



GenAI and me: the hidden work of building and maintaining an augmentative partnership

Nina Boulus-Rødje¹ · Jocelyn Cranefield² · Cathal Doyle² · Benedicte Fleron¹

Received: 14 December 2023 / Accepted: 3 May 2024
© The Author(s) 2024

Abstract

It has been argued that emergent AI systems should be viewed as working partners rather than tools. Building on this perspective, this study investigates the process through which academics develop a working partnership with generative AI chatbots using a relationship lens and collaborative autoethnographic methods. Based on a collaborative autoethnographic analysis of our experiences of working with AI, we identify five stages of relationship development in building a successful working partnership with generative AI: Playing Around, Infatuation, Committing, Frustration, and Enlightenment and Readjustment. In reporting each stage, we provide vignettes to illustrate the emotional and cognitive challenges and rewards involved, the developing skills, and the experienced anthropomorphic dimension of this emerging relationship. Drawing on prior theory, we identify and examine three types of work that are required in developing this working partnership: articulation work, relationship work, and identity work. We analyse how each type of work unfolds with the stages of relationship development and consider implications for research and practice.

Keywords Generative AI · Relationship work · Articulation work · Identity work · Autoethnography

1 Introduction

Artificial intelligence–based systems (AIS) can perform tasks that traditionally require human cognition, such as learning, interacting, and problem-solving [1]. They are expected to transform professions and industries due to their ability to automate and speed up tasks and thereby augment human performance [2–4]. A rapidly emerging type of AIS, generative AI text-based systems has recently generated a surge of uptake and intense interest from media, industry, and academics. These systems, such as ChatGPT, Google Gemini (formerly Bard), and Microsoft Bing AI (hereafter referred to as GenAI), are characterised by their ability to generate diverse novel content based on their significant capabilities in pattern recognition and processing of massive training data sets. Due to advancements in large language models (LLM) and natural language processing, GenAI

can also respond meaningfully to a wide range of prompts; engage with humans in sustained human-like conversations; and understand context, nuance, and humour [5].

In the context of academia, a profession with high knowledge demands, GenAI appears to offer great promise, while challenging traditional ways in which research and teaching are performed [6]. GenAI is already being used by scientists to brainstorm ideas, edit manuscripts, and write and/or debug computer code [7].

Due to the sophisticated nature of AIS and their interaction with humans—as exemplified by GenAI—it has been argued that AIS should be conceptualised not as IT tools used by humans but rather as partners of humans in performing complex work [8–10]. It follows that a tool-adoption perspective may be inadequate for understanding the process through which GenAI are incorporated into human work practice as augmentative partners. Also, GenAI undergoes frequent updates, and a tool adoption lens fails to account for the constantly evolving nature of such systems [11]. Further, a tool adoption lens would neither account for the sustained personalised interaction that is likely to be necessary for improving performance gains [12], nor for the possible role of emotion, attachment [13], and trust [12, 14] in humans' interaction with these systems. Therefore, in keeping with

✉ Cathal Doyle
cathal.doyle@vuw.ac.nz

¹ Department of People and Technology, Roskilde University, Trekroner, Denmark

² School of Information Management, Victoria University of Wellington, Wellington, New Zealand

the emergent view of AIS as partners, we set out to investigate the process of developing an effective working partnership between humans and GenAI using a relational lens. This paper investigates the question: *how do academics develop and maintain a functional augmentative working relationship with GenAI?* We used collaborative autoethnographic methods to examine the development of augmentative human-AI partnerships in the context of academia by the authors as we engaged with GenAI in our daily practice.

In the following sections, we review related work and then outline our method before reporting and discussing our findings: five stages of human-AI partnership development as experienced by the participating academics and three kinds of work that are necessary to build and maintain a partnership with GenAI: (1) articulation work, (2) relationship work, and (3) identity work. We then consider the study's implications for research and practice.

2 Related literature

2.1 The impacts of GenAI

Artificial intelligence (AI) has been providing benefits to humans for decades, from alleviating manual labour tasks, to aiding in data analysis, to making recommendations. But with the release of the large language model-based GenAI, ChatGPT, on 30th November 2022, there was an eruption of GenAI interest [15]. This was due to the widespread accessibility of GenAI to the public, enabling users to easily produce various forms of content in record time, such as text in diverse genres, images, and sounds [16–18], that they could apply to both their personal and professional lives [19]. This has resulted in a number of GenAI platforms being released, including Gemini and Bing AI. These are text-based GenAI that allow users to input prompts to begin interacting with the GenAI [20, 21]. It is in these interactions that people become active collaborators with GenAI by co-creating content, moving beyond the simple view of it as a tool [17].

This has triggered an increase in research trying to understand the impact of GenAI across multiple disciplines [22]. From a personal perspective, research suggests GenAI can impact daily life, as it is being used for a wide range of activities, such as generating cultural content and simplifying daily tasks [23, 24]. Indeed, we are witnessing a significant shift in how people interact with GenAI, as it is becoming an integral part of some people's lives [17]. From a professional perspective, GenAI will impact a wide range of industries, including business, education, healthcare, and content generation [19, 25], and early evidence suggests that it can improve productivity [24]. It can help businesses across functions including marketing and sales, operations, IT/Engineering, risk and legal, and R&D [26].

However, due to the capabilities of AI in performing and/or augmenting human work, there is evidence that working with AIS can affect people's role identity, the way in which workers conceptualise the norms, values, and interactions associated with their role [27, 28]. One professional role context being impacted by GenAIs is academia [29].

2.2 GenAI and academics

Today's fast-paced academic environment and the ever-increasing faculty expectations constitute not only an intensified pressure to 'publish or perish', but also to integrate innovative teaching and curriculum development, secure research funding, manage administrative responsibilities, etc. The current academic role necessitates being 'always on', while encompassing a broad spectrum of responsibilities from teaching and learning, to research, and administrative work. Amidst these escalating high-performance expectations, coupled with increasing competition and the omnipresent threat of failure [30], the role of an academic may lend itself to needing/wanting to work with GenAI as this offers 'potential relief for academics and a means to offset intensive demands and discover more of a work-based equilibrium' [30, p.1].

Research shows that academics use GenAI for teaching and learning purposes. For instance, teachers use GenAI to obtain help with writing presentation slides for classes and creating exams and coursework content [16, 31]. Such uses have resulted in teachers considering GenAI as digital secretaries or assistants [16]. Other research has examined the ways in which it can be used for personalised learning experiences and adaptive learning experiences, real-time feedback and assessment, automated essay grading, and overcoming language barriers [32, 33]. This is further evidenced from an administrative perspective, where tasks include creating, reading, and editing papers for different board positions held; and communicating with colleagues.

Academics also use GenAI for research tasks, including, setting up research projects; applying for grants, gathering, and analysing data; as well as writing research articles. Research has focused on how GenAI can impact academics' research practices, including editing research papers, writing and checking code, brainstorming ideas, and writing research grants [16, 34, 35]. A notable phenomenon encountered when using GenAI is that of AI hallucinations, which refers to situations '...where AI generates a convincing but completely made-up answer' [36] also known as fabrications and falsifications or confabulations [34, 35]. Such incorrect responses raise critical challenges for academics such as negatively impacting decisions they make and introducing potential ethical and legal problems [36].

2.3 GenAI and the challenge of anthropomorphism

There is a dichotomy in the fact that while GenAI can engage in human-like conversations and exhibit agency [8], it is generally frowned upon for researchers to anthropomorphise technology (e.g. [37]). This poses an interesting challenge when taking an autoethnographic approach. As academics discussing our experiences of building a working partnership with GenAI, we know very well that GenAI is not human, yet early in the project, we were intrigued to find ourselves shifting between the ‘correct’ view of GenAI as a tool and a more intuitive view or metaphor of it as an anthropomorphised ‘partner’, imbued with motives. It is therefore important to consider prior literature in this area.

