Exploring the Impact of Artificial Intelligence-Generated Content (AIGC) Tools on Social Dynamics in UX Collaboration

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ABSTRACT

Artificial Intelligence-Generated Content (AIGC) tools have gradually been integrated into the daily workflow of UX practitioners. While existing research has explored the integration of AIGC tools in daily workflow, little is known about their impact on social dynamics within UX collaboration. We conducted four focus groups and eight semi-structured interviews with 26 UX practitioners to investigate how AIGC tools influence social dynamics in UX collaboration. Our findings indicated that AIGC tools not only mitigated conflicts but also introduced potential new conflicts. AIGC tools expanded the roles of UX practitioners and fostered a team culture characterized by exploring and discussing. Participants have higher expectations for AI-assisted design in user understanding and prototype evaluation, and team-motivated AI tools learning. Based on these findings, we discussed the benefits and concerns of conflict resolution through AIGC and the importance of teams in AI learning. Finally, we proposed several suggestions for future AI design research.

CCS CONCEPTS

• **Human-centered computing → Empirical studies in HCI**.

KEYWORDS

user experience design, user interface design, AI-generated content, social dynamics, collaboration

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1 INTRODUCTION

The user experience (UX) field is viewed as a cornerstone in the human-centered design of interactive systems [24, 32], working in conjunction with user interface (UI) design to constitute a product's complete usability design [7]. In this paper, we use "UX" to broadly cover both disciplines. Digital tools play a vital role in supporting the design process and enhancing the efficiency, creativity, and quality of UX practitioners' work. In the rapidly evolving landscape of technology and design, these digital tools have increasingly integrated Artificial Intelligence (AI). For instance, Artificial Intelligence-Generated Content (AIGC) tools could directly generate final design outputs, such as posters, from text descriptions or uploaded source images [25, 26]. Other studies have explored the use of AIGC tools to suggest context-relevant materials and enhance creativity expression [36, 41, 79], design low-fidelity (e.g., wireframes [23]) and high-fidelity prototypes (e.g., interface design [12]), and assess product usability [17, 18, 42, 70]. As AI-powered tools become increasingly embedded into the UX workflow, it is imperative to assess how these tools not only augment the UX design and evaluation process but also reshape collaboration and communication within UX teams. Since prior studies primarily focused on laboratory studies or the approaches to integrating AIGC tools, there remains a substantial gap in understanding the real-world impact of these technologies on team dynamics and collaboration quality.

The integration of AI into team collaboration also introduces complex questions regarding the roles AI may play, from acting as mediators and arbitrators to coordinators and creators [44, 69].

While previous studies have explored AI's potential as a collaborative partner, much of this research remains in its infancy, particularly concerning AI's role in leadership and decision-making within teams and the potential conflicts that AIGC tool integration may introduce [81]. This gap highlights an opportunity for our study to contribute knowledge about the social dynamics of UX collaboration from the practitioners' perspective. Thus, we investigated the nuanced interplay between AI integration and UX practices, motivated by the need to understand the effects of AI on everyday work and collaboration among UX practitioners. Our inquiry is structured around two research questions (RQs):

- RQ1: How does the integration of AIGC influence the social dynamics within current UX collaboration?
- RQ2: What are the expectations of UX practitioners for the development of future AIGC tools and teams?

AI development in China has progressed rapidly in recent years, becoming integrated into various industries. According to the 2023 annual design AI practice report released by ZCOOL [1], 84.6% of the 5034 surveyed designers in China's design industry have utilized AI design tools or AI functionalities within traditional tools. This high adoption rate signifies the widespread popularity of AI in the Chinese design industry. Therefore, to answer these RQs, we conducted four focus groups with 18 UX professionals and semi-structured interviews with 8 UX professionals from various design industries in China. The focus group allowed us to develop an initial understanding of how UX practitioners utilized AIGC tools in their daily work and their collaboration practices, while the semi-structured interviews delved into the impact of AIGC tool integration on team dynamics and UX practitioners' expectations for future AIGC tools.

Our study revealed that the impact of AIGC tools integration on social dynamics in UX collaboration manifested in two ways. Initially, AIGC tools served to reduce communication conflicts by quickly visualizing concepts, providing design evaluation perspectives in debates, and helping team members understand each other's workloads. However, they also introduced two potential new conflicts: the quality of AI-generated content was occasionally superior to that of human collaborators, and some team members were skeptical about the reliability of AI-generated content. Furthermore, we found that the integration of AIGC tools promoted a team culture geared towards exploring AIGC capabilities and sharing their experiences, leading some UX practitioners to take on the role of instructors or leaders. Regarding future expectations, participants expressed a desire for AIGC tools that better understand target users and assist in evaluating prototypes. There was also a call for initiatives to encourage AIGC tool proficiency among UX practitioners, suggesting team-based incentives as a strategy.

By examining how AIGC tools currently influence team interactions, conflict management, and communication, and exploring UX practitioners' expectations for future tools, this study aims to provide actionable insights for the design of more effective, collaborative AI tools. In sum, we make the following contributions:

- We conducted focus groups and semi-structured interviews with Chinese UX practitioners to understand the potential of AIGC tools in supporting team dynamics.
- We identified the impact of AIGC tools on conflict resolution, team culture, and individual roles, and highlighted the potential negative impact of these tools on team dynamics in UX collaboration.
- We highlighted key considerations for improving the design of AIGC tools in the realm of UX design.

[1] https://www.zcool.com.cn/article/ZMTYwMTUzNg==.html

2 RELATED WORK

Our work is motivated by two related areas: the current integration of AI-powered tools into general UX workflow and the impact of AI integration on social dynamics in team collaboration.

