ChatGPT usage behaviour. First, it proposes a structural equation model integrating users' concerns, coping process, and behaviour intention based on the coping theory and tests the hypotheses derived from the model by data collected from 10 occupations that may be replaced by ChatGPT in the U.S. Second, our study expands the coping theory and the coping model of user adaptation to understand how users respond to using ChatGPT in order to assess and deal with stress. Third, the evidence regarding the moderating role of mindfulness presented herein is novel, because the relationship between coping strategies and continued behaviour intention has not

been previously examined. Finally, the results of this study are based on data collected from ChatGPT users. Its findings offer significant insights for companies or individuals to understand GAI and bring forth new possibilities and challenges.

2. Component theories of the integrated model

2.1. Emerging concerns about enablers and inhibitors in ChatGPT

ChatGPT outperforms human workers in quality and efficiency on certain knowledge tasks (Gilardi, Alizadeh, and Kubli 2023). However, the data-rich business environment and its highly technological dynamics may generate behavioural and cognitive challenges (Boldosova and Luoto 2019). Individuals must possess a set of AI-related skills to enhance their competitive advantage, and literacy facilitation can reduce the technostress caused by ICT use (Sharma and Gupta 2023). We define GAI literacy as the ability to understand and use GAI tools effectively to make decisions. Coolness has been used to express elements of the novelty, originality, and attractiveness of technological devices (Lucia-Palacios and Pérez-López 2023; Nan et al. 2022a, 2022b). ChatGPT has outstanding language processing capabilities as well as the ability to comprehend conversational content and to provide more accurate and relevant suggestions (Kim et al. 2023; Stokel-Walker and Van Noorden 2023). We define coolness as an overall judgment of ChatGPT technology applications that are perceived as original, attractive, unique, and innovative. Intelligent systems capable of surpassing human intelligence in a particular field are considered post-human (Nath and Manna 2023), such as ChatGPT (Niu and Mvondo 2024) and driverless cars (Gambino and Sundar 2019). Therefore, we define post-human ability as ChatGPT's ability to handle work better than a human.

AI is gradually changing the way of working, and pressure on employees from data, information, and uninterrupted communication has also intensified (Sieja and Wach 2019). Kumar, Krishnamoorthy, and Bhattacharyya (2023) indicated that role ambiguity, job insecurity, and the technology environment contribute to technostress, because of the deployment of ML and AI technologies. Li and Huang (2020) proposed and verified eight factors of AI anxiety: privacy violation anxiety, bias behaviour anxiety, job replacement anxiety, learning anxiety, existential risk anxiety, ethics violation anxiety, artificial consciousness anxiety, and lack of transparency anxiety. In fact, the rapid expansion and popularity of ChatGPT has brought privacy concerns, ethical concerns, security risks, and job

replacement concerns. Data used by AI may infringe personal privacy (Jang 2023; Paul, Ueno, and Dennis 2023). Therefore, we define privacy concern as the degree to which users are worried or stressed about personal data used by ChatGPT.

Many authors have pointed out their concerns over AI ethics (Hsieh 2023; Mvondo, Niu, and Eivazinezhad 2023; Zhang and Zhang 2023). Although users find ChatGPT enjoyable and useful, it still has potential ethical issues. When users interact with ChatGPT, OpenAI collects a wide range of sensitive user information. These ethical concerns can influence their ethical perceptions of ChatGPT (Catherine, Towfek, and Abdelhamid 2023; Niu and Mvondo 2024). In addition, the information security risks posed by ChatGPT can harm companies and compromise the security and privacy of sensitive information (Carvalho and Ivanov 2024). For example, actions creating fake news or impersonating brands may become increasingly sophisticated (Karanjai 2022). There is also a risk that personal data and other sensitive information may be used by ChatGPT to retrain the model (Kim et al. 2023; Paul, Ueno, and Dennis 2023). AI technologies and products are likely to replace some jobs (Bernazzani 2017), and unemployment or poor job prospects can generate personal anxiety. Wang and Wang (2022) and Li and Huang (2020) respectively proposed job replacement factors when studying users' anxiety about AI. We define job replacement concern as the potential for ChatGPT technology applications to replace human jobs.

Despite the many advantages of ChatGPT, our understanding of the negative impacts of ChatGPT on users is rather limited in theoretical and empirical research. The insights gained from this study will help advance the knowledge and understanding of GAI technology usage.

2.2. The coping theory and the coping model of user adaptation

Coping is a series of processes that describe how individuals discover, evaluate, deal with, and learn from stressful situations. Lazarus and Folkman (1984) proposed a widely accepted process-based stress and coping model that explains how a person evaluates and responds to stressful events. However, stress events can be assessed as a challenge or threat through cognitive appraisal. A challenge appraisal occurs when a stressful event is challenging to an individual, but is seen as an opportunity for growth, resulting in positive emotions. On the contrary, a threat appraisal occurs when an event is perceived as causing a threat, foreseeable injury, or loss, resulting in negative emotions

(Lazarus and Folkman 1984). If dealing with stress leads to positive emotions, then individuals can assess technology-related stress as a challenge; if stress leads to negative emotions, then they can be assessed as an obstacle (Zhao, Xia, and Huang 2020).

Coping strategies can fall into two perspectives on the basis of their function: problem-focused coping and emotion-focused coping (Lazarus and Folkman 1984; Xin, Siponen, and Chen 2022). Problem-focused coping (PFC) refers to acting on the environment or self, emphasizing an individual's initiative to directly respond to a situation and making efforts to manage or reduce stressors. When people feel that they can take some constructive actions, such as recognising reconstruction, acquiring new knowledge and skills, taking direct action to remove obstacles, and seeking support or help from others, they tend to adopt the PFC approach. Emotion-focused coping (EFC) refers to an individual's inner efforts to regulate or reduce negative emotions caused by stress without affecting the stressor. When people believe that the stressor is something to be accepted and tolerated, such as positive reevaluation, emotional ventilation, seeking social support, and ignoring the stressor (Carver, Scheier, and Weintraub 1989), then they tend to adopt the EFC style (Lazarus and Folkman 1984). Adopting a PFC approach means that individuals under pressure understand the root causes of the problem, plan how to deal with it, weigh alternatives, and have confidence in managing their stress. Individuals who adopt the EFC approach want to manage their emotions, rather than change the situation or attempt to solve problems.

Beaudry and Pinsonneault (2005) proposed the coping model of user adaptation (CMUA) based on the coping theory. CMUA refers to the cognitive and behavioural efforts made by users to manage specific consequences associated with major IT events that occur in their work environment. CMUA assumes that: (1) individuals will conduct a primary assessment of the new information system (IS) (i.e. opportunity or threat), (2) the personal assessment of the new IS will lead to different coping strategies (i.e. PFC and EFC), and (3) individual responses to the new IS will lead to different results, such as improving efficiency and effectiveness, reducing negative perceptions of the situation, and restoring emotional stability. Therefore, the CMUA model can explain an individual's coping behaviour related to IS. As AI technology becomes increasingly intelligent, it is more likely that it will surpass humans and may even make highly specialised occupations obsolete. The sudden change in work modes due to GAI can be difficult for users. The coping theory of Lazarus and Folkman (1984) is applicable to

understanding the process by which people adapt to new information systems. Therefore, this study aims to fill the gap in the literature and investigate users' stress due to ChatGPT and their coping strategies.

2.3. User mindfulness

Kabat-Zinn (1994) defined mindfulness as being conscious, present, and unevaluated through concentration and specific perception. Langer and Moldoveanu (2000) defined mindfulness as the process of distinguishing new things, which enables individuals to notice new things and become sensitive to the environment. The nature of mindfulness can be divided into Eastern and Western perspectives (Kabat-Zinn 1982). The Eastern perspective of mindfulness has its origins in Buddhism, primarily focusing on personal awareness of the internal processes of the mind. The Eastern concept of mindfulness includes the observation of both internal experiences (such as thoughts, feelings, and body sensations) and external experiences (such as sights, sounds, smells, and events in the physical or social environment). The Western perspective of mindfulness focuses on how external experience deals with cognition, such as decision-making, problem-solving, and cognitive efforts. In other words, the alertness and consciousness of conscious individuals to their environment are expressed through the cognitive process.

The formation of mindfulness begins with state mindfulness, followed by trait mindfulness (Eberth and Sedlmeier 2012). State mindfulness refers to the consciousness of the mind, body, and other senses, while trait mindfulness refers to how individuals feel during and after mindfulness practice (Wang and Uysal 2023). Specifically, this study defines mindfulness as a person's increased attention and awareness of current events and experiences without any ability to judge or attach importance (Brown and Ryan 2003; Kumar, Krishnamoorthy, and Bhattacharyya 2023).

There are four distinct mechanisms (self-regulation, values' clarification, flexibility, and exposure) through which the stress-reducing effects of mindfulness occur (Shapiro et al. 2006). Mindfulness allows individuals to better adjust and deal with interference in the environment and makes it easier for them to focus on practical tasks (self-regulation). People with mindfulness have a goal orientation and know meaningful aspects of life and values that are important to individuals (values clarification). Mindfulness can achieve better emotional and cognitive flexibility and takes environmental changes as opportunities by selecting or modifying them to meet their needs (flexibility). Mindfulness can bring experience, feeling, cognition,

and emotion, making people with mindfulness more willing to come into contact with unpleasant inner experiences (exposure). Sun, Fang, and Zou (2016) defined mindfulness from a technical viewpoint as a state of psychological consciousness in which a person pays attention to and is aware of the decision-making related to a technology adoption. Because people with mindfulness have a clearer understanding of the present moment, they may exhibit less impulsive behaviour (Tan et al. 2022), and people with higher mindfulness tend to feel less anxiety and emotional distress when faced with stressful relationships (Ardenghi et al. 2022).

Research has indicated that increasing mindfulness reduces negative appraisals and the adoption of more adaptive cognitive strategies, as employees are more likely to perceive demands as challenges rather than obstacles (Martín-Hernández et al. 2020). Therefore, users of mindfulness may perceive stressful situations as learning opportunities and advocate for the use of adaptive coping strategies (Gabel-Shemueli et al. 2023). This study focuses on mindfulness as a personality trait and looks into the effect of mindfulness on the coping strategies of users and their continued use intention after adoption. We posit that users' mindfulness can moderate the relationship between coping strategies and sustained usage behaviour.

3. Research hypotheses' development

Figure 1 depicts the research model tested by this study. The research model proposes that users' ChatGPT technostress enablers and inhibitors trigger their coping process by affecting their challenge and threat appraisals. However, challenge and threat appraisals are proposed to positively affect PFC and EFC. The PFC and EFC are proposed to positively affect the intention to continue using ChatGPT after adoption. Furthermore, users' mindfulness is proposed to positively moderate the relationships among PFC, EFC, and continued use intention after users' adoption of ChatGPT.