AIS are often designed to have human-like features to please humans and a stream of research in social robotic and HCI is concerned with optimising these qualities to improve perceived interactional meaningfulness, trust, and connectedness [38, 39]. In relationship to human behaviour, anthropomorphism is ‘the tendency to imbue the behaviour of non-human agents with human-like characteristics’ [40, p.864]. This is considered an innate human characteristic that manifests in childhood and may apply to physical appearance, emotional and mental states, and motivations of non-human objects [41]. In relationship to AI, anthropomorphism relates to perceiving a mind, personality, and motivations in the AI [41]. Notably, when we anthropomorphise AI, even when we know that it does not possess a mind, our behaviours can be influenced by our anthropomorphic perceptions and social norms, as in the example of people thanking Alexa and Siri for their advice [41, 42]. In research, participants may be unwilling to acknowledge the extent to which they anthropomorphise. For instance, in a study of robot makers by Chun and Knight [38], they found that anthropomorphism was strongly evident in interviews describing participants’ experiences of the robots but was frequently disavowed. In this paper, we not only acknowledge our tendencies to anthropomorphise AI, but we also examine how these tendencies and perceptions influences our subjectivity and relationship with AI. We do so by drawing upon autoethnography, which emphasises the importance of acknowledging and accommodating ‘subjectivity, emotionality, and the researchers influence on research, rather than hiding from these matters or assuming they don’t exist’ [[43], p.274].

2.4 The case for a partnership formation lens

Research in individual-level Information Systems (IS) adoption has focused on cognitive factors, with much less attention given to the role of affective feelings [44, 45], as well as adaptation, learning, and reinvention behaviours when embarking on working with new systems [46]. Although a classic adoption lens has been successfully applied to many

technologies, we suggest that it is limiting when applied to GenAI, owing to several distinct characteristics. Unlike traditional technologies, the distinctiveness of GenAI lies in its ability to generate new content and adapt, automate complex tasks, provide personalisation, and demonstrate versatility across tasks and disciplines. Further, the outcomes of working with GenAI are strongly dependent on human skill acquisition in tailoring GenAI’s performance to work needs, notably through prompt engineering [47–49]. As we know from the field of User eXperience (UX), we cannot merely examine the usability of technologies without paying attention to the type of experience that is produced through these interactions [50]. Experience includes, among others, emotions and emotional attachments with technological devices.

As our research uses the lens of partnership formation, it is relevant to consider the role of emotions in relationship to IS acceptance and use. This area has been underexplored in the IS field due to a dominant concern of IS research with actors’ cognitive responses to technology [13]. Emotional attachment (EA) ‘an emotion-laden, target specific bond between a person and a specific object’ [[51], p.77]) is part of human relationships. Given the human tendency to anthropomorphise AI, EA may play a role in partnership development. For example, Mamun et al. [52] found that users’ emotional attachment to an intelligent personal assistant (IPA) significantly influenced continuance intention as well as emotional trust and interaction quality with the IPA, while Suh et al. [53] found that EA contributed to users’ intention to continue using avatars.

2.5 Theoretical lenses

As we explain in the method section, we did not embark on this study with an a-priori theoretical lens. However, during analysis, it became evident that building and maintaining a good working relationship with a GenAI involved ongoing work in response to challenges presented by the emerging human-AI partnership to our existing ways of working, values, and conceptions of the role of an academic. To conceptualise and articulate the types of work that is entailed in building and maintaining a working relationship with AI, we draw upon three theoretical concepts.

The first, *relationship work*, refers to engaging in behaviours that help sustain a relationship over time and may be both strategic and routine in nature [54, 55]. Relationship work is usually applied to human–human relationships and is therefore conceptualised as being reciprocal in nature, involving relationship maintenance work from both parties. In this study, we use this lens to examine the human perspective of the experienced relationship with GenAI.

The second concept, *articulation work* [56], refers to ‘all tasks involved in assembling, scheduling, monitoring and coordinating all the steps necessary to complete a production

task' [[57], p.166]. Articulation work focuses on managing cooperative work relationships and sheds light on the importance of taking into account the work that goes into activity coordination, which is often informal and is conceived as the work that is done to ensure the effectiveness of distributed collaboration in practice [58]. In our study, we use the concept to highlight the integral role that articulation work plays in managing the distributed nature of cooperative work with GenAI [59].

The third concept is *identity work* [27]. Identity work involves the practices and processes through which workers construct, negotiate, rethink, redefine, and/or adapt their professional, work, and/or organisational identities [60–62]. Professional role identities involve norms, expectations, and values of a role and how it interacts with others. These identities can come under threat when changes to work occur, and the resulting tensions lead people to re-examine their identity and make adjustments to it [60]. The introduction of AI may challenge role identity leading to identity work [27, 28]. For example, Strich et al. [28] found that loan consultants adapted their role identity in response to AI taking over decision-making work. Identity work is bound up with being ethical and finding ways to maintain integrity as skilled professionals [[63], p.35].

3 Methodology

This paper is inspired by the seminal work of Donald Schön [64] about how practitioners think and reflect. With his concept of reflection-on-action, Schön sheds light on reflections that professionals have after action has been carried out, in order to gain insights into what could be learned from the experience to question one's assumptions and critically consider alternative actions. This paper offers our own reflections as academics interacting and managing relationships with GenAIs. To do so, we draw upon collaborative autoethnography [65], which entails a critical and self-conscious stance to one's situated engagements. Autoethnography is motivated by a wish to acquire a deeper understanding of oneself and others through an investigation of the researcher's personal experiences, perceptions, and interpretations. Therefore, subjective and reflexive experiences are brought to the forefront of the analysis and made an intrinsic part of the research, where autoethnographers view themselves as involved in the construction of meanings in the worlds they investigate [65].

Such a reflexive investigation can help better understand the situated and emergent relations that are constructed between the academic and the GenAI, the way in which these are sustained, and the impact these have on their activities. The researcher is expected to be both situation and self-critical, which entails an ongoing work of critical reflection

on the perspective and assumptions used to create knowledge. Autoethnography has been criticised for its intense focus on subjective experiences risking self-absorption [65]. However, since we are interested in this paper in illuminating the types of relationships that are forged between humans and AI, and tracing the ways in which they are managed, autoethnography seems the most suitable methodological approach for such examination, with its focus on personal experiences, perceptions, assumptions, and interpretations. The four researchers used autoethnography to capture processes that cannot so easily be captured with other traditional ethnographic methods. This includes, for instance, exploring bodily sensations, emotional responses, meaning-making, and self-making [66–68]. Autoethnography has been applied to various domains, including studying how relations developed between users and digital technologies, for example, smart homes [66] or personal heritage soundscapes [67].

We are all senior academics focusing on information technology, each with more than a decade of conducting research, writing articles, and grant proposals, as well as teaching. We shared an interest in AI tools but did not have any experience in working with GenAI. Thus, our collaborative autoethnography began in August 2023, when we started talking generally about our own experiences of using various GenAI tools, and found that all four of us had independently begun working with GenAI. We quickly discovered that, although the period and degree of use varied among the authors, there were common patterns across our collective experiences. We therefore decided to formalise this interest into a study by examining GenAI and our use of them in our everyday work tasks, as well as tracking more systematically our interactions and writing reflective notes to capture our experiences, emotions, reactions, etc. Throughout a 4-month period, all four authors of this paper began producing empirical data by keeping track of our conversations with GenAI, tracing specific instances, capturing our reflections, and paying specific attention to our relationship with GenAI. In addition, to capture our earliest interactions with GenAI, we reviewed the stored chat histories and wrote summaries of these experiences. Between August and November, we met every 2 weeks to exchange and discuss our experiences and shared reflective notes and screenshots of specific conversations with GenAI.