2.1 The Integration of AI-Powered Tools in General UX Workflow

UX design has evolved into an integral component of the contemporary tech industry, attracting substantial attention from researchers [48]. In 2004, the British Design Council introduced the Double Diamond design process to standardize the UX workflow. This process comprises four stages: Discover, Define, Develop, and Deliver [11]. Currently, the Double Diamond framework is widely adopted by UX practitioners, both within and beyond the industry [10, 60, 83]. Thus, we ground our review on the integration of AI-powered tools within UX workflows on the Double Diamond framework. In the discover and define stages, AI-powered tools can help UX designers understand the needs of target users from the aspect of generating user persona [40, 64], assisting in analyzing user data [52, 84]. In the early stage of the development of inspiration exploration, AI-powered tools assist in mitigating design fixations [36], proposing contextually relevant materials [41], and enhancing creative expression [79]. Additionally, these tools support activities such as mood board design [74, 79], the generation of relevant design materials [9, 36, 41, 74], and the provision of design suggestions [41]. For prototype design in the development phase, researchers have examined using AI-powered tools to assist with designing from low-fidelity to high-fidelity prototypes [12, 23, 25, 76]. In the delivery stage, AI can be trained to assist UX practitioners in prototype evaluation to user testing, including automatic UX evaluation [16, 28, 37, 54], visualizing usability problems [17, 70] or varying the timing of AI suggestions to foster better analytic performance and engagement from UX practitioners [18]. Additionally, researchers explored the possibilities of using conversational AI to assist with UX evaluation [40, 42]. In a recent study, Li et al. investigated the perspectives of UX practitioners regarding AIGC integration and summarized how UX practitioners have implemented AIGC tools in practice [47]. Our review reveals that AI-powered tools have been designed to support different stages of the UX workflow. However, prior work has primarily concentrated on laboratory studies by examining how participants interacted with these tools or simply focused on the approaches to integrating these tools. This highlights the need for a deeper understanding of the *effects of these tools' integration*, especially regarding their influence on the everyday work and collaboration within teams of UX practitioners.

2.2 The Impact of AI Integration on Social Dynamics in Team Collaboration

To investigate the impact of AI on the social dynamics of collaboration, it is essential to first delineate the concept of collaboration itself. Collaboration can be defined as a collective effort towards achieving a common objective, characterized by team or group formation, productivity, continuity, and allocation of responsibilities [59]. In the realm of UX, collaboration both within and across teams is crucial for day-to-day operations[43, 45, 71]. However, a team is a complex social organization system [58]. The quality of collaboration and communication is influenced by various factors since interpersonal communication is inherently relational, dynamic, and context-sensitive [57, 65]. As team sizes increase, so does the complexity of relationships, elevating the risk of conflicts and underscoring the necessity for effective coordination to maintain productive collaboration [31, 35]. Research in this area has identified key factors influencing collaboration dynamics, including six core processes: cooperation, conflict, coordination, communication, coaching, and cognition [50], alongside three influencing conditions: composition, culture, and context [63]. These factors are interdependent and critical to understanding the multifaceted nature of collaboration [13]. Thus, our study focuses on how AI integration impacts factors like conflict, communication, and cultural aspects within teams. By anchoring our analysis in these considerations, we aim to identify strategies for enhancing team dynamics in the age of digital transformation.

As AI becomes more deeply integrated into industry practices, previous studies demonstrated that AI can autonomously execute cognitive tasks and engage in communication with humans through the exchange of inputs and outputs [1]. This suggests that AI is transitioning from a performance-enhancing tool to a role akin to that of a teammate [1, 66]. This evolution, highlighted by studies indicating AI's growing functionality in collaboration, points to a shift in team dynamics where AI is not just an aid but a participant in collaborative efforts [4, 67]. Researchers have identified various roles for AI in teamwork, ranging from a mediator and arbitrator [44] to a coordinator, creator, perfectionist, and doer [69], underscoring its multifaceted contribution to team processes. However, despite these advancements, the exploration of AI in the areas of leadership within teams remains nascent [81]. This gap shows that the full extent of AI's role, especially in the context of collaboration between UX practitioners, is not yet fully understood. Our study aims to bridge this gap by examining how the social dynamics of collaboration are affected by AI from the perspective of UX practitioners, thereby contributing to a deeper understanding of AI's integration in current practice.

3 METHOD

We first employed focus groups to obtain an initial understanding of the utilization of AIGC tools in the daily work and collaboration of UX practitioners. Through inductive analysis of data from the focus groups, we identified initial themes and used them to inform our follow-up research. To gather more insights and understand our findings deeper, we conducted semi-structured interviews with an additional 8 Chinese UX practitioners based on the focus group results. The study received approval from the university ethics review board.

Figure 1: Focus Group Procedure: (a) Introduction of the Study: the moderator introduced the topic and objectives of the focus group, (b) Retrospection of Participants' Workflow and Collaboration: participants conducted retrospection of their workflows and usage of AIGC tools using prepared materials, (c) Discussion of Participants' Retrospection Results: participants shared their workflows and experiences with AIGC tools while responding to questions from others, (d) Discussion of Specific Topics: participants discussed some specific topics prepared by the moderator.