3.1. User concerns and cognitive appraisal

3.1.1. GAI literacy
The advantages and potential of ChatGPT in knowledge work are significant. ChatGPT provides guidance and tips to enhance human capabilities and to complete human tasks quickly and effectively, thus greatly improving productivity (Ritala, Ruokonen, and Ramaul 2023). Therefore, it is important for users to have technological literacy skills to use ChatGPT. Giudice da Silva Cezar and Maçada (2021) found data literacy to be negatively associated with perceived data overload and found a positive correlation between data literacy and individual performance. Therefore, the following hypothesis is proposed.

H1. GAI literacy positively relates to the challenge appraisal by users of ChatGPT.

3.1.2. Coolness
Coolness has emerged as a critical construct in human–computer interaction and IS research. Coolness is
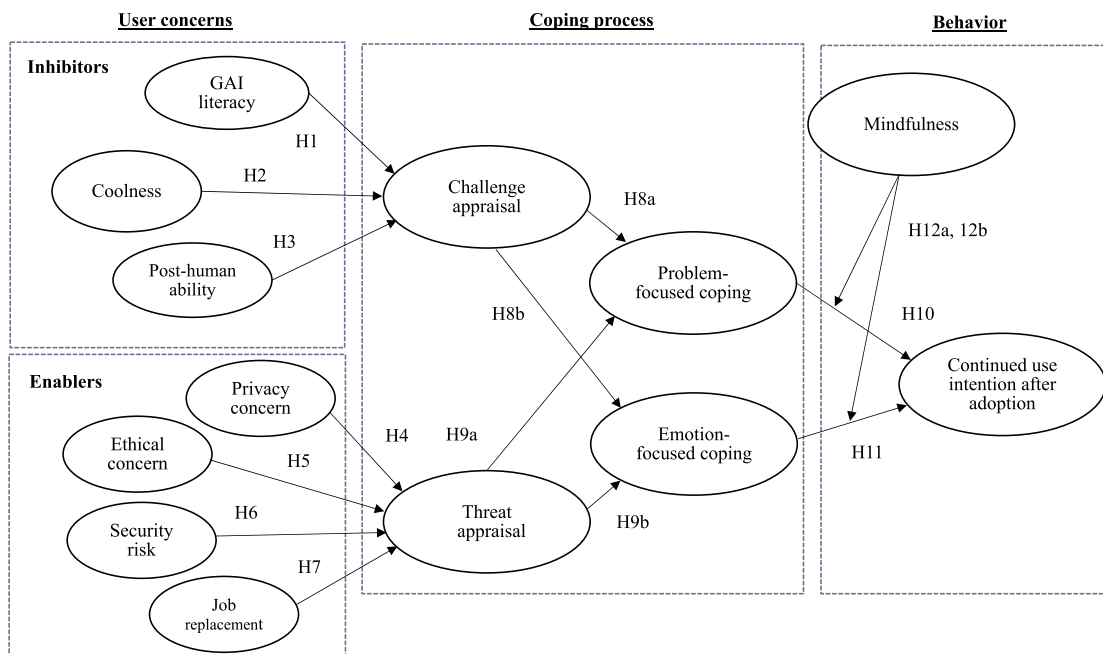

Figure 1. Conceptual model.

associated with being unique, highly technological, out-standing, and impressive (Warren et al. 2019). Coolness is considered a high-quality attribute that creatively fulfils a user's goals (Sundar, Tamul, and Wu 2014). Coolness also refers to attributes or characteristics attached to a product or service (Warren et al. 2019). Perceived coolness contains the four dimensions of utility, attractiveness, subcultural appeal, and originality (Sundar, Tamul, and Wu 2014). The coolness factor of a product contributes to its success in the market, as it plays a crucial role in how consumers perceive and engage with it (Niu and Mvondo 2024). If individuals perceive themselves as part of mainstream culture, then they may consider digital devices within the mainstream domain to be cooler than those associated with subcultures. Consumers typically believe that unique and cool products or services can trigger customer engagement motivation (Stocchi et al. 2018; Wang and Sundar 2018). Cool products can also help customers achieve their ideal selves (Tiwari, Chakraborty, and Maity 2021).

Scholars have explored coolness in the field of technology products or services. Bogicevic et al. (2021) demonstrated that perceived coolness mediates the influence of virtual reality on customers' self-brand connections. Li et al. (2022) assessed users' perceptions of multiple dimensions of coolness and their usage intentions for digital products. Wu et al. (2023) explored the relationship between delight and behavioural intention regarding the coolness of service robots. Tsaur et al. (2023) showed that perceived coolness positively affects customer engagement and memorable customer experiences. Niu and Mvondo (2024) determined that perceived coolness positively affects user satisfaction with ChatGPT.

ChatGPT is one of the impressive tools in GAI. It has the capability to enhance work efficiency and revolutionise content creation methods. ChatGPT is a versatile tool that complete a wide range of tasks involving natural language processing (Carvalho and Ivanov 2024). Therefore, this study predicts that coolness affects challenge appraisal. On this basis, a hypothesis is developed as follows:

> H2. Coolness positively relates to the challenge appraisal by users of ChatGPT.

3.1.3. Post-human ability

The term *post-human* refers to individuals or entities existing beyond the human condition. From a digital information perspective, the integration of humans and AI implies that humans have become information processing entities that closely resemble AI (Hayles 1999). Gambino and Sundar (2019) argued that *post-human* refers to digital devices that outperform humans in specific tasks. Artificial intelligence and machine

learning technologies have seen rapid development, transforming the way individuals interact with their surroundings and revolutionising work and business models. The post-human ability concept advocates the gradual blurring of boundaries between humans and machines, with humans endeavouring to expand their grasp of the future through the utilisation of technology. Studies have shown that ChatGPT's performance on some knowledge work tasks surpasses the quality of human workers (Gilardi, Alizadeh, and Kubli 2023; Ritala, Ruokonen, and Ramaul 2023). Niu and Mvondo (2024) found post-human ability to have a positive effect on user satisfaction. Therefore, we propose the following hypothesis.

> H3. Post-human ability positively relates to the challenge appraisal by users of ChatGPT.

3.1.4. Privacy concern

Privacy concern is an essential factor affecting user acceptance of AI-based technologies (Choi 2021; Li and Huang 2020). Various studies have investigated the impact of privacy concern on consumers' attitude or its effect on information technology. For example, Marakhimov and Joo (2017) studied adoptive healthcare wearable devices and concluded that privacy concern negatively influences challenge appraisals and positively influences threat appraisals. Cai, Cain, and Jeon (2022) found perceived privacy concern has a negative effect on both customers' intention to use and their positive word-of-mouth about AI-enabled voice assistants. Simultaneously, research has confirmed that privacy concern and awareness of privacy risks undermine users' willingness to use personalised services (Choi 2021).

Privacy concern is defined as the level of worry or stress experienced by users regarding opportunistic actions related to ChatGPT and their personal information. Therefore, privacy concern is an essential factor affecting the threat appraisal of ChatGPT technologies. Consequently, the following hypothesis is proposed.

> H4. Privacy concern positively relates to the threat appraisal by users of ChatGPT.

3.1.5. Ethical concern

When the boundaries between AI and humans become increasingly blurred, a series of ethical issues will follow (Kamila and Jasrotia 2023; Ryan and Stahl 2021; Zhang and Zhang 2023). Since the essence of AI is deep learning (DL) algorithms, the opacity of the internal operations may lead to a lack of transparency in decision-making (McGowan 2023). The ethical concerns

associated with using AI as an auxiliary tool involve distrust, regulatory aspects, and responsibilities (Esmaeilzadeh 2020). Niu and Mvondo (2024) found that ethical concerns directly influence users' satisfaction and loyalty towards chatbot services. Therefore, this study proposes the following hypothesis.

> H5. Ethical concern positively relates to the threat appraisal by users of ChatGPT.

3.1.6. Security risk

This study defines security risk as the degree to which users are worried or stressed about the accuracy and reliability of information obtained from ChatGPT. The security risks of ChatGPT stem from two main aspects: AI generation and training data input. Research has indicated that the cybersecurity risks posed by ChatGPT may jeopardise the security and privacy of sensitive information, potentially harming a company's reputation (Carvalho and Ivanov 2024). Another concern is that confidential data shared with ChatGPT may be utilised as training data, potentially leading to output that mimics such sensitive information (Kim et al. 2023). Lastly, ChatGPT could pose a significant threat to cybersecurity, as it has the potential to significantly amplify the creation and distribution of malicious content, such as spam, fake messages, phishing emails, and malicious software (Karanjai 2022). Therefore, we propose the following hypothesis.

> H6. Security risk positively relates to the threat appraisal by users of ChatGPT.

Job replacement

Artificial intelligence has some negative impacts, among which replacing human job opportunities has received the greatest attention and discussion. Because people are afraid of being replaced, they find themselves in a relentless pursuit of acquiring more knowledge, inadvertently leading them into a spiral of anxiety and stress (Li and Huang 2020; Wang and Wang 2022). Scholars have pointed out that AI technology and products may replace some jobs (Bernazzani 2017). Consequently, we hypothesise the following.

> H7. Job replacement positively relates to the threat appraisal by users of ChatGPT.

3.2. Cognitive appraisal and coping behaviour

When presented with opportunities for growth and enrichment, consumers tend to perceive stress as a challenge, but if stress impacts their well-being, then consumers may view it as a threat (Lazarus and Folkman 1984). Specifically, challenge appraisal refers to the perception that interacting with technology presents a challenging situation for an individual, but can be managed through appropriate coping efforts, thereby generating positive emotions. On the other hand, threat appraisal signifies the anticipation that one's well-being or performance may be jeopardised due to encountering technological challenges, thereby generating negative emotions (Sharma and Gupta 2023).

This study defines challenge appraisal as the degree to which users appraise or evaluate ChatGPT use as an opportunity to enhance their work efficiency. However, threat appraisal is defined as the degree to which users evaluate ChatGPT as a potential threat to their concerns and job replacement. Many scholars agree that challenge and threat appraisals both positively influence a person's problem-focused and emotion-focused coping strategies (Lazarus and Folkman 1984; Marakhimov and Joo 2017; Sharma and Gupta 2023). Thus, we have the following hypotheses.

> H8a. The challenge appraisal by users of ChatGPT positively relates to their problem-focused coping.

> H8b. The challenge appraisal by users of ChatGPT positively relates to their emotion-focused coping.

> H9a. The threat appraisal by users of ChatGPT positively relates to their problem-focused coping.

> H9b. The threat appraisal by users of ChatGPT positively relates to their emotion-focused coping.

3.3. Relationship between coping process and behaviour

Scholars have tried to systematically understand and predict the intention to use ChatGPT by employing the TAM (Tiwari et al. 2023). Few studies have considered how users cope with the psychological stress factors caused by ChatGPT use, but scholars have realised the psychological impact of interacting with ChatGPT (Salah et al. 2023). Continued use intention after adoption is defined as the degree to which users learn and use the functions of ChatGPT to support their work and well-being. PFC and EFC positively relate to the postadoptive use of a technology (Marakhimov and Joo 2017). In addition, PFC positively impacts learning satisfaction, while EFC negatively impacts learning satisfaction (Sharma and Gupta 2023). Huang and Dootson (2022) found that when customers engage in PFC or EFC strategies, their actions exert a positive effect on customer aggression. We therefore postulate the following.