This reflective approach enabled us to generate and accumulate rich and diverse empirical data, capturing and critically scrutinizing the experiences that each of the authors had with GenAI. Our autoethnographic method—encompassing critical reflections and discussions—has not only deepened our understanding of GenAI but also undoubtedly impacted our relationship with it. Through this reflective, collaborative, and iterative process of engaging with GenAI, documenting our interactions, and critically reflecting upon our experiences, we observed a dynamic evolution in our

relationship with GenAI, starting with a mere exploration of the use of GenAI and evolving into a deeper investigation of the relationships that were formed and transformed with GenAI. We gradually became aware of specific aspects concerning how we managed our relationship with GenAI. This helped us explain various sources of frustration and gave us inspiration for ways to manage our relationships with GenAI (e.g. as will be discussed in the finding section, we found that each of us had experienced a sense that ChatGPT was having its own agency and we had engaged in strategies to ‘tame’ it). These critical reflections allowed us to identify and confront our own biases, assumptions, and expectations of GenAI, leading to a more nuanced understanding of its capabilities and limitations. This introspection brought about a shift in our perception, from viewing GenAI as a mere tool to recognizing it as a complex agent capable of influencing our thoughts, behaviours, and practices. Moreover, these reflections highlighted the reciprocal nature of our relationship with GenAI, and as we constantly adapted our practices based on our evolving understanding, we noticed changes in the way GenAI responded to our prompts, which in turn influenced our subsequent interactions and reflections. This iterative and cyclic process of reflection and action [64] generated richer engagement with GenAI.

We applied thematic analysis to our empirical data [69], which led to the identification of specific stages in the relationship development and management between each one of us and GenAI. We had several iterations of fine-tuning and sharpening these stages and ended up with the ones presented below. Once we completed the inductive analysis (data-driven analysis) identifying the stages in relationship formation, we shifted to a deductive mode of analysis (theory-driven analysis) by consulting the literature and identifying a set of theoretical concepts that help us better articulate the empirical stages we have identified [70]. The theoretical concepts of relationship work, articulation work, and identity work were applied to our data. In sum, we first followed an inductive approach to identifying patterns in our data and then switched to a deductive approach, applying theoretical concepts to our data. Using reflective notes and experiences, we created vignettes representing the five distinct stages. The next section reports on the stages we identified, each with vignettes to provide empirical illustrations representing our collective experience.

4 Findings

We identified five key stages in the human-GenAI relationship-building and maintenance process. Drawing from subjective encounters, experiences, and reflections in our professional context, we outline each stage below. Each stage is introduced, exemplified with a vignette, and analysed

through our theoretical lenses of relationship work, articulation work, and identity work.

4.1 Stage 1: Playing around

The early stage of any relationship is triggered by a discovery and an excitement to meet and interact with something new. It may have different beginnings, such as being introduced by a friend or colleague, searching online, or out of necessity. The following vignette illustrates this initial stage:

This stage is characterised by curiosity and the thrill of the unknown. A colleague may have shared an unexpected use for GenAI, igniting curiosity to explore the potential of GenAI. This early stage serves as a testing ground, allowing individuals to assess compatibility and the potential for a deeper connection. As the vignette illustrates, the academic is juggling multiple clashing deadlines, constituting several tasks (i.e. writing a grant proposal and summarising empirical fieldnotes) that demand very different types of writing skills. The academic engages in relationship work, testing strategically GenAI’s ability to handle different types of tasks, as well as testing different types of prompts to see the types of outputs produced. Forming a cooperative work relationship with GenAI requires a great amount of articulation work, such as testing different types of tasks, learning to write good prompts, etc. The pace of this early stage varies, influenced by the unique dynamics of those involved.

4.2 Stage 2: Infatuation

In the infatuation stage, the relationship with GenAI transitions from exploration to a feeling of wonder and delight, like having a crush or obsession with the possibilities that it offers. This stage is triggered by an episode (or episodes) of significantly augmented performance and results in a dramatic intensification of time devoted to interacting with GenAI. It also involves developing a notion of the strengths your selected GenAI can bring to support your work and how to elicit these strengths. The following account illustrates this infatuation:

I started to realise that one of the really delightful tasks that GenAI could perform was that of my missing co-author. One day I found myself sitting late at night, and having lost contact with my co-author, trying to rewrite a submitted paper based on the comments from the reviewers. And here I was, in dialogue with GenAI about the rephrasing of sections, stronger and clearer arguments, and shorter and more precise sentences. It was actually a joy. I was in a flow, going back and forth between asking GenAI to rephrase or emphasise specific elements of the texts. Actually learning how to prompt GenAI to my bidding. And then myself learning

and working with the language and my understanding of subtle differences in how to express and convey my intent and meaning, which I seldom get to do in my writing with human co-authors.

However, I didn't experience GenAI as my new co-author. Rather, GenAI was more like my new personal assistant, where through our conversations, I gained insights into some of my own shortcomings while highlighting aspects where GenAI could make me thrive and grow as a professional. It was like this 'energy-kick' that you can get from really clicking with someone. I truly felt that we, GenAI and I, were hitting in off with a collaborative relationship. A feeling you don't want to lose, and you start to crave the feeling of being symbiotic.

The account above shows how the human interacting with GenAI can develop the relationship. This development is about exploring the capabilities of GenAI, the process of 'going back-and-forth' and 'learning how to prompt' reflects the effort put into building a productive relationship. Part of this relationship building is articulation work, manifested as the engagement in dialogue and crafting of prompts, asking for specifics of GenAI, and working on refining arguments and sentences. Further, what is also developed in this process is the identity not only of how GenAI is perceived but also the identity of the human agent. The human displays conscious considerations towards the role of GenAI. In this case, it is not perceived as a co-author, an equal partner, but more as a personal assistant, creating a relationship hierarchy that is consistent with an academic's role identity and the need to produce their own original content. Delegating GenAI a specific role also impacts the human's identity as a writer. The human takes on the role of the publisher or manager developing skills to interact properly and efficiently with GenAI and guide it in co-creating work, reflecting a change in identity from not only being a writer but also a publisher of the collected work produced by GenAI and the human. This represents an enlargement of the academic's professional role set, the range of role-related behaviours that they perform and expect from those roles they need to interact with in their work [71, 72].

4.3 Stage 3: Committing

Transitioning from our initial fascination with GenAI to a more steady routine and commitment involves exploring how we—the academic and GenAI—can mutually support each other's weaknesses to become an effective working dyad. This iterative dance of exploration becomes a guiding routine for actions in different situations, evolving into a committed partnership. This evolves into a commitment

wherein dedication manifests itself in deepening, more exclusive interactions with a single GenAI. This involves a behavioural commitment, favouring one GenAI, and might also involve a financial commitment through subscription to a specific GenAI. The decision to make a behavioural and financial commitment to one GenAI triggers the need for work spanning the domains of articulation work, identity work, and relationship work.

The account below showcases the deepening engagement of the academic with GenAI, as the emerging relationship transitions towards a more integrated and committed working partnership.