3.1 Focus Group

3.1.1 ***Participants.*** We recruited UX professionals (N=18) from the industry through social media and mailing lists with two inclusion criteria: 1) At least one year of experience in UX-related occupations; 2) Experience using AIGC tools in their daily work. These participants came from South, East, and North China, which are the most densely populated areas of China's Internet industry. While five participants (F1-F5) came from the same company, others were from other companies. Table 1 shows the participants' demographics: eleven were UX designers, two were UI designers, two were product managers (PM), two were design team leaders, and one was a UX consultant. Their UX experience ranged from one to ten years and they came from diverse industries, such as mobile games, online community applications, and the motor industry. Regarding the utilization of AIGC tools, none of the participants' companies imposed restrictions on utilizing AIGC tools. Eight participants' companies (F1-F5, F7-F9) took the initiative to organize seminars to share the methods of AIGC utilization, three participants' companies (F7, F8, F18) developed AI tools to facilitate their daily work, and three participants' companies (F7, F8, F10) were developing AI products or features. AIGC tools that they most frequently used included *ChatGPT* (N=17), *Midjourney* (N=15), and

Table 1: Demographic Information of Participants in the Focus Group

Participants	Job Title	Job Experience (yr.)	AIGC Tools	AIGC Experience (yr.)	Industry	Size of company
F1	UX designer	1	ChatGPT, Stable Diffusion, NewBing, Midjourney	1	Mobile games	500+
F2	UX designer	4	ChatGPT, Midjourney	0.5	Mobile games	500+
F3	UX designer	1.5	ChatGPT, Midjourney	0.5	Mobile games	500+
F4	UX designer	1	ChatGPT, Midjourney, Caude AI	0.5	Mobile games	500+
F5	UX designer	4	ChatGPT, Midjourney	0.5	Mobile games	500+
F6	UX consultant	4	ChatGPT, Notion AI, Tome	0.5	Consultant	500k+
F7	UX designer	3	ERNIE Bot, Infoflow	0.5	Online community application	30k+
F8	Senior UX designer	6	ChatGPT, New Bing, ERNIE Bot, Midjourney, Stable Diffusion, Tongyi Qianwen	1	AI voice assistant	200k+
F9	UI designer	6	ChatGPT, ERNIE Bot, Midjourney, Photoshop (Beta)	0.5	Online community application	30k+
F10	UX designer	3	Midjourney, Stable Diffusion, Poe, ChatGPT	0.5	Internet application design	10k+
F11	Senior Product manager	3	Midjourney, ChatGPT	0.5	Motor industry	10k+
F12	UX designer	3	Midjourney, ChatGPT	0.5	Phone design	10k+
F13	Design team leader	3	Dall-E2, ChatGPT	0.5	Industrial control, Robot	10k+
F14	UI designer	10	Midjourney, ChatGPT	0.5	Online community application	200+
F15	UX designer	5	ChatGPT, Midjourney, Stable Diffusion, Photoshop (Beta)	0.5	Internet enterprises	100k+
F16	Design team leader	6	Midjourney, ChatGPT, Stable diffusion	0.5	Motor industry	500k+
F17	Product manager	3	ChatGPT, Stabble Diffusion, NewBing, Midjourney	0.5	B2B, SaaS consulting	20+
F18	UX designer	7	Midjourney, ChatGPT, Stable Diffusion, Internal Tools	1	Mobile games	30k+

Stable Diffusion (N=6). Since AIGC tools have gained traction recently, fifteen participants have used AIGC tools for one year and three have used AIGC tools for half a year.

3.1.2 ***Procedure.*** We conducted both in-person and online sessions (previous studies have demonstrated the feasibility of online focus group discussions [21, 73]), which allowed us to gather insights from a diverse range of UX professionals residing in geographically diverse locations. We conducted four focus groups: two groups of participants joined offline (Group 1: five participants, Group 2: four participants), while two groups joined online (Group 3: four participants, Group 4: five participants). We utilized Tencent Meeting for online focus group discussions. The study took 2 hours on average to finish, and each participant was compensated with the local currency equivalent to 15 USD. Each focus group was divided into four phases:

- **Introduction of the Study.** The moderator introduced the topic and objectives of the focus group and initiated an ice-breaking activity among participants to facilitate deeper discussion.
- **Retrospection of Participants' Workflow and Collaboration.** In this phase, participants conducted retrospection of their workflows and usage of AIGC tools. The moderator prepared some materials for participants to organize and present their retrospection of daily workflow and collaboration: 1) Cards with pre-defined design processes on them. The moderator prepared four colored cards, each labeled with a design phase: *Define/Understand product requirements*, *Ideation*, *Design prototypes*, and *Evaluate prototypes*. These pre-defined design phases were derived from the design thinking process [75]. Due to the variation in UX workflows, we did not require participants to conform to these pre-defined design phases strictly. We also prepared blank cards for participants to fill in based on their actual design phases. 2) Sticky notes. Participants could retrospect the actions and AIGC utilization taken during the work phases to achieve the goals of the phases and write on sticky notes. For online participants, moderators utilized Figma to digitalize the materials used in the offline study. Online participants employed Figma to organize and present their results. This process lasted about 30-40 minutes until all participants indicated that they had completed the retrospection.
- **Discussion of the Retrospection Results.** The results of the participants' retrospection were sequentially posted on a blank wall (or canvas in Figma) by the moderator for collective review. Subsequently, participants shared their workflows and collaborations while responding to questions from others. This inter-participant communication fostered in-depth retrospection and simultaneously yielded diverse perspectives.
- **Discussion of Specific Topics.** After the completion of individual workflow sharing by all participants, the moderator introduced specific topics to further enrich perspectives on aspects that may have been overlooked. These topics included the impact of AIGC tools on their UX collaborations, the change in their team structures, and their expectations for the future AIGC tools and teams.