H10. Problem-focused coping positively relates to continued use intention after users' adoption of ChatGPT.

H11. Emotion-focused coping negatively relates to continued use intention after users' adoption of ChatGPT.

3.4. Moderating effects of mindfulness

Mindfulness can help individuals cope with stress and select adaptive coping strategies by regulating their responses to stressful life events (Elhai et al. 2018; Grover et al. 2017). For example, when using direct problem-focused coping with stressful situations, mindfulness can enhance individuals' ability to cope with stressful events and help them change the relationship between negative thoughts by focusing on current experiences (Pflügner, Maier, and Weitzel 2021; Pirkkalainen et al. 2019). In addition, mindfulness individuals are more likely to choose coping strategies when facing a stressful situation (Tuan 2022). Mindfulness can cause individuals to adopt emotion-focused coping strategies to avoid or ignore stress (Weinstein, Brown, and Ryan 2009). Mindfulness effectively reduces anxiety, enhances positive emotions, and improves attention and cognitive abilities (Azpíroz-Dorronsoro et al. 2023; Wang, Berthon, and Bechwati 2021).

Several studies have confirmed that moderating effect of mindfulness is reduced stress or increased well-being (My-Quyen, Hau, and Thuy 2020; Victor-son et al. 2020). Furthermore, mindfulness can act as a moderating mechanism (Zha et al. 2015). For example, Pflügner, Maier, and Weitzel (2021) confirmed that mindfulness moderates the effect of perceived techno-stressors on job burnout. Mindfulness mediates the relations between both depression and anxiety sensitivity with problematic smartphone use severity (Elhai et al. 2018). Martinez et al. (2023) showed that mindfulness moderates the relationship between attributes of benevolence and post-purchase intention. This present study focuses on mindfulness as a moderator of coping strategies. We expect users' mindfulness to moderate the effects of PFC, EFC, and continued use intention after adoption and hypothesise the following.

H12a. Users' mindfulness positively moderates the relationship between problem-focused coping and continued use intention after adoption.

H12b. Users' mindfulness negatively moderates the relationship between emotion-focused coping and continued use intention after adoption.

Based on the prior discussion, the research model proposed appears in Figure 1.

4. Methodology

4.1. Sampling and data collection

This study administered a structured online questionnaire through Amazon's Mechanical Turk (MTurk) platform. MTurk is a widely used platform among scholars due to its high-quality responses and the naivety anonymity of its respondents (Niu and Mvondo 2024). The subjects of this study were people living in the U.S. To qualify for the study, participants should meet the two questions were used: 'Do you have experience using generative AI tools?' and 'Are you one of the following occupations that may be replaced by AI?' These questions were used to identify individuals who had not used generative AI tools and were not affected by AI, and these individuals were not questioned further. Therefore, 20.9% (73 surveys) of the respondents are excluded from this study. The remaining respondents were asked to provide one of their most frequently used GAI tools, since they were likely to be familiar with them. In total, 277 questionnaires were used for the analysis.

GAI users were recruited in January 2024 to fill out the survey. A total of 277 valid responses were used for data analysis and comprised 169 are male respondents (61.0%) and 108 are female respondents (39.0%). Respondents aged 25–34 account for 62.1% of ChatGPT users. The distribution of these respondents by age and gender is very similar to the use of ChatGPT worldwide in 2023 statistics (Thormundsson 2024). Most participants have a bachelor's degree (72.2%), followed by a master's degree (21.7%). Most occupations are in the technology industry (40.8%). About 51.3% of the respondents said they use GAI tools at least once four to five days a week, and 27.1% use them at least once a day. Table 1 presents the demographic characteristics of the respondents. In addition, we conducted a non-response bias test (Armstrong and Overton 1977), and the chi-square test results showed no significant difference ($p > 0.05$).

4.2. Questionnaire design and measures

The items of the questionnaire were derived from related studies, and we adapted and designed the question items to fit the context of this study. The measurement instrument consisted of 64 items and measured 13 research constructs. GAI literacy was adopted and modified from Giudice da Silva Cezar and Maçada (2021) and was measured by using five items. Coolness was adopted from Niu and Mvondo (2024) and was measured using six items. Post-human ability was measured with two items modified from the topical literature (Gambino and Sundar 2019). Privacy concern (Marakhimov and Joo 2017) was assessed by four items, and ethical concern

Table 1. Demographics.

Demographics		Full sample (n = 277)	
		Number	%
Gender	Male	169	61.0
	Female	108	39.0
Age (years)	⩽19	0	0.0
	20–24	24	8.7
	25–29	75	27.1
	30–34	97	35.0
	35–39	58	20.9
	⩾ 40	23	8.3
Education	High school degree	13	4.7
	Bachelor's degree	200	72.2
	Master's degree	60	21.7
	PhD degree	4	1.4
Occupation	Technical industry (program designer, computer engineer, software engineer, data analyst)	113	40.8
	Media industry (advertising, content creation, content writing, news)	30	10.8
	Legal industry (lawyer assistant, legal assistant)	15	5.4
	Market research analyst	35	12.6
	Teacher	12	4.3
	Financial industry (financial analyst, personal financial advisor)	25	9.0
	E-commerce practitioner	10	3.6
	Graphic designer	11	4.0
	Accountant	17	6.1
	Customer service centre	9	3.2
Frequency	Every day	75	27.1
	4–5 days per week	142	51.3
	2–3 days per week	52	18.8
	1 day per week	8	2.9

was measured by employing five items from Niu and Mvondo (2024). Security risk was gauged by using four items from Weeger, Wang, and Gewald (2015). The three items for job replacement were adopted from Wang and Wang (2022) and Li and Huang (2020). Challenge appraisal and threat appraisal (Marakhimov and Joo 2017) were assessed by eight items. The variables of problem-focused coping and emotion-focused coping were adopted from Marakhimov and Joo (2017) and assessed by eight items. The Mindful Attention Awareness Scale (Brown and Ryan 2003) was assessed by 15 items. Finally, four items on continued use intention after adoption were adopted from Gupta et al. (2020). The demographic information consists of gender, age, education, and occupation. All measurement items were identified from previous studies, with minor modifications to fit the context of GAI. Each item was assessed using a seven-point Likert scale, with scores ranging from 1 (not agree at all) to 7 (absolutely agree). The measures and respective items are presented in Appendix A.

5. Results

IBM SPSS 26.0 was used to assess non-response bias, common method variance and demographic data. In this study, we consider the non-normal of the collected data and complexity of hypothesised model. We used partial least square structural equation modelling to assess the measurement and structural model with SmartPLS 4.2 (Hair et al. 2017, 2021).

5.1. Measurement model assessment

Table 2 shows the results of the analysis. We delete six items whose factor loadings are less than 0.7. Other factor loadings are over the cut-off value of 0.70 (Hair et al. 2019), and all constructs have variance inflation factor (VIF) values less than 4, suggesting acceptable reliability (Hair et al. 2017). Cronbach's alphas range from 0.704 to 0.961 and exceed the recommended threshold of 0.70 (Nunnally and Bernstein 1994). Composite reliability (CR) ranges between 0.841 and 0.965, and average variance extracted (AVE) ranges between 0.572 and 0.742, thus exceeding the recommended threshold of CR greater than 0.70 and AVE greater than 0.50 (Hair et al. 2017). The measurement model thus has high reliability and convergent validity. Table 3 shows results discriminant validity of the latent variables is tested using the Fornell and Larcker (1981) criterion. The square roots of the AVE values are all larger than the correlations. All values of heterotrait-monotrait ratio (HTMT) for constructs were lower than 0.9 (HTMT between 0.244 and 0.893), which is the cut-off value (Henseler, Ringle, and Sarstedt 2015), thus supporting discriminant validity.

5.2. Common method variance

Given that both criterion and predictor variables were obtained from a single source (Podsakoff et al. 2003), the risk of common method variance (CMV) could be a concern in this study. We controlled for potential CMV by optimally designing the research questionnaire and placing questions related to the dependent variable before the predictor variables. We used second statistical methods to check for CMV. First, we adopted Harman's single factor test (Podsakoff et al. 2003). The total variance for a single factor was 35.95% (less than 50%), which met the cut-off criteria (Mackenzie and Podsakoff 2012). Second, we used a latent marker variable to control the influence of CMV in the research model (Chin et al. 2013; Liang et al. 2007; Rönkkö and Ylitalo 2011). The results demonstrated that the path significance of the original model did not change after controlling the influence of the marker variable. Thus, CMV is not an issue in this study.

Table 2. Reliability and validity analysis of the full sample.

Construct	Indicator	Factor loading	VIF	Cronbach's α	CR	AVE
GAI literacy (GAIL)	GAIL1*	(deleted)	–	0.829	0.886	0.661
	GAIL2	0.777	1.659			
	GAIL3	0.817	1.766			
	GAIL4	0.835	1.852			
	GAIL5	0.824	1.813			
Coolness (COOL)	COOL1*	(deleted)	–	0.862	0.901	0.646
	COOL2	0.854	2.348			
	COOL3	0.767	1.754			
	COOL4	0.817	1.949			
	COOL5	0.829	2.069			
	COOL6	0.748	1.665			
Post-human ability (PA)	PA1	0.841	1.310	0.704	0.852	0.742
	PA2	0.882	1.310			
Privacy concern (PC)	PC1	0.786	1.457	0.823	0.882	0.651
	PC2	0.856	2.093			
	PC3	0.799	1.845			
	PC4	0.785	1.809			
Ethical concern (EC)	EC1	0.706	1.499	0.845	0.889	0.616
	EC2	0.839	1.953			
	EC3	0.721	1.670			
	EC4	0.813	1.805			
	EC5	0.835	2.176			
Security risk (SR)	SR1	0.780	1.675	0.854	0.901	0.695
	SR2	0.865	2.109			
	SR3	0.848	2.179			
	SR4	0.840	2.099			
Job replacement (JR)	JR1	0.807	1.619	0.815	0.890	0.730
	JR2	0.886	1.943			
	JR3	0.867	1.965			
Challenge appraisal (CH)	CH1	0.723	1.458	0.824	0.883	0.655
	CH2	0.861	2.163			
	CH3	0.839	1.941			
	CH4	0.810	1.779			
Threat appraisal (TH)	TH1	0.770	1.719	0.877	0.915	0.730
	TH2	0.884	2.531			
	TH3	0.888	2.697			
	TH4	0.870	2.266			
Problem-focused coping (PFC)	PFC1	0.724	1.368	0.748	0.841	0.572
	PFC2	0.828	1.677			
	PFC3	0.807	1.630			
	PFC4	0.705	1.253			
Emotion-focused coping (EFC)	EFC1*	(deleted)	–	0.781	0.873	0.696
	EFC2	0.826	1.628			
	EFC3	0.852	1.769			
	EFC4	0.824	1.532			
Mindfulness (MIN)	MIN1	0.745	2.050	0.961	0.965	0.681
	MIN2	0.779	2.819			
	MIN3	0.849	3.225			
	MIN4	0.816	3.195			
	MIN5	0.788	3.114			
	MIN6	0.845	3.540			
	MIN7	0.846	3.177			
	MIN8	0.843	3.223			
	MIN9	0.854	3.483			
	MIN10	0.851	3.585			
	MIN11	0.836	3.217			
	MIN12	0.856	3.870			
	MIN13	0.814	2.753			
	MIN14*	(deleted)	–			
	MIN15*	(deleted)	–			
Continued use intention after adoption (CUIA)	CUIA1	0.735	1.445	0.787	0.862	0.610
	CUIA2	0.812	1.647			
	CUIA3	0.769	1.519			
	CUIA4	0.805	1.657			

Notes: GAI literacy (GAIL); Coolness (COOL); Post-human ability (PA); Privacy concern (PC); Ethical concern (EC); Security risk (SR); Job replacement (JR); Challenge appraisal (CH); Threat appraisal (TH); Problem-focused coping (PFC); Emotion-focused coping (EFC); Mindfulness (MIN); Continued use intention after adoption (CUIA). The symbol * represents that the factor loading is lower than 0.7, and the original item is deleted.