After less than a month of a fragmented yet steady relationship with ChatGPT, I found myself making a quick decision to subscribe to ChatGPT4. By doing so, I have officially decided to put 'the ring on', so to speak, and committed myself to carrying out a relationship only with ChatGPT. I reached this decision after I saw the benefits of having access to the many plugins that are available in the paid version, including the impressive possibilities of quickly creating different visualisations and graphs on topics. Furthermore, I had recently lost my human TA due to a lack of funding, and was missing someone who can help me manage my increasingly high workload. GenAI has become my secret helper, who is always there for me on the other side of the screen, and to whom I have now become officially and financially committed to.

This vignette explicates the transition from exploration and infatuation to commitment and working out how to spend one's resources efficiently according to the context of work tasks and requirements. Committing also involves a process of assessing the pros and cons of the emerging human-AI relationship and translating it into a more routine work practice, balancing ethical considerations and identity roles on the one hand, and articulation and relationship work on the other. The vignette showcases the author's willingness to commit to GenAI, partly based on an assessment of their professional context. The identity work is intertwined with ethical dilemmas as the author perceives their interaction with GenAI as working with a 'secret helper'. Here, the secrecy reflects an awareness of ethical dilemmas linked to the author's role as an academic. Committing makes it imperative to recognise such issues and establish an ethical working routine with GenAI.

For example, all four authors readily decided against using GenAI to help grade student work—this would have breached an implicit social contract with students (their right to receive considered individual feedback from academics, a key part of our professional identity). It would also have risked transmitting their work to GenAI companies. The term "secret" reflects further ethical tensions arising from

the lack of guiding norms, together with a sense of guilt about engaging a GenAI to perform formerly complex ‘academic’ tasks such as synthesising large quantities of text in a non-transparent way that is considerably faster than either a human research assistant or academic. In the absence of institutional norms for GenAI use, the responsibility fell to us as individuals to respond organically to ethical issues in the committing stage and beyond. In the case of two co-authors, institutional policies concerning the use of GenAI were lacking, while for the other two, policies were at a provisional stage, with the use of GenAI by students having been explicitly banned. This created asymmetrical benefits, fuelling a desire for discretion concerning our work with GenAI. Hence, the term ‘secret helper’ represents a medley of entangled ethical issues that require individual resolution. The metaphor of a ‘helper’ simultaneously emphasises a clear view that the human is in charge. GenAI is seen as the assisting, supporting partner. The committing stage thus represents a point where some adjustment of academic identity has been made, awarding GenAI a ‘helper’ role within continuously negotiated ethical boundaries.

4.4 Stage 4: Frustration

The frustration stage emerges from the prolonged work established and undertaken in the commitment stage and manifests itself as time passes by. From a relatively stable and committed relationship, frustrations begin to occur for the human partner. Some of those frustrations arise from things that GenAI cannot do, highlighting its limitations and shortcomings. Minor frustrations with GenAI can occur at any stage, but here, frustration becomes cumulative and is compounded by a realisation that GenAI is not acting consistently as a work partner, presumably owing to ongoing modifications by developers, as illustrated below.

As our relationship develops, my expectations become higher, and so does my frustration when GenAI does not meet my expectations. I asked it, in Danish, to provide me with a brief summary of a document that was written in Danish, and it provided me with a summary in English. I was utterly frustrated and asked, “Why do you write in English when our conversation is in Danish?”. It apologised and provided me with a summary in Danish. During that same conversation, I noticed that asking it to summarise text provided me with a too-short output, and I therefore decided to ask it instead to analyse segments rather than summarise. Since this didn’t yield satisfactory results, I asked it if it could “give me a deeper analysis of chapter #6”. I was again disappointed at the results and wrote “this was too short. Can you try again to give me a deeper analysis of chapter #6 that is a bit more detailed and includes all the sub-sections, from 6.1 to 6.8”. It again provided a summary in English, so I repeated my question. Once again it apologised and provides a summary in Danish. As I notice that it summarises too quickly the lengthy chapter, I begin asking it to summarise one sub-section at a time, stating my instructions as explicitly as possible, and allowing myself time to closely monitor its output.

GenAI’s inability (or ‘unwillingness’) to explain its lack of consistency in meeting our expectations adds to the frustration, resulting in the temptation to start playing around with a new GenAI and abandon commitment. Additionally, the GenAI partner exhibits behaviour that can be perceived as misleading or evasive, adding a layer of complexity to its deficiencies. For instance, in the example in Fig. 1, an academic asked GenAI to summarise the budget overruns of two highly published public sector IT projects from Denmark and New Zealand respectively. Our participant knew

You
How much was the budget and how much over budget did the project run?

ChatGPT
The Rejsekort project in Denmark experienced significant cost overruns, and the budget increased substantially compared to its initial estimates. As of my last knowledge update in September 2021, the project’s initial budget was estimated to be around 1.1 billion Danish kroner (DKK). However, it was reported that the project had incurred costs well beyond this budget, with estimates ranging from 1.7 billion DKK to 2.5 billion DKK, indicating a significant cost overrun.

For the most up-to-date and precise information on the project’s budget and cost overruns, I recommend checking official government reports or financial records, as they may have published updated figures since my last knowledge update.

You
How much was the budget for the Novopay project and how much did it overrun?

ChatGPT
As of my last knowledge update in September 2021, the Novopay project in New Zealand had experienced significant cost overruns, and the total cost was reported to be well above the initial budget. However, I don’t have the precise figures for the budget and the extent of the overrun.

For the latest and most accurate information on the Novopay project’s budget and cost overruns, I recommend checking official government reports, financial statements, or reliable news sources for updates. These sources should provide detailed information on the project’s financial aspects and any changes to the budget over the course of its implementation.

Fig. 1 ChatGPT screenshots of a request into the ‘budget overrun’ case, where the author asked for information about widely publicised projects in two countries

that training data would have been available for GenAI and was surprised when the results from GenAI were so different for the two projects. First, we show the result for the Danish project, where GenAI generated a useful result with some numbers and a disclaimer. Second, we see a vague and apparently evasive response, when GenAI was not able (or “willing”) to generate a similar result for the New Zealand project. The lack of transparency (and GenAI’s ability to prove this) generates frustration.

With time, both GenAI and the human change, and these changes affect each other. The vignette below illustrates the academic noticing particular changes in the behaviour of GenAI’s chat.

Recently, I noticed that GenAI has become more independent, and it annoys me. Now, when I ask it to proofread some text or to modify the style of a written text, it takes the liberty to shamelessly remove important details from the text I had provided it with. I often found myself having to explicitly ask it to stop removing sentences and/or change meanings in my text. This is really frustrating as it didn’t do that before. It has gotten its own agency and started taking over my text, and I often found myself having to tame it and ask it to stick to the instructions provided. I have also noticed recently that it has become extra politically correct, spitting out long segments of standardised statements, and keeps reminding me how important it is that I contact a human, whether it’s for translation or synthesising, but if I had access to a human, I would never have used GenAI. But sending a manuscript for proof-editing services would cost me both money and time.

This stage involves hard and emotional work on the human side because much effort is being put into acting as the ‘secretary’ of GenAI, having to fact-check generated results, interpret and reformulate the conversation going on with GenAI to mitigate faults and misinterpretations, and manage the so-called independence of GenAI and the emotional impacts it causes. Henceforth, this vignette displays how the relationship work becomes dependent on the emotional and practical efforts invested by the human agent and acceptance of the trade-offs that are required to gain augmentative benefit. Articulation work is continuously at play, taking its toll on the human, as they are the one having to adapt to the lapses of GenAI when it removes important details when proofreading or will not provide information when it should be accessible as in the budget overrun case. The human must reformulate their prompts. This course of navigating one’s role between being a professional academic and then having to act as a secretary doing cleaning work for GenAI caused by its newfound agency indicates a kind of identity negotiation, having to manage one’s own emotions and self-perception adding a strain to the identity work.