3.1.3 ***Data Analysis.*** We followed thematic analysis to analyze our data [62]. All focus groups were recorded and automatically transcribed using "Tencent Meeting". Subsequently, two researchers independently coded the transcripts and conducted the inductive thematic analysis using the affinity diagramming approach [56]. Researchers regularly discussed the codes and resolved disagreements to create a consolidated codebook. Both primary coders possess over two years of experience as UX researchers and have more than one year of experience employing AIGC tools, such as ChatGPT and Midjourney. After that, further meetings were scheduled

Table 2: Demographic Information of Participants in Semi-structured Interview

Participants	Job Title	Job Experience (yr.)	AIGC Tools	AIGC Experience (yr.)	Industry	Size of company
P1	UX designer	5	ChatGPT, Midjourney, NewBing, ERNIE Bot	1	Internet	10k+
P2	UX designer	3	ChatGPT, Midjourney	1	Internet	30k+
P3	UX designer	1.5	ChatGPT, Midjourney	1	AI Industry	50+
P4	UI designer	10	ChatGPT, Midjourney, Stable Diffusion	1	AI Industry	200+
P5	UI Leader	12	ChatGPT, Midjourney, Stable Diffusion	1	Mobile games	500+
P6	UX designer	4	ChatGPT, Midjourney, Notion AI, Stable Diffusion	1	Consultant	10k+
P7	Product manager	1	ChatGPT, Midjourney, Stable Diffusion	2	AI Industry	30+
P8	UX consultant	3	ChatGPT, Midjourney	1	Consultant	10k+

with all co-authors to reach an agreement based on the preliminary coding results. Finally, we obtained three main themes: 1) Conflict resolution of communication and potential new conflicts; 2) Subtle Shift in Team Culture and Individual Roles; and 3) UX practitioners' Expectations.

3.2 Semi-structured Interview

Following the analysis of data derived from the focus groups, three primary themes emerged in response to the research questions. To gather more insights and understand deeper about these three themes, we conducted semi-structured interviews with 8 additional UX practitioners.

3.2.1 ***Participants.*** We recruited additional UX professionals (N=8) from the industry through social media and mailing lists with the same inclusion criteria and geographic location as recruiting participants for focus groups. None of the 8 participants participated in our focus group. Table 2 shows the participants' demographics: four were UX designers, one was a UI designer, one was a UI leader, one was a PM, and one was a UX consultant. Their UX experience ranged from one to twelve years and they came from diverse industries, such as mobile games, the AI industry, and the Internet. Regarding the utilization of AIGC tools, none of the participants' companies imposed restrictions on utilizing AIGC tools. Seven participants' companies (P1-P3, P5-P8) took the initiative to organize seminars to share the methods of AIGC utilization, four participants' companies (P2, P3, P5, P7) developed AI tools to facilitate their daily work, and three participants' companies (P3, P4, P7) were developing AI products or feature. AIGC tools that they most frequently used included *ChatGPT* (N=8), *Midjourney* (N=8), and *Stable Diffusion* (N=4). Seven participants have used AIGC tools for one year and one for two years.

3.2.2 ***Procedure.*** At first, participants conducted a brief retrospection of AIGC integration within their daily work. Subsequently, we asked follow-up questions on the retrospection and the underlying themes identified in the focus groups. The questions included: *"Has AIGC tools played a role in resolving collaborative conflicts for you? If so, how?" "What potential contradictions do you perceive AIGC tools introducing to your work?" "Are there any noticeable changes in your team due to the integration of AIGC tools?"* and *"What are your expectations for the future development of AIGC tools?"* We conducted additional in-depth inquiries regarding collaboration details, guided by the participants' responses. The interview took 30-40 minutes to finish, and each participant was compensated with the local currency equivalent to 15 USD. We employed the same data analysis processes as the focus group.

4 FINDINGS

We identified two main impacts of integrating AIGC tools on the social dynamics of UX teams: *1) Conflict Resolution:* AIGC tools reduced some conflicts while potentially introducing new conflicts with the integration of emerging technologies; *2) Team Culture and Personal Dynamics:* AIGC tools promoted a collaborative culture geared towards exploring AIGC capabilities and sharing usage experiences. Simultaneously, it gradually expanded the individual roles and responsibilities of UX practitioners. We also summarized UX practitioners' expectations for future AIGC tools and team development.

4.1 Conflict Resolution and Potential New Conflicts in UX Collaboration Resulting from Integrating AIGC Tools.

4.1.1 ***The Integration of AIGC Tools Reduces Conflicts in UX Collaboration.*** It is mainly manifested in three aspects: **(1) Visualizing concepts to mitigate comprehension errors during verbal communication.** Fourteen participants utilized AIGC tools to create visual representations such as storyboards to articulate concepts clearly, aiming to reduce *"comprehension errors and unnecessary debate (P4)."* Simultaneously, compared to previous approaches (e.g., hand-drawing and computer-drawing), AIGC tools offer a more convenient avenue for some UX designers who are not proficient at sketching (Figure 2). As P8 said, *"generating is much faster than freehand sketching."* Additionally, F14 said, *"This approach saves me the time to jump between different websites to find materials."* However, participants also highlighted that while it was feasible to generate visual materials by simply inputting prompts, the learning and selection of prompts involved crucial steps.

(2) Providing additional perspectives to mediate debates and promote consensus among collaborators. Seven participants recounted challenges faced during discussions with cross-functional collaborators, such as product managers and developers. P5 highlighted that *"UX designer is consistently in a weak position during these discussions. For example, some PMs believe they have*

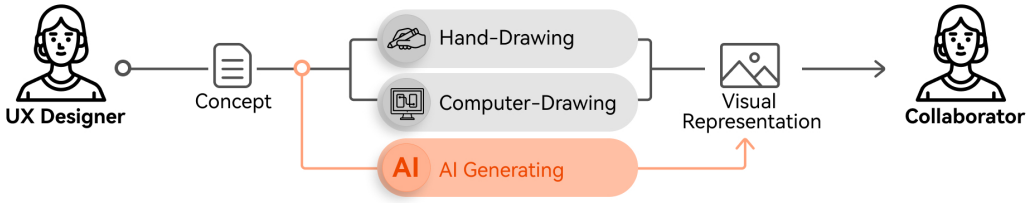

Figure 2: The evolution of how UX practitioners visualize concepts involves two stages: Traditionally, practitioners relied on manual methods such as hand drawing and computer drawing. Currently, the integration of AIGC tools enables practitioners to expedite the generation of visualizations swiftly (The gray patterns represent the original workflow, while the orange patterns represent the behavior, processes, or role transitions in UX work under the integration of AIGC tools. This applies to the color representations in Fig3 and Fig4.).