Table 3. Discriminant validity checks.

Construct	1	2	3	4	5	6	7	8	9	10	11	12	13
							Correlations and square roots of AVE						
GAIL	**0.813**												
COOL	0.778	**0.804**											
PA	0.614	0.612	**0.862**										
PFC	0.494	0.485	0.368	**0.807**									
EFC	0.613	0.609	0.459	0.808	**0.785**								
SR	0.459	0.427	0.374	0.682	0.700	**0.834**							
JR	0.419	0.372	0.280	0.594	0.562	0.592	**0.854**						
CH	0.639	0.740	0.588	0.398	0.449	0.268	0.270	**0.810**					
TH	0.276	0.291	0.199	0.624	0.523	0.697	0.559	0.213	**0.855**				
PF	0.656	0.713	0.564	0.420	0.485	0.311	0.282	0.754	0.218	**0.813**			
EF	0.687	0.756	0.558	0.452	0.505	0.338	0.312	0.760	0.257	0.729	**0.834**		
MIN	0.457	0.415	0.336	0.539	0.528	0.607	0.549	0.306	0.527	0.384	0.353	**0.826**	
CUIA	0.692	0.787	0.617	0.517	0.556	0.415	0.316	0.749	0.261	0.752	0.790	0.391	**0.781**

Note: Diagonal elements (in bold) are the square root of the constructs' AVEs.

5.3. Structural model assessment

The R-squared results show that the endogenous constructs – namely, challenge appraisal (0.580), threat appraisal (0.555), problem-focused coping (0.596), emotion-focused coping (0.588), and continued use intention after adoption (0.709) – have large effects, indicating that the regression model is acceptable. Figure 2 shows the path coefficients and t-values. Of the inhibitors, GAI literacy has no effect on challenge appraisal ($\beta = 0.091$, $t = 1.071$); thus, H1 is rejected. Coolness and post-human ability have a positive influence on challenge appraisal ($\beta = 0.550$, $t = 6.610$; $\beta = 0.196$, $t = 3.607$); hence, H2 and H3 are supported. Among the four dimensions of enablers, privacy concern ($\beta = 0.345$, $t = 3.409$), ethical concern ($\beta = 0.206$, $t = 2.023$), and security risk ($\beta = 0.505$, $t = 5.416$) have a positive influence on threat appraisal; hence, H4, H5, and H6 are supported. Job replacement ($\beta = 0.172$, $t = 1.556$) has no effect on threat appraisal; thus, H7 is rejected.

Challenge appraisal positively influences problem-focused coping ($\beta = 0.741$, $t = 22.091$) and emotion-focused coping ($\beta = 0.739$, $t = 19.278$); thus, H8a and H8b are supported. Threat appraisal positively influences problem-focused coping ($\beta = 0.117$, $t = 3.042$) and emotion-focused coping ($\beta = 0.100$, $t = 2.322$); thus, H9a and H9b are supported. Furthermore, problem-focused coping ($\beta = 0.367$, $t = 6.438$) and emotion-focused coping ($\beta = 0.447$, $t = 8.426$) positively influence continued use intention after adoption, thus supporting H10 and H11.

5.4. Moderation analysis

The structural model looks into the moderating effect of mindfulness on the proposed causal relationships among PFC, EFC, and CUIA. There is no significant moderation effect of users' mindfulness on the relationship between PFC and CUIA ($\beta = 0.090$, $t = 1.355$), and thus H12a is not supported. However, users' mindfulness ($\beta = -0.139$, $t = 2.253$; see Figure 3) has a negative moderating effect on the association between EFC and CUIA. Thus, H12b is supported.

5.5. Predictive relevance and effect sizes

We next calculate the effect sizes (f^2) for each path model. As a rule of thumb, values of 0.02, 0.15, and 0.35 can be interpreted as small, medium, and large effects (Cohen 2013; Hair et al. 2019). The test results are in Table 4. In addition, this study calculates cross-validated redundancy (Q^2) to assess the model's out-of-sample predictive power or predictive relevance. Q^2 values larger than zero for a particular endogenous construct indicate the path model's predictive relevance for that construct (Hair et al. 2019). The Q^2 values for CH and TH are 0.564 and 0.514, respectively, while the Q^2 values for PFC and EFC are 0.540 and 0.553, respectively. The Q^2 values for CUIA is 0.579. The demographic controls of gender and age do not significantly relate to the constructs (Table 5).

6. Conclusions and implications

6.1. Discussion

This study examines how users continue to use ChatGPT in the inhibitors and enablers of technostress through the coping theory and the coping model of user adaptation. Additionally, it investigates the impact of user mindfulness on the moderation effect between PFC, EFC, and sustained use. First, the results show that coolness and post-human capability concerns significantly affect users' challenge appraisal of ChatGPT. Coolness has the greatest impact on challenge appraisal.
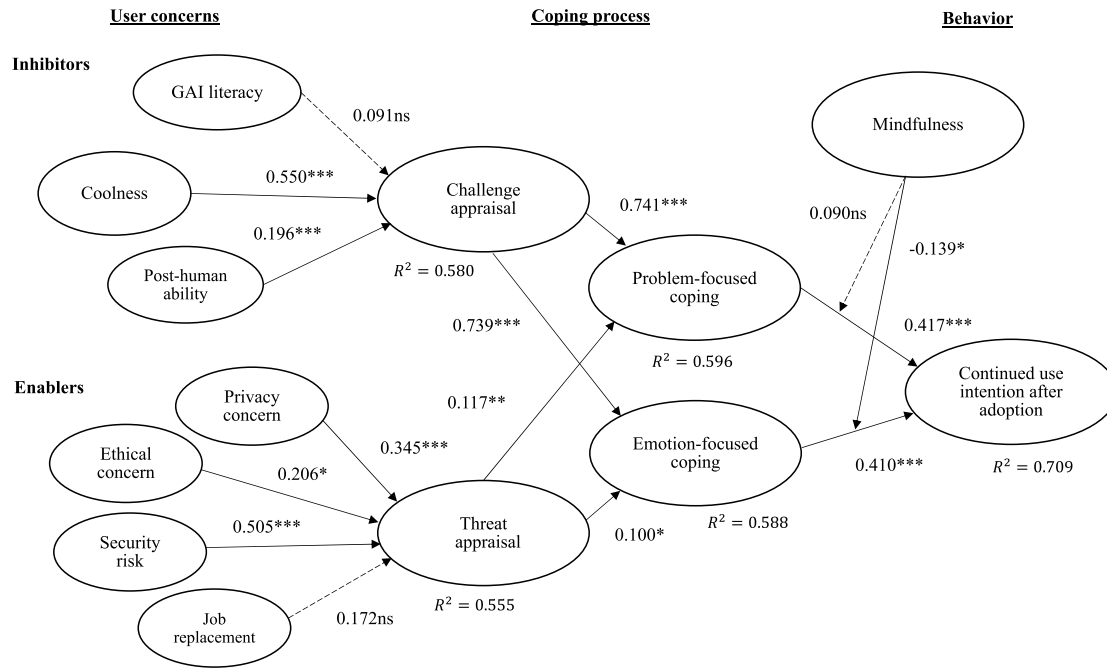
Figure 2. PLS results for the full sample of the research model.

This finding aligns with other research suggesting that coolness and post-human ability positively influence the use of ChatGPT (Niu and Mvondo 2024). However, GAI literacy does not significantly affect challenge appraisal, although technical literacy or data literacy can help users manage stressors (Sharma and Gupta 2023). GAI literacy should help users learn how to use ChatGPT so as to facilitate work and to increase their competence and confidence in using ChatGPT through training courses and learning mechanisms. Second, the results show that privacy, ethics, and security concerns significantly affect users' threat appraisal of ChatGPT.

However, security concerns (Carvalho and Ivanov 2024) have the greatest impact on threat appraisal. Surprisingly, job replacement does not significantly affect threat appraisal is a notable finding and is different from other research results (Lazarus and Folkman 1984). This possibly because AI has yet to replace human labour on a large scale, and few workers have been replaced by AI. Most people will therefore not experience being replaced by AI (Li and Huang 2020). In addition, people view ChatGPT as an empowering technology that can help workers become more efficient in completing tasks or even create entirely new jobs
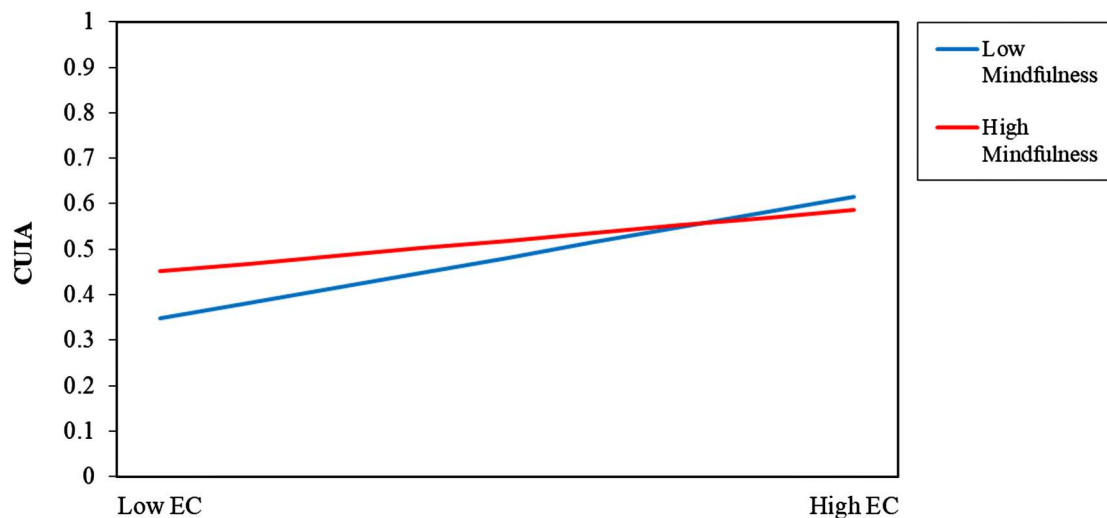

Figure 3. Moderating effect of mindfulness on the association between EFC and CUIA.