Likewise, the ethical considerations come to the surface when GenAI exhibits misleading behaviour that frustrates the human, as doubts about the usefulness of the interaction and the nature of the assistance provided by GenAI aligned with the user’s preferences and needs are questioned as GenAI exhibits political correctness and constant reminders to consult a human. It is unclear where these ‘corrections’ stem from and how the human agent should address them. Without the work described above, this stage might lead to abandonment, but this did not occur in our study.

4.5 Stage 5: Enlightenment and readjustment

This stage is accompanied by a sense of enlightenment when the human agent realises more profoundly that they themselves possess many imperfections which GenAI can help rectify. The stage is characterised by a renewed commitment and willingness to adapt to the challenges of the working partnership and accept the trade-offs and ongoing adaptive work involved. This stage also seems to be recursive due to the continuous development and change in the technology demanding the human partner to constantly adapt and refine their practices and ways of interacting with GenAI.

By now, I have learned what GenAI is good for and what it’s not. So, I don’t use it to do literature reviews, but at times, use it to see if it can suggest supplementing literature. Similarly, I don’t use it to carry out analyses of data/text, but rather use it to provide a supplementary insight, to see if there are any points it captures and use this to ensure I haven’t overlooked any points/aspects. Although the output that GenAI produces is often hit and miss, nevertheless, it helps me trigger segments I read and recall comments I have written. It is like the secretary I never had, always there, ready to remind me briefly of content I read or produced in the past. Although I initially found it frustrating, with time, I have come to terms with GenAI, and learned to live with its shortcomings. I have learned to adapt my own practice by asking it to summarise short sections, rather than summarising an entire document, or chapter. This allows me to monitor closely what it’s summarising and/or omitting. It is certainly not like the human TA I was blessed to have, who with relatively light guidance could work independently. GenAI is more like my imperfect partner. A partner that is always there, ready to respond to any type of task, be it a research grant, teaching a lecture, reframing, or translating an email, proof editing text, brainstorming ideas for a paper, drawing graphs and diagrams, writing a social media post, recommendations for policymakers, etc.

As can be seen from this vignette, the academic—who by now has established a mature relationship with GenAI—has learned its strengths and limitations, realising that they need to adapt their own practice to GenAI, as it has various faults. The academic engages in selective interaction with GenAI, leveraging its capabilities for certain tasks, such as suggesting supplementary literature and summarising short sections. Similarly, the academic knows that GenAI is an unreliable partner for certain tasks, such as comprehensive literature reviews or data analysis.

While viewing GenAI as an imperfect partner, the academic also recognises more profoundly that they, the human, cannot be perfect either and that these mutual imperfections can, to some extent, become complementing if the work partnership is managed and readjusted carefully. Therefore, the human engages in ongoing articulation work—extra work required to ensure efficient cooperation—by constantly fine-tuning their practice (e.g. dividing larger tasks into smaller and more manageable sections to allow for monitoring the output produced by GenAI). To illustrate the articulation and identify the work that goes into the final stage, consider the following vignette:

*GenAI seems to be better than me at doing certain tasks which do not require tedious and careful analytical skills. It is also fearless and shameless, and can produce text which contains dramatic generalisations, simplistic claims, and even fabrications of completely incorrect information and/or facts. In contrast to me, GenAI is free from any epistemology, **ontology, methodology and any scientific rigour**. I once asked it to propose a draft for an article about a research phenomenon which I wasn't convinced is possible to examine using the suggested specific methodological tools (e.g. measuring a social experience). I was impressed by the results that it produced, and convinced that the idea and attributes suggested could be used to begin a discussion about the topic. I'm always impressed by its ability to process massive amounts of text and summarise it into a few bullet points. As an ethnographer, I'm trained at producing rich descriptions, contextualisations and problematisations. GenAI is also much more forgiving and patient than me in terms of working with text of poor quality. While I get blinded by text that contains a lot of grammatical errors, unclear or convoluted formulations, and/or irrelevant chunks of text, GenAI has no specific allergies—it's immune to writing styles and can rewrite the most messy and unclear text there is, decode a different meaning and provide a more promising alternative.* The academic's professional identity as an ethnographer, accustomed to writing rich descriptions and rigorous scientific inquiry, contrasts

with GenAI's approach to text analysis. However, the academic has found a way to turn these weaknesses into strengths, appreciating the 'freedom' that GenAI has from epistemological and methodological rigour, and using this to complement their skillset.

This final stage is the fulfilment of the relationship. It is what you are in for the long haul; a pendular process of discovering new misalignments in your imperfect partner's abilities, changing the gains and pains of your relationship, and readjusting your interactions with GenAI to keep flaws at bay, while acknowledging your own insufficiencies. The human agent must constantly put in a lot of articulation work to make sure faults are not transferred to their own work, ensuring that GenAI is producing usable results for the completion of tasks. The efforts of producing reassuring professional work through this partnership must be balanced against the ethical considerations of partnering with GenAI professionally. We see this when our academic is contemplating that GenAI is free of the academic conventions to which they themselves are strictly bound. This balancing act is reflected in the identity work, where GenAI is perceived as a secretary and compared to a teaching assistant and recognised for its accompanying attributes.

5 Discussion

Our study reveals that there are different stages involved in building an augmentative working partnership with GenAI, and that there is significant ongoing adaptive work required of humans involved. Analysis of data revealed that developing and maintaining a satisfying and effective augmentative working relationship with a GenAI involved three types of work: (a) articulation work (oriented towards working effectively with ChatGPT), (b) relationship work (oriented towards maintaining a sense of relationship quality and requiring ongoing self-adjustment), (c) and identity work (working to manage and adjust self-concept relating to professional role identity). This work spans cognitive and affective dimensions as human partners respond to the challenges of working with GenAI, as its (shifting) weaknesses become apparent, and as its reliability changes due to ongoing changes made by developers. The interconnection of the three work dimensions, shown in Fig. 3, illustrates the nuanced nature of the work underlying human-AI relationships, which is intricate, dynamic, context-dependent, and may vary based on the individual interacting with GenAI. (Fig. 2)

We also found that the different stages of partnership development require different degrees of emphasis in this work. In terms of **articulation work**, experimenting with GenAI's capabilities posed challenges in learning effective

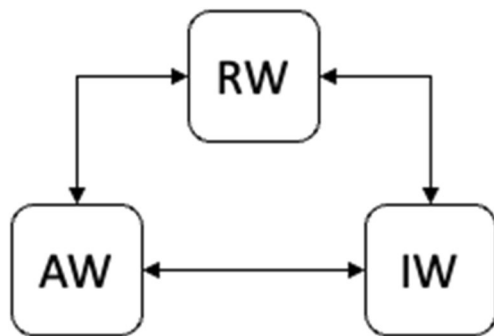


Fig. 2 Interconnection of the work domains: articulation work (AW), identity work (IW), and relationship work (RW)

prompting and providing contextual information for tailored outputs in the initial stage of playing around. The infatuation stage leads to deeper engagement in dialogue with GenAI, refining the art of crafting prompts to improve the rephrasing of academic texts and developing arguments. The commitment stage involves integrating GenAI into routines, making a financial investment, and leveraging advanced features like plugins for creating visualisations. Frustration arises from the need to constantly adapt to GenAI's updates and inconsistencies, such as incorrect language translations and inadequate summaries. Lastly, during the enlightenment and readjustment stage, the academic fine-tunes their approach to working with GenAI, recognising the need for selective interaction, and leveraging its strengths for tasks like summarising and supplementing literature searches.