some knowledge of UX, leading them to disregard my input, leaving me no choice but to repeatedly argue with them." Therefore, some participants tended to seek assistance from their leaders to have further discussions. However, this approach lacked timeliness, requiring additional time for describing details with leaders. Moreover, as P3 said, *"Sometimes the leaders are indecisive, and they struggle to make definitive decisions quickly."*, he also emphasized that *"this approach lacks the rigor and persuasiveness of scientific measurement."* Consequently, four participants employed a strategy involving AIGC tools in discussions (Figure 3a). They utilized AIGC tools to evaluate interface layouts, interaction flows, and fulfillment of target user needs to strengthen their viewpoints. For instance, P5 said,*"I utilize Attention Insight to create heat maps of the user interface, enhancing the persuasiveness."* P6 mentioned, *"I employ ChatGPT to generate a user persona to evaluate and provide feedback on my design."*

(3) Facilitating the comprehension of collaborators' workload and challenges. AIGC tools introduced a novel avenue for participants to understand the workload of their collaborators' tasks (Figure 3b). Four participants employed conversational agents (CAs) to investigate the ongoing work of their collaborators, as P2 said, *"I utilize ChatGPT to validate development workload before engaging with developers and to gain insights into the challenges of the development process."* P4 employed CAs to *"understand the difficulties of creating some 3D character models for UI design."*. Furthermore, in contrast to conventional search engines, CAs exhibited the capability to provide *"more centralized responses, thereby diminishing the time expended on navigating multiple web pages for information retrieval (F1)."* However, P2 also acknowledged that the generated content and data tended to be broad and fragmented, *"it is challenging to swiftly utilize AI to comprehend the intricate technological aspects within the company."*

4.1.2 ***The Integration of AIGC Tools Introduces Potential New Conflicts in Current UX Collaboration.*** We found that the integration of AIGC tools also introduced two potential new conflicts: **(1) The quality of AI-generated content sometimes surpasses that of collaborators.** AIGC tools provided UX designers with expanded content generation capabilities. However, nine participants encountered a situation where AI-generated content was of higher quality than the work produced by collaborators. Therefore, participants are confronted with a decision regarding whether to utilize the AI-generated content or that created by their colleagues. Accepting AI's content may embarrass their colleagues and cause tension. As F1 said, *"Some AI-generated images can be directly provided to front-end engineers."* P9 mentioned, *"Sometimes the posters generated by AI surpassed the materials provided by the operations department."* As a solution, participants typically accepted the output produced by their collaborators instead of AI's output, even though the latter might be better than the former, to avoid potential conflicts among human collaborators. Their actions were confined to *"private complaints rather than overt expressions (F1)."* Furthermore, four participants proactively communicated with collaborators. F1 added, *"If the images deviate significantly from our expectations, I consistently engage in communication with UI designers."* P2 suggested that *"directly presenting the AI-generated results to collaborators might be impolite,"* so he preferred *"involving ChatGPT to generate more colloquial expressions of technical terms, facilitating discussions with developers about coding."* However, for some participants, this collaborative conflict did not severely impact their work, as they had reached a consensus with collaborators that *"the goal is the most important (P1),"* and *"as long as the final result is good, it doesn't matter much who produces it or what tool is used to achieve it (P8)."* In particular, P6 provided his interpretation, he indicated the essence of this phenomenon lies in *"the transformation of production relations following the emergence of AIGC tools"*, and he believed that practitioners are *"inclined to adapt to the changes AI introduced"* because *" they don't want to give up efficient tools."*

(2) Skepticism toward content generated by AIGC tools. Ten participants articulated their skepticism of content generated by AIGC tools, particularly concerning data reliability. This limitation raised concerns among collaborators regarding the reliability of AI-generated content. As F11 described, *"I once utilized AI-generated data about competitive products in a project report, and the leader promptly identified inaccuracies. He issued a specific caution to all company employees, advising against blind trust in AI."* Furthermore, some participants noted the challenge in assessing the authenticity of generated data, prompting their adoption of varied verification strategies. For instance, six participants requested AI to generate data sources, cross-referencing them with relevant sources to verify authenticity. Meanwhile, two participants chose to modify prompts, ensuring that the output maintained consistency. P1 said, *"Switching*

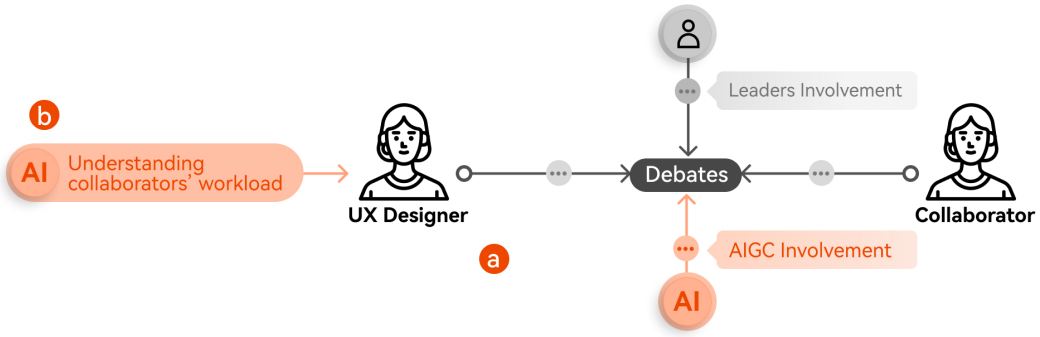

Figure 3: a) The process of how AIGC tools mediate debates. The previous approach was to seek assistance solely from leaders. Through the integration of AIGC tools, UX designers can actively involve these tools in the discussion. b) Before engaging in communication with collaborators, UX designers leverage AIGC tools to gain insights into collaborators' workloads.