Table 4. Hypothesised model results.

Hypothesis	Standardized Coefficient	t-value	p-value	Result
H1: GAIL→CH	0.091	1.071	0.284	Not Supported
H2: COOL→CH	0.550	6.610***	0.000	Supported
H3: PA→CH	0.196	3.607***	0.000	Supported
H4: PC→TH	0.345	3.409***	0.001	Supported
H5: EC→TH	0.206	2.023*	0.043	Supported
H6: SR→TH	0.505	5.416***	0.000	Supported
H7: JR→TH	0.172	1.556	0.120	Not Supported
H8a: CH→PFC	0.741	22.091***	0.000	Supported
H8b: CH→EFC	0.739	19.278***	0.000	Supported
H9a: TH→PFC	0.117	3.042**	0.002	Supported
H9b: TH→EFC	0.100	2.322*	0.020	Supported
H10: PFC→CUIA	0.417	7.081***	0.000	Supported
H11: EFC→CUIA	0.410	7.536***	0.000	Supported
H12a: PFC × MIN→CUIA	0.090	1.355	0.176	Not Supported
H12b: EFC × MIN→CUIA	−0.139	2.253*	0.024	Supported

Notes: *$p < 0.05$; **$p < 0.01$; and ***$p < 0.001$. GAI literacy (GAIL); coolness (COOL); post-human ability (PA); privacy concern (PC); ethical concern (EC); security risk (SR); job replacement (JR); challenge appraisal (CH); threat appraisal (TH); problem-focused coping (PFC); emotion-focused coping (EFC); mindfulness (MIN); continued use intention after adoption (CUIA).

(Korzynski et al. 2023; Ritala, Ruokonen, and Ramaul 2023).

Third, regarding the coping process, challenge and threat appraisals have a significantly positive impact on users' PFC and EFC, which in turn have a significantly positive impact on CUIA. These results are in line with those of other research (Marakhimov and Joo 2017; Sharma and Gupta 2023), which maintains that challenge and threat appraisals are the primary antecedents of the overall coping behaviour. However, challenge appraisal has a more significant effect on PFC and EFC than on threat appraisal, yet a stronger effect on PFC than on EFC. Most importantly, this study finds that mindfulness exhibits a negative moderating influence on EFC and CUIA.

6.2. Theoretical implications

This study has several academic implications. First, most research on ChatGPT has primarily focused on proposing conceptual impacts on industries or

Table 5. Effect size.

Construct	Path	Cohen's effect sizes (f^2)	Q-square (Q^2)	R-square (R^2)
CH	CH→PFC	1.292 (large)	0.564	0.580
	CH→EFC	1.264 (large)		
TH	TH→PFC	0.032 (medium)	0.514	0.555
	TH→EFC	0.023 (medium)		
PFC	PFC→CUIA	0.213 (large)	0.540	0.596
EFC	EFC→CUIA	0.204 (large)	0.553	0.588
CUIA	–	–	0.579	0.709

organisational sectors, with only Niu and Mvondo (2024) identifying the determinants of users' loyalty and their ethical usage concerns related to ChatGPT. This paper is unique in that it empirically tests a research model drawing on the coping theory and the coping model of user adaptation. This study complements the extant research on ChatGPT by identifying and empirically examining the effects of users' enablers and inhibitors of ChatGPT technostress on their coping behaviour. The findings indicate that users' coping behaviour significantly predicts their continued use intention after ChatGPT adoption. Second, most studies on technostress and coping perspective leave out the inhibitors (Pirkkalainen et al. 2019; Zhao, Xia, and Huang 2020). Our study extends the existing knowledge by including both users' inhibitors and enablers in the research model to study their effect on users in a ChatGPT environment. Third, as for the coping process, the results indicate that users' PFC and EFC significantly predict their continued use intention after adoption. This also implies people use PFC strategies when they feel they have control over a situation. Conversely, EFC strategies are used when a situation is uncontrollable (Cheng, Lau, and Chan 2014; Chiavarino et al. 2012; Spekman, Konijn, and Hoorn 2018).

Finally, mindfulness is relevant to EFC (Elhai et al. 2018). Mindfulness improves people's ability to handle stressful conditions arising from technology. This results in improved well-being as well as reduced technostress and depression (Klussman et al. 2020; Kudesia, Pandey, and Reina 2022). In addition, Chang, Huang, and Lin (2016) confirmed that individuals with high mindfulness tend to use more PFC strategies in controllable stressful situations and rely more on EFC strategies in uncontrollable stressful situations. Similarly, Marsh, Perez Vallejos, and Spence (2024) found that higher levels of mindfulness better protect individuals against the negative effects associated with digital work. In the current study, mindfulness fails to moderate the relationship between PFC and continued use intention. A possible explanation for this may be that use of GAI tools and ChatGPT innovative technologies are constantly being developed (e.g. GPT-4 language models), they will have a positive transformative impact on the industry (Dwivedi et al. 2024). Obviously, managers and users are still understanding, learning and adapting to the changes and negative impacts of ChatGPT on their work.

6.3. Practical implications

Our findings provide some practical implications for organisations, managers, employees and software

developers. First, while many companies have used AI techniques to automate processes, the greater impact of the technology may be to complement and augment human capabilities rather than replace them (Wilson and Daugherty 2018). ChatGPT will not replace human work soon, but employees from all walks of life should understand this new technology and learn to use ChatGPT to improve their workplace productivity. Therefore, managers can promote the performance of ChatGPT tools through social media platforms and allow users to learn online through videos. Second, ChatGPT's coolness and post-human ability also influence users' challenge appraisals. This provides a strong incentive for OpenAI and other companies building software applications based on transformer technology to develop and launch new features regularly and to create excitement over them. Technology designers should also strive to explore ways in which technology can surpass human capabilities (Niu and Mvondo 2024). For example, provide prompt engineering and AI dialogue communication strategies. Third, the results of this study indicate that users are indeed concerned about the inaccuracy and ethical issues of data obtained by ChatGPT. These concerns lead them to view ChatGPT as a threat. Managers should demonstrate commitment to user data security, privacy concerns, and mitigating ethical concerns about using ChatGPT. Fourth, GAI tools such as ChatGPT are expected to expand significantly in the near future. Organisations should alleviate the pressure level of GAI technology through timely and effective technical support. The coping processes among users of these technologies can significantly affect the pace and success of ChatGPT. Users who employ PFC strategies can create a plan of action to learn ChatGPT and as a result feel more confident and competent in its use.

Finally, mindfulness is a personal resource that can help reduce anxiety and technology related stress (Marsh, Perez Vallejos, and Spence 2024; Pflügner, Maier, and Weitzel 2021). Mindfulness helps to focus and calm can exert more creativity, which is relatively difficult to be replaced by AI. Consequently, managers and professionals are encouraged to maintain an open mindset, cultivate curiosity, experiment with ChatGPT and GAI tools, and build their learning capacities. Organisations also should provide employees with mindfulness training to reduce perceived GAI stress (Vonderlin et al. 2020), such as daily meditation practice (Lomas et al. 2017), and promote their proactive problem-focused strategies to technological stress (Pflügner, Maier, and Weitzel 2021). In addition, training programmes can achieve balance through regulatory focus (promotion and prevention focus) (Tuan 2022).

With adequate facilitation focus, employees tend to proactively respond to the technological pressures of generative AI.

7. Limitations and future research

This research had several limitations. First, this study primarily focuses on users' enablers and inhibitors. Future research should consider a wider range of antecedents of the coping process, including the applications, benefits, and risks of ChatGPT. Additionally, this research considers how mindfulness affects coping processes. Future studies should explore other personality traits, such as empowerment and having regulatory focus. Second, we used the MTurk sampling pool, which might decrease the external validity of the findings. This study may have been prone to self-selection bias, because the survey sample only focused on the distribution of ten occupations that may be replaced by ChatGPT. Therefore, other occupational samples should be further investigated in the future.

Third, the current research survey focused on U.S. professionals in selected fields, collected data from a sample of 277 actual ChatGPT users. While this sample size is adequate for many research purposes, which may not reflect diverse global contexts. Future research should consider the differences between countries in understanding the outcome of their concerns. Users from different countries may have different views on handling their concerns in a ChatGPT environment. Finally, this study examines users' enablers and inhibitors, appraisal methods, and coping processes by collecting cross-sectional data. For future research, it may be helpful to perform a longitudinal approach to obtain a more vigorous explanation of the causal relationships.

Disclosure statement

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References

Ardenghi, S., S. Russo, M. Luciani, V. Salvarani, G. Rampoldi, M. Bani, Davide Ausili, Stefania Di Mauro, and Maria Grazia Strepparava. 2022. "The Association Between Dispositional Mindfulness and Empathy among Undergraduate Nursing Students: A Multicenter Cross-Sectional Study." *Current Psychology* 42:15132–15140. https://doi.org/10.1007/s12144-022-02829-1.

Armstrong, J. S., and T. S. Overton. 1977. "Estimating Nonresponse Bias in Mail Surveys." *Journal of Marketing Research* 14 (3): 396–402. https://doi.org/10.1177/002224377701400320

Azpíroz-Dorronsoro, C., B. Fernández-Muñiz, J. M. Montes-Peón, and C. J. Vázquez-Ordás. 2023. "Technostress and Work-Family Conflict in ICT-User Employees During the Covid-19 Pandemic: The Role of Social Support and Mindfulness." *Behaviour & Information Technology* 43:1531–1553. https://doi.org/10.1080/0144929X.2023.2220051.

Beaudry, A., and A. Pinsonneault. 2005. "Understanding User Responses to Information Technology: A Coping Model of User Adaptation." *MIS Quarterly* 29:493–524. https://doi.org/10.2307/25148693

Bernazzani, S. 2017. "10 Jobs Artificial Intelligence will Replace (and 10 that are Safe)." https://blog.hubspot.com/marketing/jobs-artificial-intelligence-will-replace.

Bogicevic, V., S. Q. Liu, S. Seo, J. Kandampully, and N. A. Rudd. 2021. "Virtual Reality is So Cool! How Technology Innovativeness Shapes Consumer Responses to Service Preview Modes." *International Journal of Hospitality Management* 93:102806. https://doi.org/10.1016/j.ijhm.2020.102806

Boldosova, V., and S. Luoto. 2019. "Storytelling, Business Analytics and Big Data Interpretation." *Management Research Review* 43 (2): 204–222. https://doi.org/10.1108/MRR-03-2019-0106

Brown, K. W., and R. M. Ryan. 2003. "The Benefits of Being Present: Mindfulness and its Role in Psychological Well-Being." *Journal of Personality and Social Psychology* 84 (4): 822. https://doi.org/10.1037/0022-3514.84.4.822

Cai, R., L. N. Cain, and H. Jeon. 2022. "Customers' Perceptions of Hotel AI-Enabled Voice Assistants: Does Brand Matter?" *International Journal of Contemporary Hospitality Management* 34 (8): 2807–2831. https://doi.org/10.1108/IJCHM-10-2021-1313

Carvalho, I., and S. Ivanov. 2024. "ChatGPT for Tourism: Applications, Benefits and Risks." *Tourism Review* 79 (2): 290–303. https://doi.org/10.1108/TR-02-2023-0088.