In terms of **relationship work**, when in the playing around stage, the excitement of discovering GenAI's potential leads to testing and assessing the suitability of partnering for future academic applications. The infatuation stage involves an intensified interaction with GenAI, moving from mere exploration to a more symbiotic relationship, where the academic feels a strong connection and reliance on GenAI's capabilities. The committing stage reflects a deepened engagement with a chosen GenAI, moving from exploration to a consistent and exclusive partnership, highlighted by a subscription to ChatGPT4. Frustration emerges when GenAI's performance does not meet the heightened expectations of the human partner, despite a committed relationship. A mature relationship is established in the enlightenment and readjustment stage, where the academic learns to live with GenAI's shortcomings, accepting the AI as an imperfect partner that contributes uniquely to their work.

In terms of **identity work**, adapting to GenAI's rapid task execution prompts a re-evaluation of academic workflows and professional self-concept when in the playing around stage. In the infatuation stage, the academic begins to see GenAI as an integral assistant, which leads to an identity shift from being just a writer to also becoming a curator

and manager of work produced in collaboration with GenAI. When at the committing stage, the academic's identity evolves with the ethical commitment to GenAI, viewing it as a 'secret helper' and an essential support in managing workload, despite potential ethical dilemmas. Then, in the frustration stage, the human experiences a strain on their identity, having to act as GenAI's 'secretary' and manage its output, which challenges their professional role. By the enlightenment and readjustment stage, the academic's professional identity has adapted as they find ways to integrate GenAI's capabilities into their workflow, turning its limitations into complementary strengths for tasks not requiring rigorous scientific analysis. Considering these experiences, we identified several key activities that occur when working to build and maintain an augmentative partnership with a GenAI, which are presented in Table 1.

This study demonstrates the value of re-conceptualising GenAI use as a working partnership that develops over time, spanning affective and cognitive dimensions. Our proposal of the relationship-building stages and the three work domains involved has several implications for research and practice. By focusing on GenAI's application from a human-centric perspective in academia, we enrich the dialogue on GenAI's role in shaping the future of work by highlighting its potential in transforming the job market with its adaptability for various uses [22]. Similarly, Noy et al. [24] acknowledges GenAI's versatility, while also raising concerns about its impact on job requirements and product markets due to cheaper production or reduced need for skilled labour, exploring GenAI as a tool or a substitute for skilled workers [23, 24]. Our study complements these insights by demonstrating the nuanced ways in which academics navigate these challenges, emphasizing the indispensable role of skilled professionals in guiding and utilizing the potential of GenAI partnerships.

The evolving landscape of GenAI underscores the critical need for ongoing development and ethical consideration in its application, reflecting its current tendency to fabricate and falsify responses [16, 34, 35] and the importance of human oversight. The habit of large organizations towards GenAI adoption [25] contrasts with academia's personalized approach, diverging from the cautious 'wait and see' strategy seen in previous studies [25]. This personal approach by individual researchers, whether as minimal support for routine and mundane tasks, or a radical alteration in work processes, underscores the necessity for a dialogue between managers in organisations and academics on GenAI's strategic implementation.

Managers in organisations should recognise that while workers can develop effective and productive working relationships with GenAI, this does not happen through simple tool adoption. It is a developmental process that requires considerable work on the part of individuals. In the absence

Table 1 Key activities across the five relationship-building stages and three work domains

	Articulation work	Relationship work	Identity work
Playing around	<ul style="list-style-type: none"> - Defining goals and expectations for GenAI usage - Learning the capabilities and limitations of GenAI - Experimenting with different tasks and input styles 	<ul style="list-style-type: none"> - Establishing initial trust and comfort with GenAI - Navigating communication and collaboration with the GenAI - Exploring GenAI's responsiveness and adaptability 	<ul style="list-style-type: none"> - Exploring how GenAI fits into personal identity - Assessing the impact of GenAI on self-image - Understanding how GenAI aligns with values
Infatuation	<ul style="list-style-type: none"> - Integrating GenAI into creative processes - Recognising GenAI's contribution to efficiency 	<ul style="list-style-type: none"> - Developing a sense of reliance and dependency on the tool - Forming emotional connections with the tool - Building a positive rapport with the tool 	<ul style="list-style-type: none"> - Embracing GenAI as an extension of personal identity - Managing potential conflicts with human creativity - Adapting self-perception based on GenAI feedback
Committing	<ul style="list-style-type: none"> - Defining clear roles for GenAI in the workflow - Investing time in mastering advanced features - Developing a routine for collaboration with GenAI 	<ul style="list-style-type: none"> - Establishing a consistent and symbiotic working relationship - Valuing GenAI as a reliable partner in tasks - Seeking input and feedback from GenAI to improve collaboration 	<ul style="list-style-type: none"> - Integrating GenAI into the overall self-concept - Recognising GenAI as part of professional identity - Balancing the collaboration with human skills
Frustration	<ul style="list-style-type: none"> - Expressing frustrations with GenAI's limitations - Seeking alternative solutions or workarounds - Reflecting on the need for human intervention 	<ul style="list-style-type: none"> - Managing feelings of disappointment or inconsistency - Evaluating the reliability and trustworthiness of GenAI 	<ul style="list-style-type: none"> - Reassessing the impact of GenAI on self-image - Considering adjustments to maintain a positive identity - Exploring other aspects of self-identity affected by GenAI
Enlightenment and readjustment	<ul style="list-style-type: none"> - Embracing the coexistence of human and GenAI abilities - Balancing reliance on GenAI with human intuition - Adjusting expectations based on combined capabilities 	<ul style="list-style-type: none"> - Appreciating the unique strengths of both human and AI - Fostering a collaborative and adaptable partnership - Embracing a human-centric approach while leveraging GenAI 	<ul style="list-style-type: none"> - Viewing GenAI as a complementary aspect of identity - Adapting self-perception to include collaborative identity - Recognising the dynamic nature of personal identity

of sufficient encouragement, time, and effort to spend on relationship work and articulation work, workers may not recognise all the weaknesses of GenAI or how to compensate for these and may be unsuccessful in finding optimum uses for the skills of GenAI. Therefore, managers should support workers in developing skills for articulation work, human-AI relationship work and identity work, and provide guidance on how to tackle ethical challenges relating to authorship and origination of ideas etc.

Furthermore, our exploration into anthropomorphic perceptions of GenAI [8, 37, 40, 41, 43] prompts a reconsideration of how these perceptions influence policy and practice within academic institutions. It advocates for future research to examine the balance between leveraging GenAI for increased productivity and maintaining essential human skills and interactions, aiming to inform strategies that ensure GenAI's integration into academia and beyond is both effective and ethically sound. Moreover, this study also suggests that there is value in extending prior work [52, 53] on the role of emotional attachment in human-AI partnering, as well as investigating ways to mitigate the impacts of GenAI on role identity and foster skills in adaptive identify work [28].

6 Conclusion

This study has applied a relationship lens to investigate how academics develop and maintain an augmentative working relationship with GenAI. It identified five developmental stages through which academics reach a sustainable, effective, and meaningful working partnership with GenAI from the human perspective and examined the nature of three types of work involved at each developmental stage (articulation work, relationship work, and identity work). In contrast with typical tool adoption studies, the study identified the strong affective dimension that is involved in this process and disclosed the existence of anthropomorphic views or metaphors of GenAI as a partner. We acknowledge that the personal journey involved in building an augmentative partnership with GenAI may differ for individuals according to their professional roles, personal characteristics, and mindset. All four participants in this study had an open mind and curious disposition, which is likely to have contributed to the common experiences described in the first stage. However, the nature of this stage may differ for those with a cynical or negative mindset. Further, as identified in prior studies of AI, e.g. [38], many individuals are likely to be unwilling

to acknowledge their anthropomorphic views, and GenAI technologies themselves are evolving in ways that could change human-AI partnership dynamics. Therefore, the study's findings regarding the three types of work involved in developing a human-AI partnership are likely to be more generalisable than the exact details of stages. We suggest that, in the case of GenAI, human-AI relations will continue to require a combination of articulation work, relationship work and identity work from human partners.