the language or order of prompts can result in different outputs from ChatGPT. Therefore, I try to verify the consistency of generated content by altering these prompts." Notably, F5 and P8 chose to seek feedback and comments from colleagues, with F5 noting, *"After consulting with a colleague, I was informed that the outputs generated by these tools are about 90% comparable to actual results. Given my trust in this colleague, I've also developed trust in the tool itself."*

4.2 Transformation in Team Culture and Individual Roles in UX Collaboration Resulting from Integration of AIGC Tools.

4.2.1 ***AIGC Tools Integration Promoted UX Team Culture Characterized by Exploring AIGC Capabilities and Sharing their Experiences.*** Fourteen participants mentioned that they stayed abreast of the latest information about AIGC, engaging in learning and testing novel AIGC tools and prompts (Figure 4). The primary channels for firsthand information updates encompassed social media platforms such as YouTube, Medium, Bilibili, and XiaoHongshu. Seven participants acquired knowledge through team or company-based sharing activities, as well as paying attention to tweets shared by friends on social networking apps. Three participants actively participated in external sharing sessions and competitions to stay informed about trends. Upon acquiring new information, participants conducted tests to validate its applicability to their daily work, as well as *"comparing the generated outcomes with existing tools (F1)."*

After testing new AIGC tools and prompts individually, they actively shared potential tools with their team members (Figure 4). For instance, P3 said, *"We occasionally share intriguing algorithms in our team and explore tools tailored to our work."* Similarly, P5 conveyed, *"If the designers have a handy prompt, they will organize it into detailed steps for collective learning."* After completing the evaluation, they would have an in-depth discussion to determine the effect of these AIGC tools. Notably, the team led by P7 adopted a strategy involving the *"assignment of a simple design task to evaluate the effectiveness of the tool within a specified timeframe."* While it was acknowledged that the outcomes of AIGC tool testing may not consistently align with expectations, participants emphasized that the experiential and discussion processes contributed valuable insights, fostering a collaborative atmosphere for sharing experiences and perspectives.

However, some participants argued for a balanced approach to learning AI. For instance, P5, the head of the UI department, recognized the efficiency gains from using AIGC tools. Yet, she also stressed the need to avoid allocating all working hours to AI learning and research. She highlighted the urgency and importance of learning AI primarily in the context of mass production challenges, suggesting a focus on practical, problem-solving applications of AI knowledge.

4.2.2 ***The Roles of Some UX Practitioners Expanded to "Instructors" and "Leaders".*** subsection 4.2 mentioned that the integration of AIGC tools promoted team culture by encouraging explorations and sharing. With this shift, we observed that AIGC-skilled UX designers actively or passively took on the roles of instructors or leaders in AI learning (Figure 4). Six participants mentioned being frequently approached by colleagues for assistance. P1, an early AIGC tools user, expressed a willingness to *"share prompts with colleagues and guide them on adjusting keywords to generate similar style images."* However, he clarified that he wouldn't *"directly generating content for colleagues."* F1 stated that he would *"often help colleagues to generate some visual materials, as it's very easy"*, and F4 and F5, who worked on the same team as F1, confirmed that F1 was very popular as a power user of AIGC tools. Additionally, some participants actively advocated for the learning and integration of AIGC tools within the team. For instance, P4 said, *"I consider myself an exploratory designer, and I consistently recommend new AIGC tools to the team."* Furthermore, P1 was invited to present and share their AIGC tools usage experience with all UX department colleagues, establishing an "AI exploration" group with some colleagues.

4.3 UX Designers' Expectations of Future AIGC Tools and Team Development.

4.3.1 ***Expectation 1: Assisting UX Designers in Understanding Precise Insights into Target Users.*** Ten participants highlighted that, in contrast to UI design or development, UX design

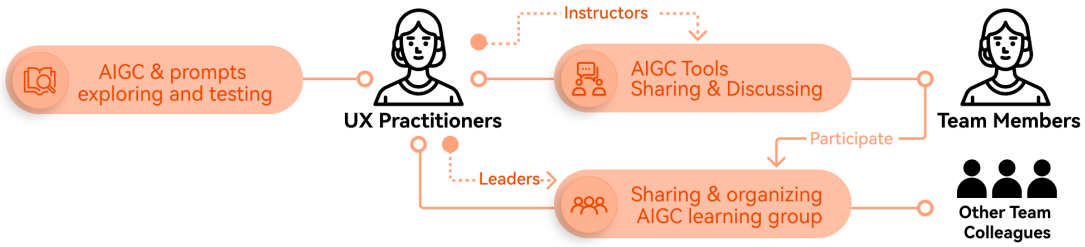

Figure 4: A team culture characterized by exploring and sharing AIGC tools: UX practitioners share and discuss their exploring AIGC tools with team members and form AIGC Learning groups with other colleagues. In this process, the UX practitioner's role is expanded to that of instructor and leader.

was more closely aligned with the project's core business line, emphasizing the essential needs and experiences of the target users. However, a notable gap existed as *"the majority of advanced AIGC tools excel primarily in handling text and image output, yet there is a lack of effective AIGC capable of enhancing UX design—a tool serving the creative process spanning from divergent thinking to convergent realization (P6)."* Despite some participants' attempts with CAs like ChatGPT, there still existed limitations such as a lack of empathy (P3), content fragmentation (P1), and falsification of data (F1, F4, F5, F11, P1, P2, and P8). As a result, many participants wanted AIGC tools to help them understand target users and define problems. For example, three participants expected that AIGC tools could assist them in understanding target users by analyzing user interview results (P6, P7), as P6 said, *"Manual processing of interview data is a highly intricate task, and there is a risk of overlooking key information. Therefore, if AIGC tools can assist with analysis, it could significantly improve efficiency, potentially capturing nuances such as users' emotional fluctuations."*