Carver, C. S., M. F. Scheier, and J. K. Weintraub. 1989. "Assessing Coping Strategies: A Theoretically Based Approach." *Journal of Personality and Social Psychology* 56 (2): 267–283. https://doi.org/10.1037/0022-3514.56.2.267

Catherine, A. T., S. K. Towfek, and A. Abdelhamid. 2023. "An Overview of the Evolution and Impact of Chatbots in Modern Healthcare Services." *Mesopotamian Journal of Artificial Intelligence in Healthcare* 2023:71–75. https://doi.org/10.58496/MJAIH/2023/014

Chang, J. H., C. L. Huang, and Y. C. Lin. 2016. "The Effect of Mindfulness on Coping and Emotion Regulation Flexibility." *Formosa Journal of Mental Health* 29 (4): 391–411.

Cheng, C., H. P. Lau, and M. P. Chan. 2014. "Coping Flexibility and Psychological Adjustment to Stressful Life Changes: A Meta-Analytic Review." *Psychological Bulletin* 140 (6): 1582–1607. https://doi.org/10.1037/a0037913

Cheng, X., H. Zhang, J. Cao, and Y. Ma. 2022. "The Effect of Mindfulness-Based Programs on Psychological Distress and Burnout in Kindergarten Teachers: A Pilot Study." *Early Childhood Education Journal* 50 (7): 1197–1207. https://doi.org/10.1007/s10643-021-01254-6

Chiavarino, C., D. Rabellino, R. B. Ardito, E. Cavallero, L. Palumbo, S. Bergerone, Fiorenzo Gaita, and Bruno G. Bara. 2012. "Emotional Coping is a Better Predictor of Cardiac Prognosis Than Depression and Anxiety." *Journal of Psychosomatic Research* 73 (6): 473–475. https://doi.org/10.1016/j.jpsychores.2012.10.002.

Chin, W. W., J. B. Thatcher, R. T. Wright, and D. Steel. 2013. "Controlling for Common Method Variance in PLS Analysis: The Measured Latent Marker Variable Approach." *Springer Proceedings in Mathematics & Statistics* 56:231–239.

Choi, Y. 2021. "A Study of Employee Acceptance of Artificial Intelligence Technology." *European Journal of Management and Business Economics* 30 (3): 318–330. https://doi.org/10.1108/EJMBE-06-2020-0158

Cohen, J. 2013. *Statistical Power Analysis for the Behavioral Sciences*. New York: Routledge.

Dilmegani, C. 2024. "Top 20 Use Cases of ChatGPT in Marketing for 2024." https://blog.hubspot.com/marketing/jobs-artificial-intelligence-will-replace.

Dwivedi, Y. K., N. Pandey, W. Currie, and A. Micu. 2024. "Leveraging ChatGPT and Other Generative Artificial Intelligence (AI)-Based Applications in the Hospitality and Tourism Industry: Practices, Challenges and Research Agenda." *International Journal of Contemporary Hospitality Management* 36 (1): 1–12. https://doi.org/10.1108/IJCHM-05-2023-0686

Eberth, J., and P. Sedlmeier. 2012. "The Effects of Mindfulness Meditation: A Meta-Analysis." *Mindfulness* 3 (3): 174–189. https://doi.org/10.1007/s12671-012-0101-x

Elhai, J. D., J. C. Levine, K. D. O'Brien, and C. Armour. 2018. "Distress Tolerance and Mindfulness Mediate Relations Between Depression and Anxiety Sensitivity with Problematic Smartphone Use." *Computers in Human Behavior* 84:477–484. https://doi.org/10.1016/j.chb.2018.03.026

Esmaeilzadeh, P. 2020. "Use of AI-Based Tools for Healthcare Purposes: A Survey Study from Consumers' Perspectives." *BMC Medical Informatics and Decision Making* 20 (1): 70. https://doi.org/10.1186/s12911-020-01191-1

Folkman, S., and R. S. Lazarus. 1988. "Coping as a Mediator of Emotion." *Journal of Personality and Social Psychology* 54 (3): 466–475. https://doi.org/10.1037/0022-3514.54.3.466

Fornell, C., and D. Larcker. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research* 18 (1): 39–50. https://doi.org/10.1177/002224378101800104

Gabel-Shemueli, R., S. Tzafrir, B. Rodriguez Perez, and D. Bahamonde Canepa. 2023. "Being Present: A Longitudinal Study on the Role of Mindfulness on Engagement and Burnout in Teachers." *Academia Revista Latinoamericana de Administración* 36 (3): 335–352. https://doi.org/10.1108/ARLA-01-2023-0011

Gambino, A., and S. S. Sundar. 2019. "Acceptance of Self-Driving Cars: Does Their Posthuman Ability Make Them More Eerie or More Desirable?" In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*, 1–6. New York, NY: Association for Computing Machinery.

George, A. S., A. S. H. George, and A. S. G. Martin. 2023. "A Review of ChatGPT AI's Impact on Several Business Sectors." *Partners Universal International Innovation Journal (PUIIJ)* 1 (1): 9–23.

Gilardi, F., M. Alizadeh, and M. Kubli. 2023. "ChatGPT Outperforms Crowd-Workers for Text-Annotation Tasks." *Working Paper.* https://doi.org/10.48550/arXiv.2303.15056.

Giudice da Silva Cezar, B., and A. C. G. Maçada. 2021. "Data Literacy and the Cognitive Challenges of a Data-Rich Business Environment: An Analysis of Perceived Data Overload, Technostress and Their Relationship to Individual Performance." *Aslib Journal of Information Management* 73 (5): 618–638. https://doi.org/10.1108/AJIM-01-2021-0015.

Grover, S. L., S. T. T. Teo, D. Pick, and M. Roche. 2017. "Mindfulness as a Personal Resource to Reduce Work Stress in the Job Demands-Resources Model: Mindfulness and Stress." *Stress and Health* 33 (4): 426–436. https://doi.org/10.1002/smi.2726

Guidetti, G., S. Viotti, R. Badagliacca, L. Colombo, and D. Converso. 2019. "Can Mindfulness Mitigate the Energy-Depleting Process and Increase Job Resources to Prevent Burnout? A Study on the Mindfulness Trait in the School Context." *PLoS One* 14 (4): e0214935. https://doi.org/10.1371/journal.pone.0214935

Gupta, S., V. A. Drave, Y. K. Dwivedi, A. M. Baabdullah, and E. Ismagilova. 2020. "Achieving Superior Organizational Performance via Big Data Predictive Analytics: A Dynamic Capability View." *Industrial Marketing Management* 90:581–592. https://doi.org/10.1016/j.indmarman.2019.11.009

Hair, J. F., G. T. M. Hult, C. M. R. Ringle, M. Sarstedt, N. P. Danks, and S. Ray. 2021. *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R.* Springer. https://doi.org/10.1007/978-3-030-80519-7.

Hair, J. F., J. J. Risher, M. Sarstedt, and C. M. Ringle. 2019. "When to Use and How to Report the Results of PLS-SEM." *European Business Review* 31 (1): 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hair, J. F., M. Sarstedt, C. M. Ringle, and S. P. Gudergan. 2017. *Advanced Issues in Partial Least Squares Structural Equation Modeling.* Thousand Oaks, CA: Sage Publications.

Hayles, N. K. 1999. *How we Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics.* Chicago: The University of Chicago Press.

Henseler, J., C. M. Ringle, and M. Sarstedt. 2015. "A new Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling." *Journal of the Academy of Marketing Science* 43 (1): 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hsieh, P. J. 2023. "Determinants of Physicians' Intention to Use AI-Assisted Diagnosis: An Integrated Readiness Perspective." *Computers in Human Behavior* 147:107868. https://doi.org/10.1016/j.chb.2023.107868

Huang, Y. S., and P. Dootson. 2022. "Chatbots and Service Failure: When Does it Lead to Customer Aggression." *Journal of Retailing and Consumer Services* 68:103044. https://doi.org/10.1016/j.jretconser.2022.103044

Ivanov, S., and M. Soliman. 2023. "Game of Algorithms: ChatGPT Implications for the Future of Tourism Education and Research." *Journal of Tourism Futures* 9 (2): 214–221. https://doi.org/10.1108/JTF-02-2023-0038

Jang, C. 2023. "Coping with Vulnerability: The Effect of Trust in AI and Privacy-Protective Behaviour on the Use of AI-Based Services." *Behaviour & Information Technology* 43 (11): 2388–2400. https://doi.org/10.1080/0144929X.2023.2246590

Kabat-Zinn, J. 1982. "An Outpatient Program in Behavioral Medicine for Chronic Pain Patients Based on the Practice of Mindfulness Meditation: Theoretical Considerations and Preliminary Results." *General Hospital Psychiatry* 4 (1): 33–47. https://doi.org/10.1016/0163-8343(82)90026-3

Kabat-Zinn, J. 1994. *Wherever You Go, There You are: Mindfulness Meditation in Everyday Life.* New York: Hyperion.

Kamila, M. K., and S. S. Jasrotia. 2023. "Ethical Issues in the Development of Artificial Intelligence: Recognizing the Risks." *International Journal of Ethics and Systems* 41:45–63. https://doi.org/10.1108/IJOES-05-2023-0107.

Karanjai, R. 2022. "Targeted Phishing Campaigns Using Large Scale Language Models." arXiv. Accessed February 3, 2023. https://doi.org/10.48550/arxiv.2301.00665

Kim, J., J. H. Kim, C. Kim, and J. Park. 2023. "Decisions with ChatGPT: Reexamining Choice Overload in ChatGPT Recommendations." *Journal of Retailing and Consumer Services* 75:103494. https://doi.org/10.1016/j.jretconser.2023.103494

Klussman, K., N. Curtin, J. Langer, and A. L. Nichols. 2020. "Examining the Effect of Mindfulness on Well-Being: Self-Connection as a Mediator." *Journal of Pacific Rim Psychology* 14:e5. https://doi.org/10.1017/prp.2019.29

Kong, H., Y. Yuan, Y. Baruch, N. Bu, X. Jiang, and K. Wang. 2021. "Influences of Artificial Intelligence (AI) Awareness on Career Competency and Job Burnout." *International Journal of Contemporary Hospitality Management* 33 (2): 717–734. https://doi.org/10.1108/IJCHM-07-2020-0789.

Korzynski, P., G. Mazurek, A. Altmann, J. Ejdy, R. Kazlauskaite, J. Paliszkiewicz, K. Wach, and E. Ziemba. 2023. "Generative Artificial Intelligence as a New Context for Management Theories: Analysis of ChatGPT." *Central European Management Journal* 31 (1): 3–13. https://doi.org/10.1108/CEMJ-02-2023-0091

Kudesia, R. S., A. Pandey, and C. S. Reina. 2022. "Doing More with Less: Interactive Effects of Cognitive Resources and Mindfulness Training in Coping with Mental Fatigue from Multitasking." *Journal of Management* 48 (2): 410–439. https://doi.org/10.1177/0149206320964570.