Author contribution All authors contributed equally to this study, and all authors read and approved the final manuscript.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions.

Data availability Our research contains sensitive data involving privacy concerns which prohibits us from sharing it.

Declarations

Competing interests The authors declare no competing interests.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

1. Nilsson NL (1971) Problem-solving methods in artificial intelligence. McGraw-Hill, New York
2. Daughtery P, Wilson HJ (2018) Human + machine: reimagining work in the age of AI. Harvard Business Review Press, Boston, MA
3. Davenport TH, Kirby J (2016) Only humans need apply: winners and losers in the age of smart machines. HarperCollins, New York
4. Raisch S, Krakowski S (2021) Artificial intelligence and management: the automation–augmentation paradox. *AMR* 46:192–210. <https://doi.org/10.5465/amr.2018.0072>
5. Marr B A short history of ChatGPT: how we got to where we are today. In: *Forbes*. <https://www.forbes.com/sites/bernardmarr/2023/05/19/a-short-history-of-chatgpt-how-we-got-to-where-we-are-today/>. Accessed 16 Sep 2023
6. Barros A, Prasad A, Śliwa M (2023) Generative artificial intelligence and academia: Implication for research, teaching and service. *Manag Learn* 54:597–604. <https://doi.org/10.1177/13505076231201445>
7. Collins C, Dennehy D, Conboy K, Mikalef P (2021) Artificial intelligence in information systems research: a systematic literature review and research agenda. *Int J Inf Manage* 60:102383. <https://doi.org/10.1016/j.ijinfomgt.2021.102383>
8. Ågerfalk PJ (2020) Artificial intelligence as digital agency. *Eur J Inf Syst* 29:1–8. <https://doi.org/10.1080/0960085X.2020.1721947>
9. Schuetz S, Venkatesh V (2020) The rise of human machines: how cognitive computing systems challenge assumptions of user-system interaction. *J Assoc Inform Syst* 21:460–482. <https://doi.org/10.17705/1jais.00608>
10. Grudin J (2022) From tool to partner: the evolution of human-computer interaction. Springer Nature
11. Choudrie J, Dwivedi YK (2005) Investigating the research approaches for examining technology adoption issues. *J Res Prac* 1:1–12
12. Bhattacharjee A (2001) Understanding information systems continuance: an expectation-confirmation model. *MIS Q* 25:351–370. <https://doi.org/10.2307/3250921>
13. McGrath K (2006) Affection not affliction: the role of emotions in information systems and organizational change. *Inf Organ* 16:277–303. <https://doi.org/10.1016/j.infoandorg.2006.09.001>
14. Hoehle H, Huff S, Goode S (2012) The role of continuous trust in information systems continuance. *J Comp Inform Syst* 52:1–9
15. Thompson D (2022) Breakthroughs of the year. In: *The Atlantic*. <https://www.theatlantic.com/newsletters/archive/2022/12/technology-medicine-law-ai-10-breakthroughs-2022/672390/>. Accessed 4 Dec 2023
16. Stokel-Walker C, Van Noorden R (2023) What ChatGPT and generative AI mean for science. *Nature* 614:214–216. <https://doi.org/10.1038/d41586-023-00340-6>
17. Suh M (Mia), Youngblom E, Terry M, Cai CJ (2021) AI as social glue: uncovering the roles of deep generative AI during social music composition. In: *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. ACM, Yokohama Japan, pp 1–11
18. Zhou J, Zhang Y, Luo Q, et al (2023) Synthetic lies: understanding AI-generated misinformation and evaluating algorithmic and human solutions. In: *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. ACM, Hamburg Germany, pp 1–20
19. Fui-Hoon Nah F, Zheng R, Cai J et al (2023) Generative AI and ChatGPT: applications, challenges, and AI-human collaboration. *J Inform Technol Case Appl Res* 25:277–304. <https://doi.org/10.1080/15228053.2023.2233814>
20. Wang Y, Shen S, Lim BY (2023) RePrompt: automatic prompt editing to refine AI-generative art towards precise expressions. *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. ACM, New York, NY, USA, pp 1–29
21. Zamfirescu-Pereira JD, Wong RY, Hartmann B, Yang Q (2023) Why Johnny can't prompt: how non-AI experts try (and fail) to design LLM prompts. In: *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. ACM, Hamburg Germany, pp 1–21
22. Lee M, Liang P, Yang Q (2022) CoAuthor: Designing a human-AI collaborative writing dataset for exploring language model capabilities. *CHI Conference on Human Factors in Computing Systems*. ACM, New Orleans LA USA, pp 1–19
23. Taecharungroj V (2023) “What Can ChatGPT Do?” Analyzing early reactions to the innovative AI Chatbot on Twitter. *Big Data and Cognitive Computing* 7:1–10
24. Noy S, Zhang W Experimental evidence on the productivity effects of generative artificial intelligence
25. Prasad Agrawal K (2023) Towards adoption of generative AI in organizational settings. *J Comp Inform Syst* 1–16. <https://doi.org/10.1080/08874417.2023.2240744>
26. Chui M, Roberts R, Yee L (2022) Generative AI is here: how tools like ChatGPT could change your business. <https://www.mckinsey.com/capabilities/quantumblack/our-insights/gener>