4.3.2 ***Expectation 2: Assisting in Evaluating Prototypes and Effectiveness of the UX Design.*** Five participants expressed their expectations regarding AIGC tools' involvement in design evaluation, aiming to conduct a thorough scrutiny of oversights before delivering to development. This was intended to reduce the costs associated with rework and iterations, especially enhancing individual reflection on their designs. For instance, F15 expressed, *"In the current design environment, I expect AIGC tools to help me assess the overall effectiveness of the prototype and predict how much improvement in product performance my new UX design can create."* P6 expressed that while he attempted to employ ChatGPT to simulate users, he would rather *"have professional tools to help him comprehensively understand them."* For example, he proposed that designers could train AI-powered target users and then ask them to interact with the testing prototypes and offer design feedback without needing to recruit real users. P3 also mentioned, *"I hope to understand whether my design has a positive or negative impact on product performance."* Specifically, he expected that AIGC tools could comprehend the prototypes, requirements, and additional documents he provided, guiding him on *"how to set up event tracking for this design and how to monitor these event tracking."* Once receiving feedback on the data from the corresponding event tracking, he gained insights into the effectiveness of that design portion, allowing him to draw from this experience in subsequent projects.

4.3.3 ***Expectation 3: Other Expectations for Future AIGC Tools.*** In addition to the specific UX-related expectations, participants also desired general improvements. Firstly, concerning the application of AIGC tools for conceptual visualization, participants expressed a desire for a simpler approach to producing higher-fidelity images (P8, F2). Additionally, F13, who is engaged in robot design, expressed that *"industrial design places more emphasis on the study of product appearance compared to software design."* Therefore, he suggested integrating AIGC tools with specific tools to expedite the creation of tangible prototypes. In terms of data verification, many participants expected AIGC tools to automatically provide the source of generated data to facilitate swift searches and verifications of data sources (F1, F4, F11, P7). Four participants pointed out that it was better to reduce the hardware configuration burden of some AIGC tools, like Stable Diffusion, which currently requires demanding hardware requirements and intricate installation processes.

4.3.4 ***Expectation 4: Promoting AIGC Learning Among UX Practitioners through Team-Based Motivation.*** Fourteen participants expressed optimism regarding the future of AI-driven UX work. Despite acknowledging existing limitations and controversies about AIGC tools, they asserted that *"early learning and access is a wise choice (F5)."* Within the AIGC learning in UX work, participants underscored the importance of team motivation. P4 emphasized, *"The team's efforts can alleviate various usage constraints, such as shouldering the cost of tool acquisition and enhancing the team's atmosphere."* F5 added, *"AI necessitates structured, systematic learning, a prolonged undertaking that demands effective team leadership."* Additionally, given the current limitations of AIGC tools, the role of the team became more prominent. At first, some participants advocated for the team's active involvement in *"specifying and constraining the principles of AI usage (P6),"*, which could reduce usage disputes and technical anxiety associated with the integration of new tools. Furthermore, to alleviate the challenges faced by UX practitioners with limited AI knowledge, some participants suggested that leaders should recruit members with relevant technical backgrounds to strengthen the team. Alternatively, active collaboration with the technical department was recommended, as P13

said, *"Effective human-AI collaboration relies on the foundation of a mature and sizable engineering team for support."*

5 DISCUSSION

5.1 The Potential Benefits and Concerns of Employing AIGC Tools for Conflict Resolution in UX Collaboration

5.1.1 ***Potential Benefits of Conflict Resolution.*** Research on UX collaboration has demonstrated that debates and conflicts between UX practitioners and collaborators often stem from factors such as a lack of mutual understanding of expertise and direct communication [2, 34, 34, 38, 38, 55]. In this study, we found that participants employed strategies utilizing AIGC tools to enhance collaboration and mitigate conflicts. Some participants leveraged AIGC tools to create rapid visualization of concepts. This process helps build a common understanding of terms and directions in UX collaborative communication [30]. In particular, AIGC's ability to rapidly generate images simplifies the visualization process [23, 36, 74], such as saving time in cross-platform materials collection and enabling some UX designers, who are not proficient at sketching, to quickly generate visual materials through prompts. Additionally, some participants stated that AIGC tools provide different perspectives to mediate debates. While prior work suggested that AI could potentially act as a "coordinator," focusing on neutral, fact-based, unemotional arguments, and as a "perfectionist," pinpointing the optimal solutions based on objective criteria in lab studies [69], our work provided concrete practices in industry such as assisting participants in evaluating interface layouts, interaction flows, and fulfillment of target user needs, illustrating the mediator role AIGC tools play. Finally, with the big data repository and proficient text generation capabilities of CAs like ChatGPT [22, 82], participants can easily leverage them to understand their collaborators in a given task. For instance, in Section 4.1.1 (3), participants mentioned that they employed ChatGPT to comprehend collaborators' challenges in product development, 3D model creation, and other areas, affirming its efficiency in information retrieval. Furthermore, we posit that in contrast to the methods proposed in previous studies, such as partners actively engaging in cross-learning to mitigate conflicts [38], rapid comprehension of task focal points through AI is relatively effective in real-world scenarios. Participants do not need to expend considerable effort to acquire the full professional knowledge of collaborators, they can dedicate their attention to learning or acquiring specific task-related knowledge through CAs in advance, visualize the concept through text-to-image AI, and obtain timely data support in disputes (Section 4.1.1). However, this approach to employing AIGC tools to reduce conflicts has certain limitations, which we will discuss in the following section. In sum, our findings underscore the potential of AI in alleviating collaboration conflicts