Kumar, A., B. Krishnamoorthy, and S. S. Bhattacharyya. 2023. "Machine Learning and Artificial Intelligence-Induced Technostress in Organizations: A Study on Automation-Augmentation Paradox with Socio-Technical Systems as Coping Mechanisms." *International Journal of Organizational Analysis* Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJOA-01-2023-3581.

Langer, E. J., and M. Moldoveanu. 2000. "The Construct of Mindfulness." *Journal of Social Issues* 56 (1): 1–9. https://doi.org/10.1111/0022-4537.00148

Lazarus, R. S., and S. Folkman. 1984. *Stress, Appraisal, and Coping.* Springer Publishing Company.

Li, J., Y. Gong, J. Xie, and Y. Tan. 2022. "Relationship Between Users' Perceptions of Coolness and Intention to use Digital Products: A User-Centered Approach." *Information Technology & People* 35 (4): 1346–1363. https://doi.org/10.1108/ITP-03-2020-0129

Li, J., and J. S. Huang. 2020. "Dimensions of Artificial Intelligence Anxiety Based on the Integrated Fear

Acquisition Theory." *Technology in Society* 63:101410. https://doi.org/10.1016/j.techsoc.2020.101410

Liang, H., N. Saraf, Q. Hu, and Y. Xue. 2007. "Assimilation of Enterprise Systems: The Effect of Institutional Pressures and the Mediating Role of top Management." *MIS Quarterly* 31 (1): 59–87. https://doi.org/10.2307/25148781

Lomas, T., J. C. Medina, I. Ivtzan, S. Rupprecht, R. Hart, and F. J. Eiroa-Orosa. 2017. "The Impact of Mindfulness on Well-Being and Performance in the Workplace: An Inclusive Systematic Review of the Empirical Literature." *European Journal of Work and Organizational Psychology* 26 (4): 492–513. https://doi.org/10.1080/1359432X.2017.1308924

Lu, Q., B. Qiu, L. Ding, L. Xie, and D. Tao. 2023. "Error Analysis Prompting Enables Human-Like Translation Evaluation in Large Language Models: A Case Study on ChatGPT." Preprints 2023, 2023030255. https://doi.org/10.20944/preprints202303.0255.v1.

Lucia-Palacios, L., and R. Pérez-López. 2023. "How Can Autonomy Improve Consumer Experience When Interacting with Smart Products?" *Journal of Research in Interactive Marketing* 17 (1): 19–37. https://doi.org/10.1108/JRIM-02-2021-0031

Mackenzie, S. B., and P. M. Podsakoff. 2012. "Common Method Bias in Marketing: Causes, Mechanisms, and Procedural Remedies." *Journal of Retailing* 88 (4): 542–555. https://doi.org/10.1016/j.jretai.2012.08.001

Marakhimov, A., and J. Joo. 2017. "Consumer Adaptation and Infusion of Wearable Devices for Healthcare." *Computers in Human Behavior* 76:135–148. https://doi.org/10.1016/j.chb.2017.07.016

Marsh, E., E. Perez Vallejos, and A. Spence. 2024. "Mindfully and Confidently Digital: A Mixed Methods Study on Personal Resources to Mitigate the Dark Side of Digital Working." *PLoS One* 19 (2): e0295631. https://doi.org/10.1371/journal.pone.0295631

Martinez, L. M., N. Pacheco, F. R. Ramos, and M. Bicho. 2023. "Would You Try it Again? Dual Effects of Customer Mindfulness on Service Recovery." *Journal of Retailing and Consumer Services* 74:103438. https://doi.org/10.1016/j.jretconser.2023.103438

Martín-Hernández, P., J. Ramos, A. Zornoza, E. M. Lira, and J. M. Peiró. 2020. "Mindfulness and Job Control as Moderators of the Relationship Between Demands and Innovative Work Behaviours." *Revista de Psicología del Trabajo y de las Organizaciones* 36 (2): 95–101. https://doi.org/10.5093/jwop2020a9

McGowan, L. 2023. "OpenAI Criticised for Lack of Transparency Around GPT-4." Accessed July 16, 2023. https://www.siliconrepublic.com/machines/openai-gpt4-transparency-ai-concerns-strip e-chatgpt.

Mvondo, G. F. N., B. Niu, and S. Eivazinezhad. 2023. "Generative Conversational AI and Academic Integrity: A Mixed Method Investigation to Understand the Ethical Use of LLM Chatbots in Higher Education." *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4548263

My-Quyen, M. T., L. N. Hau, and P. N. Thuy. 2020. "Mindful Co-Creation of Transformative Service for Better Well-Being." *Service Business* 14 (3): 413–437. https://doi.org/10.1007/s11628-020-00422-9

Nan, D., H. Lee, Y. Kim, and J. H. Kim. 2022a. "My Video Game Console is So Cool! A Coolness Theory-Based Model for Intention to Use Video Game Consoles." *Technological Forecasting and Social Change* 176:12145.

Nan, D., E. Shin, G. A. Barnett, S. Cheah, and J. H. Kim. 2022b. "Will Coolness Factors Predict User Satisfaction and Loyalty? Evidence from an Artificial Neural Network–Structural Equation Model Approach." *Information Processing & Management* 59 (6): 103108. https://doi.org/10.1016/j.ipm.2022.103108

Nath, R., and R. Manna. 2023. "From Posthumanism to Ethics of Artificial Intelligence." *AI & SOCIETY* 38 (1): 185–196. https://doi.org/10.1007/s00146-021-01274-1

Niu, B., and G. F. N. Mvondo. 2024. "I Am ChatGPT, the Ultimate AI Chatbot! Investigating the Determinants of Users' Loyalty and Ethical Usage Concerns of ChatGPT." *Journal of Retailing and Consumer Services* 76:103562. https://doi.org/10.1016/j.jretconser.2023.103562

Nunnally, J. C., and I. H. Bernstein. 1994. "The Assessment of Reliability." *Psychometric Theory* 3:248–292.

Oakland, S., and A. Ostell. 1996. "Measuring Coping: A Review and Critique." *Human Relations* 49 (2): 133–155. https://doi.org/10.1177/001872679604900201

OpenAI. 2023. "ChatGPT: Optimizing Language Models for Dialogue." Accessed October 10, 2023. https://openai.com/blog/chatgpt/.

Paul, J., A. Ueno, and C. Dennis. 2023. "ChatGPT and Consumers: Benefits, Pitfalls and Future Research Agenda." *International Journal of Consumer Studies* 47 (4): 1213–1225. https://doi.org/10.1111/ijcs.12928

Pflügner, K., C. Maier, and T. Weitzel. 2021. "The Direct and Indirect Influence of Mindfulness on Techno-Stressors and Job Burnout: A Quantitative Study of White-Collar Workers." *Computers in Human Behavior* 115:106566. https://doi.org/10.1016/j.chb.2020.106566

Pham, H. C., C. D. Duong, and G. K. H. Nguyen. 2024. "What Drives Tourists' Continuance Intention to Use ChatGPT for Travel Services? A Stimulus-Organism-Response Perspective." *Journal of Retailing and Consumer Services* 78:103758. https://doi.org/10.1016/j.jretconser.2024.103758

Pirkkalainen, H., M. Salo, M. Tarafdar, and M. Makkonen. 2019. "Deliberate or Instinctive? Proactive and Reactive Coping for Technostress." *Journal of Management Information Systems* 36 (4): 1179–1212. https://doi.org/10.1080/07421222.2019.1661092

Podsakoff, P. M., S. B. MacKenzie, J. Y. Lee, and N. P. Podsakoff. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies." *Journal of Applied Psychology* 88 (5): 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Polyportis, A., and N. Pahos. 2024. "Understanding Students' Adoption of the ChatGPT Chatbot in Higher Education: The Role of Anthropomorphism, Trust, Design Novelty and Institutional Policy." *Behaviour & Information Technology* Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1080/0144929X.2024.2317364

Ren, Z., Y. Zhan, B. Yu, L. Ding, and D. Tao. 2023. "Healthcare Copilot: Eliciting the Power of General LLMs for Medical Consultation." *Computation and Language (cs.CL)*, https://doi.org/10.48550/arXiv.2402.13408.

Ritala, P., M. Ruokonen, and L. Ramaul. 2023. "Transforming Boundaries: How Does ChatGPT Change Knowledge

Work?" *Journal of Business Strategy* Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JBS-05-2023-0094

Rönkkö, M., and J. Ylitalo. 2011. "PLS Marker Variable Approach to Diagnosing and Controlling for Method Variance." *ICIS 2011 Proceedings* 8: 1–16.

Ryan, M., and B. C. Stahl. 2021. "Artificial Intelligence Ethics Guidelines for Developers and Users: Clarifying Their Content and Normative Implications." *Journal of Information, Communication and Ethics in Society* 19 (1): 61–86. https://doi.org/10.1108/JICES-12-2019-0138

Salah, M., H. Alhalbusi, M. M. Ismail, and F. Abdelfattah. 2023. "Chatting with ChatGPT: Decoding the Mind of Chatbot Users and Unveiling the Intricate Connections Between User Perception, Trust and Stereotype Perception on Self-Esteem and Psychological Well-Being." *Current Psychology* 20:1–26.

Shapiro, S. L., L. E. Carlson, J. A. Astin, and B. Freedman. 2006. "Mechanisms of Mindfulness." *Journal of Clinical Psychology* 62 (3): 373–386. https://doi.org/10.1002/jclp.20237

Sharma, S., and B. Gupta. 2023. "Investigating the Role of Technostress, Cognitive Appraisal and Coping Strategies on Students' Learning Performance in Higher Education: A Multidimensional Transactional Theory of Stress Approach." *Information Technology & People* 36 (2): 626–660. https://doi.org/10.1108/ITP-06-2021-0505

Sieja, M., and K. Wach. 2019. "The Use of Evolutionary Algorithms for Optimization in the Modern Entrepreneurial Economy: Interdisciplinary Perspective." *Entrepreneurial Business and Economics Review* 7 (4): 117–130. https://doi.org/10.15678/EBER.2019.070407

Spekman, M. L. C., E. A. Konijn, and J. F. Hoorn. 2018. "Perceptions of Healthcare Robots as a Function of Emotion-Based Coping: The Importance of Coping Appraisals and Coping Strategies." *Computers in Human Behavior* 85:308–318. https://doi.org/10.1016/j.chb.2018.03.043

Srivastava, R. V., and T. Tang. 2018. "Coping Intelligence Theory: Coping Strategies, Satisfaction, and Sales Commission." *Journal of Business & Industrial Marketing* 33 (5): 610–624. https://doi.org/10.1108/JBIM-03-2017-0072

Stocchi, L., N. Michaelidou, N. Pourazad, and M. Micevski. 2018. "The Rules of Engagement: How to Motivate Consumers to Engage with Branded Mobile Apps." *Journal of Marketing Management* 34 (13-14): 1196–1226. https://doi.org/10.1080/0267257X.2018.1544167

Stokel-Walker, C., and R. Van Noorden. 2023. "What ChatGPT and Generative AI Mean for Science." *Nature* 614 (7947): 214–216. https://doi.org/10.1038/d41586-023-00340-6

Sun, H., Y. Fang, and H. M. Zou. 2016. "Choosing a Fit Technology: Understanding Mindfulness in Technology Adoption and Continuance." *Journal of the Association for Information Systems* 17 (6): 377–412. https://doi.org/10.17705/1jais.00431

Sundar, S. S., D. J. Tamul, and M. Wu. 2014. "Capturing 'Cool': Measures for Assessing Coolness of Technological Products." *International Journal of Human-Computer Studies* 72 (2): 169–180. https://doi.org/10.1016/j.ijhcs.2013.09.008

Tan, Y., Y. Gong, J. Xie, J. Li, and Y. Liu. 2022. "More Mindfulness, Less Conspicuous Consumption? Evidence from Middle-Aged Chinese Consumers." *Journal of Retailing and Consumer Services* 69:103096. https://doi.org/10.1016/j.jretconser.2022.103096

Tech informed. 2023. "70% of Employees Keen to Delegate Work to AI to Reduce Workload." https://techinformed.com/70-of-employees-keen-to-delegate-work-to-ai-to-reduce-workload/.