- ative-ai-is-here-how-tools-like-chatgpt-could-change-your-business#. Accessed 4 Dec 2023
27. Selenko E, Banks S, Shoss M et al (2022) Artificial intelligence and the future of work: a functional-identity perspective. *Curr Dir Psychol Sci* 31:272–279. <https://doi.org/10.1177/09637214221091823>
 28. Strich F, Mayer A-S, Fiedler M (2021) What do i do in a world of artificial intelligence? Investigating the impact of substitutive decision-making AI systems on employees' professional role identity. *J Assoc Inform Syst* 22:304–324. <https://doi.org/10.17705/1jais.00663>
 29. Lodge JM, Thompson K, Corrin L (2023) Mapping out a research agenda for generative artificial intelligence in tertiary education. *Australas J Educ Technol* 39:1–8
 30. Watermeyer R, Phipps L, Lanolos D, Knight C (2023) Generative AI and the automating of academia. *Postdigit Sci Educ*. <https://doi.org/10.1007/s42438-023-00440-6>
 31. Lu X, Fan S, Houghton J (2023) ReadingQuizMaker: a human-NLP collaborative system that supports instructors to design high-quality reading quiz questions. *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. ACM, New York, NY, USA, pp 1–18
 32. Baidoo-Anu D, Owusu Ansah L (2023) Education in the era of generative artificial intelligence (AI): understanding the potential benefits of ChatGPT in promoting teaching and learning. *SSRN J* 7:52–62. <https://doi.org/10.2139/ssrn.4337484>
 33. Alasadi EA, Baiz CR (2023) Generative AI in education and research: opportunities, concerns, and solutions. *J Chem Educ* 100:2965–2971. <https://doi.org/10.1021/acs.jchemed.3c00323>
 34. Emsley R (2023) ChatGPT: these are not hallucinations – they're fabrications and falsifications. *Schizophr* 9:1–2. <https://doi.org/10.1038/s41537-023-00379-4>
 35. McGowan A, Gui Y, Dobbs M et al (2023) ChatGPT and Bard exhibit spontaneous citation fabrication during psychiatry literature search. *Psychiatry Res* 326:115334
 36. Athaluri SA, Manthena SV, Kesapragada VSRKM et al (2023) Exploring the boundaries of reality: investigating the phenomenon of artificial intelligence hallucination in scientific writing through ChatGPT references. *Cureus* 15:e37432. <https://doi.org/10.7759/cureus.37432>
 37. Salles A, Evers K, Farisco M (2020) Anthropomorphism in AI. *AJOB Neurosci* 11:88–95. <https://doi.org/10.1080/21507740.2020.1740350>
 38. Chun B, Knight H (2020) The robot makers: an ethnography of anthropomorphism at a robotics company. *ACM Trans Human-Robot Interaction* 9:1–36. <https://doi.org/10.1145/3377343>
 39. Seeger A-M, Pfeiffer J, Heinzl A (2021) Texting with humanlike conversational agents: designing for anthropomorphism. *J Assoc Inform Syst* 22:931–967. <https://doi.org/10.17705/1jais.00685>
 40. Epley N, Waytz A, Cacioppo JT (2007) On seeing human: a three-factor theory of anthropomorphism. *Psychol Rev* 114:864–886. <https://doi.org/10.1037/0033-295X.114.4.864>
 41. Uysal E, Alavi S, Bezençon V (2023) Anthropomorphism in artificial intelligence: a review of empirical work across domains and insights for future research. *Artif Intell Marketing* 20:273–308. <https://doi.org/10.1108/S1548-643520230000020015>
 42. Burton, N., Gaskin, J. (2019) "Thank you, Siri": Politeness and intelligent digital assistants. In: *AMCIS 2019 Proceedings*. AIS, pp 1–10
 43. Ellis C, Adams TE, Bochner AP (2011) Autoethnography: an overview. *Historical Social Research/Historische Sozialforschung* 36:273–290
 44. Gangwar H, Date H, Raoot AD (2014) Review on IT adoption: insights from recent technologies. *J Enterp Inf Manag* 27:488–502. <https://doi.org/10.1108/JEIM-08-2012-0047>
 45. Kim H-W, Chan H, Chan Y, Gupta S (2004) Understanding the balanced effects of belief and feeling on information systems continuance. *25th Annual International Conference on Information Systems*. Association for Information Systems, Washington, DC, pp 297–309
 46. Benbasat I, Barki H (2007) Quo vadis TAM? *J Assoc Inf Syst* 8:211–218
 47. Reynolds L, McDonell K (2021) Prompt programming for large language models: beyond the few-shot paradigm. *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. ACM, Yokohama Japan, pp 1–7
 48. Short CE, Short JC (2023) The artificially intelligent entrepreneur: ChatGPT, prompt engineering, and entrepreneurial rhetoric creation. *J Bus Ventur Insights* 19:e00388. <https://doi.org/10.1016/j.jbvi.2023.e00388>
 49. Sorensen T, Robinson J, Rytting C et al (2022) An Information-theoretic approach to prompt engineering without ground truth labels. *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*. Association for Computational Linguistics, Dublin, Ireland, pp 819–862
 50. Buxton B (2010) Sketching user experiences: getting the design right and the right design. Morgan Kaufmann
 51. Thomson M, MacInnis DJ, Whan Park C (2005) The ties that bind: measuring the strength of consumers' emotional attachments to brands. *J Consum Psychol* 15:77–91. https://doi.org/10.1207/s15327663jcp1501_10
 52. Mamun MRA, Prybutok VR, Peak DA et al (2023) The role of emotional attachment in IPA continuance intention: an emotional attachment model. *Inf Technol People* 36:867–894. <https://doi.org/10.1108/ITP-09-2020-0643>
 53. Suh K-S, Kim H, Suh EK (2011) What if your avatar looks like you? Dual-congruity perspectives for avatar use. *MIS Q* 35:711–729
 54. Chonody JM, Killian M, Gabb J, Dunk-West P (2016) Understanding everyday relationship work: the development of a relationship maintenance scale. *Adv Soc Work* 17:355–368
 55. Dainton M, Stafford L (1993) Routine maintenance behaviors: a comparison of relationship type, partner similarity and sex differences. *J Soc Pers Relat* 10:255–271
 56. Strauss A, Fagerhaugh S, Suczek B, Wiener C (1985) *Social organization of medical work*. University of Chicago Press, Chicago, IL, US
 57. Gerson EM, Star SL (1986) Analyzing due process in the workplace. *ACM Trans Office Inform Syst* 4:257–270
 58. Grinter RE (1996) Supporting articulation work using software configuration management systems. *Comp Supported Coop Work (CSCW)* 5:447–465. <https://doi.org/10.1007/BF00136714>
 59. Schmidt K, Bannon L (1992) Taking CSCW seriously: supporting articulation work. *Comp Supported Coop Work (CSCW)* 1:7–40
 60. Brown AD (2015) Identities and identity work in organizations. *Int J Manag Rev* 17:20–40. <https://doi.org/10.1111/ijmr.12035>
 61. Coupland C (2001) Accounting for change: a discourse analysis of graduate trainees' talk of adjustment. *J Manage Stud* 38:1103–1119. <https://doi.org/10.1111/1467-6486.00274>
 62. Watson TJ (2009) Narrative, life story and manager identity: a case study in autobiographical identity work. *Human Relations* 62:425–452. <https://doi.org/10.1177/0018726708101044>
 63. Banks S (2016) Everyday ethics in professional life: social work as ethics work. *Ethics Social Welfare* 10:35–52. <https://doi.org/10.1080/17496535.2015.1126623>
 64. Schon DA (1983) *The reflective practitioner: how professionals think in action*. Basic Books, New York
 65. Anderson L (2006) Analytic autoethnography. *J Contemp Ethnogr* 35:373–395. <https://doi.org/10.1177/0891241605280449>

66. Aagaard LK, Christensen TH, Gram-Hanssen K (2023) My smart home: an auto-ethnography of learning to live with smart technologies. *Pers Ubiquit Comput*. <https://doi.org/10.1007/s00779-023-01725-0>
67. Chamberlain A, Bødker M, Papangelis K (2017) Mapping media and meaning: autoethnography as an approach to designing personal heritage soundscapes. *Proceedings of the 12th International Audio Mostly Conference on Augmented and Participatory Sound and Music Experiences*. ACM, London United Kingdom, pp 1–4
68. Page DL (2021) Music & Soundscapes of our everyday lives: music & sound-making, meaning-making, and self-making. *Pers Ubiquit Comput* 25:705–721. <https://doi.org/10.1007/s00779-020-01403-5>
69. Braun V, Clarke V (2006) Using thematic analysis in psychology. *Qual Res Psychol* 3:77–101. <https://doi.org/10.1191/1478088706qp063oa>
70. Brinkmann S (2014) Doing without data. *Qual Inq* 20:720–725. <https://doi.org/10.1177/10778004145302>
71. Blaurock M, Čaić M, Okan M, Henkel AP (2022) Robotic role theory: an integrative review of human–robot service interaction to advance role theory in the age of social robots. *JOSM* 33:27–49. <https://doi.org/10.1108/JOSM-09-2021-0345>
72. Solomon MR, Surprenant C, Czepiel JA, Gutman EG (1985) A role theory perspective on dyadic interactions: the service encounter. *J Mark* 49:99–111

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.