Thormundsson, B. 2024. "Use of ChatGPT Worldwide in 2023, by Age and Gender." https://www.statista.com/statistics/1384324/chat-gpt-demographic-usage/.

Tiwari, C. K., M. A. Bhat, S. T. Khan, R. Subramaniam, and M. A. I. Khan. 2023. "What Drives Students Toward ChatGPT? An Investigation of the Factors Influencing Adoption and Usage of ChatGPT." *Interactive Technology and Smart Education* Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ITSE-04-2023-0061

Tiwari, A. A., A. Chakraborty, and M. Maity. 2021. "Technology Product Coolness and its Implication for Brand Love." *Journal of Retailing and Consumer Services* 58:102258. https://doi.org/10.1016/j.jretconser.2020.102258

Tsaur, S. H., H. Y. Teng, T. C. Han, and J. H. Tu. 2023. "Can Perceived Coolness Enhance Memorable Customer Experience? The Role of Customer Engagement." *International Journal of Contemporary Hospitality Management* 35 (12): 4468–4485. https://doi.org/10.1108/IJCHM-08-2022-1031

Tuan, L. T. 2022. "Employee Mindfulness and Proactive Coping for Technostress in the COVID-19 Outbreak: The Roles of Regulatory Foci, Technostress, and job Insecurity." *Computers in Human Behavior* 129:107148. https://doi.org/10.1016/j.chb.2021.107148

Victorson, D. E., C. M. Sauer, L. Wolters, C. Maletich, K. Lukoff, and N. Sufrin. 2020. "Meta-Analysis of Technology-Enabled Mindfulness-Based Programs for Negative Affect and Mindful Awareness." *Mindfulness* 11 (8): 1884–1899. https://doi.org/10.1007/s12671-020-01373-y

Vonderlin, R., M. Biermann, M. Bohus, and L. Lyssenko. 2020. "Mindfulness-Based Programs in the Workplace: A Meta-Analysis of Randomized Controlled Trials." *Mindfulness* 11 (7): 1579–1598. https://doi.org/10.1007/s12671-020-01328-3

Wang, E. J., P. R. Berthon, and N. N. Bechwati. 2021. "The Effect of Mindfulness on Service Encounter Quality." *Journal of Services Marketing* 35 (4): 453–472. https://doi.org/10.1108/JSM-05-2020-0170

Wang, R., and S. S. Sundar. 2018. "How Does Parallax Scrolling Influence User Experience? A Test of Time (Theory of Interactive Media Effects)." *International Journal of Human–Computer Interaction* 34 (6): 533–543. https://doi.org/10.1080/10447318.2017.1373457

Wang, Y. C., and M. Uysal. 2023. "Artificial Intelligence-Assisted Mindfulness in Tourism, Hospitality, and Events." *International Journal of Contemporary Hospitality Management* 36 (4): 1262–1278. https://doi.org/10.1108/IJCHM-11-2022-1444.

Wang, Y. Y., and Y. S. Wang. 2022. "Development and Validation of an Artificial Intelligence Anxiety Scale: An Initial Application in Predicting Motivated Learning

Behavior." *Interactive Learning Environments* 30 (4): 619–634. https://doi.org/10.1080/10494820.2019.1674887

Warren, C., R. Batra, S. M. C. Loureiro, and R. P. Bagozzi. 2019. "Brand Coolness." *Journal of Marketing* 83 (5): 36–56. https://doi.org/10.1177/0022242919857698

Weeger, A., X. Wang, and H. Gewald. 2015. "IT Consumerization: BYOD- Program Acceptance and its Impact on Employer Attractiveness." *Journal of Computer Information Systems* 56 (1): 1–10. https://doi.org/10.1080/08874417.2015.11645795

Weinstein, N., K. W. Brown, and R. M. Ryan. 2009. "A Multi-Method Examination of the Effects of Mindfulness on Stress Attribution, Coping, and Emotional Well-Being." *Journal of Research in Personality* 43 (3): 374–385. https://doi.org/10.1016/j.jrp.2008.12.008

Wilson, H. J., and P. R. Daugherty. 2018. "Collaborative Intelligence: Humans and AI are Joining Forces." *Harvard Business Review* 96 (4): 114–123.

Wu, J. J., S. T. Chang, Y. P. Lin, and T. M. Y. Lin. 2023. "Examining How Coolness of Service Robots Influences Customers' Delight: Mediating Role of Perceived Values." *Journal of Hospitality and Tourism Insights* Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JHTI-02-2023-0069

Xin, T., M. Siponen, and S. Chen. 2022. "Understanding the Inward Emotion-Focused Coping Strategies of Individual Users in Response to Mobile Malware Threats."

Behaviour & Information Technology 41 (13): 2835–2859. https://doi.org/10.1080/0144929X.2021.1954242.

Zha, X., J. Zhang, Y. Yan, and D. Zha. 2015. "Sound Information Seeking in Web 2.0 Virtual Communities: The Moderating Effect of Mindfulness." *Behaviour & Information Technology* 34 (9): 920–935. https://doi.org/10.1080/0144929X.2015.1027876.

Zhang, J., and Z. M. Zhang. 2023. "Ethics and Governance of Trustworthy Medical Artificial Intelligence." *BMC Medical Informatics and Decision Making* 23:7. https://doi.org/10.1186/s12911-023-02103-9.

Zhao, X., Q. Xia, and W. Huang. 2020. "Impact of Technostress on Productivity from the Theoretical Perspective of Appraisal and Coping Processes." *Information & Management* 57 (8): 103265. https://doi.org/10.1016/j.im.2020.103265

Zhong, Q., L. Ding, J. Liu, B. Du, and D. Tao. 2023. "Can ChatGPT Understand Too? A Comparative Study on ChatGPT and Fine-Tuned BERT." *Computation and Language (cs.CL)*. https://doi.org/10.48550/arXiv.2302.10198.

Zinkula, J., and A. Mok. 2024. "ChatGPT May be Coming for Our Jobs. Here are the 10 Roles that AI is Most Likely to Replace." https://www.businessinsider.com/chatgpt-jobs-at-risk-replacement-artificial-intelligence-ai-labor-trends-2023-02

Appendix A

Measurement construct
GAI literacy
I am able to use ChatGPT to prepare the available data and make a decision.
I am able to use ChatGPT to analyse data and discover meaningful information.
I am able to use ChatGPT to synthesise meaningful information and apply it in decision-making.
I am able to use ChatGPT to evaluate the results of data analysis.
Overall, I think I am efficient at using ChatGPT to handle data.
Coolness
ChatGPT is cool.
When I first heard of ChatGPT, I remember thinking it would be cool to use it.
Using ChatGPT makes me look cool.
When I use ChatGPT, my response is often, 'That's cool!'
ChatGPT has some cool features.
ChatGPT is cooler than other chatbots.
Post-human ability
Technology in the role of ChatGPT gives me control.
Technology in the role of ChatGPT makes me feel empowered.
Privacy concern
I am concerned that personal information I disclose to ChatGPT could be misused.
I am concerned that ChatGPT could share my personal information with third parties without my consent.
I am concerned about providing my personal information to ChatGPT, because of what others might do with it.
I am concerned about providing my personal information to ChatGPT, because it could be used in a way I did not foresee.
Ethical concern
I think ChatGPT collects my personal information.
I recognise that disclosing personal information through ChatGPT is a risk.
ChatGPT uses collected information for research purposes.
I think that ChatGPT may disclose my information to third parties without consent.
ChatGPT denies users the right to choose if they wish their data to be collected.
Security risk
Using ChatGPT for work will increase my risk of losing task data.
Using ChatGPT for work will increase my risk of becoming a target for hackers.
Using ChatGPT for work will increase my risk of corrupting the corporate network with malware.
Using ChatGPT for work will increase my risk of violating company security policy.
Job replacement
I am worried that ChatGPT will replace my work in the future.

(Continued)

Continued.

Measurement construct

I feel anxious that ChatGPT is smarter than me.
I am worried that ChatGPT will replace many people's jobs.

Challenge appraisal
I believe ChatGPT can improve my access to my task.
I believe ChatGPT can improve my ability to manage my task.
I believe ChatGPT can improve the quality of my task.
I believe ChatGPT can improve my ability to stay on the path of task operating.

Threat appraisal
I fear ChatGPT can misguide me regarding my actual task content.
I fear ChatGPT can cause damage to my task in a way I did not foresee.
I fear ChatGPT can lead to making wrong decisions regarding my task.
I fear I might lose control over my task information if I use ChatGPT.

Problem-focused coping
I am ready to put some effort into doing something about ChatGPT.
I am ready to put effort into exploring new ways I can use ChatGPT.
I am ready to put effort into exploring different functions of ChatGPT that can be useful to me.
I am ready to put effort into exploring new ways of using ChatGPT that I did not have in mind prior to signing up.

Emotion-focused coping
I try to overlook the disadvantages of ChatGPT.
I try to focus on the benefits I get from ChatGPT.
I try to make the best of what ChatGPT offers.
I try to change my mind about ChatGPT to be positive and have fun.

Mindfulness
I could be experiencing an emotion and not be conscious of it until sometime later.
I break or spill things, because of carelessness, not paying attention, or thinking of something else.
I find it difficult to stay focused on what is happening in the present.
I tend to walk quickly to get where I am going without paying attention to what I experience along the way.
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
I forget a person's name almost as soon as I have been told it for the first time.
The process of doing things seems to be automatic, without much awareness or attention to what I am doing.
I rush through activities without being really attentive to them.
I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.
I do jobs or tasks automatically, without being aware of what I am doing.
I find myself listening to someone with one ear while doing something else at the same time.
When I arrive at a place, I wonder why I am there.
I find myself preoccupied with the future or the past.
I find myself doing things without paying attention.
I snack without being aware that I am eating.

Continued use intention after adoption
I plan to continue using ChatGPT.
I will continue to use ChatGPT as I do now.
I intend to continue using ChatGPT, and I feel ChatGPT is irreplaceable.
In the future, I plan to increase my interaction with ChatGPT.