5.1.2 ***Concerns of Potential New Conflicts.*** While highlighting the advantages of AIGC tools in conflict resolution, it is necessary to acknowledge the potential conflicts it may introduce. Some participants expressed that they sometimes encountered situations where the quality of AI-generated content surpasses that of collaborators. In this situation, they are confronted with the dilemma of selecting between them. Opting against their peers' suggestions risks potential offense to colleagues. Presently, academia lacks an in-depth exploration of this direction. Further research is warranted to explore strategies for engaging in discussions with colleagues regarding the adoption of either peer advice or AI recommendations without conflict. Additionally, although we have not yet obtained collaborators' exact perspectives, based on prior research, we speculate that if participants excessively rely on AI, collaborators may feel marginalized or disempowered [5, 8, 80]. However, it's worth noting that these feelings are not absolute. In some studies involving creative professionals or game industry professionals, many participants expressed no concerns about being replaced [33, 78]. However, since these studies do not primarily focus on the UX field, further exploration is necessary to investigate whether there is potential marginalization of collaborators due to AIGC among different roles (e.g., UX designers and UI designers, UX designers and PM) in the UX environment. Another concern is the potential for bias or errors in AI-generated content, which not only poses risks in working scenarios but also increases the time for users to validate data [20, 29, 41, 76]. In collaboration, distrust of generated data could strengthen collaborators' skepticism toward UX practitioners' perspectives, leading to more debate and even conflict. Therefore, utilizing AI for conflict resolution requires awareness of its potential risks.

5.2 The Important Role of Teams in Motivating AIGC Tools Learning and Usage

5.2.1 ***How Teams Can Motivate Learning and Usage.*** In our study, participants underscore the significance of team-motivated AIGC tools learning. On the one hand, they expressed that integrating AIGC tools into current UX practices has fostered a collaborative culture of exploration and sharing within their teams. This collaborative learning approach can enhance adaptability and explain tacit knowledge, facilitating effective responses to similar scenarios in the future [61, 68, 72, 77]. On the other hand, participants' expectations for the AIGC tool development also emphasized the crucial role of team leadership. Initially, concerning the acquisition of AIGC tools, participants believed that team support could mitigate usage constraints, cover acquisition costs, and provide professional technical assistance. Subsequently, regarding AIGC utilization and oversight, participants advocated for team leaders to establish rules and limitations on AI use. This is primarily due to the challenges and ethical dilemmas associated with AIGC tools. For instance, in Section 4.1.2, participants expressed concerns about new conflicts arising from skepticism about AIGC. Additionally, practitioners may overly rely on AI, potentially accepting decisions without verification [6]. Furthermore, previous studies have highlighted other challenges posed by AIGC, such as contentious intellectual property rights of AI-generated content [27], and privacy and security concerns associated with AIGC tool usage [14]. Therefore, in light of these limitations, it becomes incumbent upon team leaders to address the needs of their members and employ targeted measures to aid in the effective acquisition and utilization of AIGC tools. For instance, they should establish pre-defined regulations and guidelines for acquiring and utilizing AIGC tools to regulate team members' dependence on these tools. Additionally,

they should vigilantly monitor the impact of these tools among team members, fostering an environment conducive to collaborative learning and knowledge sharing. However, the establishment of reasonable AIGC tool learning and usage patterns by teams remains a direction that requires widespread exploration, especially following the gradual deeper integration of AIGC into UX practice.

5.2.2 ***The Gradual Transition of Individual Roles to Team Leadership.*** We observed that UX practitioners proficient in AIGC usage or displaying a significant passion for AIGC tools progressively assumed the roles of instructors and leaders. Some participants willingly offered recommendations or guidance to team members in AIGC learning. There may have been a shift in identity, where they were not just improving AI knowledge and skills but also deriving motivation and a sense of achievement from fostering learning and collaboration [3, 46]. While it remains unclear to what extent this identity shift may impact the professional development and UX team [49, 51], given that these members actively follow AI updates in real-time and understand the nature of UX work and the details of working with AI as UX practitioners, we hypothesized that involving these participants in the management of AIGC tools learning and utilization in UX team can improve team learning efficiency. This hypothesis warrants further exploration and validation in subsequent relevant studies.

5.3 Implications of UX Practitioners' Future Expectations of AIGC Tools

Understanding user needs and evaluating prototypes in UX design is important. In this study, participants expressed their expectations of the development of AIGC tools to assist in understanding target users and evaluating prototypes. However, our literature review reveals that many studies have already sought to assist practitioners in understanding target users and prototype evaluation by developing AI-driven tools. For example, to understand target users, some researchers explored utilizing AI to analyze vast quantities of textual and video data, mitigate the time-consuming nature of manual text processing by designers, and supplement missing user information [15, 39, 52]. Secondly, some researchers have developed AI-driven tools to extract intricate user data by observing and documenting user behavior [84]. In terms of prototype evaluation, researchers leveraged AI-powered tools for automatic UX evaluation [16, 28, 37, 54], as well as exploring human-AI collaborative approaches by visualizing ML-driven features that are indicative of usability problems [17, 70]. In addition to the research field, several commercial tools have incorporated AI features to support user understanding and prototype evaluation. For example, AI Insight Summary [2]provides users with interactive, powerful data analysis on demand by leveraging AI to automatically summarize and identify key information in verbal and behavioral data. Syntheticusers [3] and Userdoc [4] provide AI-simulated users to help designers understand requirements and evaluate designs. VisualEyes [5] generates attention heat maps and preference tests for designers to evaluate the design of the interface. However, these research-based and commercial tools developed for UX workflows were not widely adopted by our participants working in the industry. They tended to use more general tools like ChatGPT despite being aware of its limitations, such as privacy concerns and incorrect responses. We speculate that one reason for this phenomenon may be that ChatGPT offers advantages such as efficient multi-modal semantic understanding and text generation, a straightforward interaction mode, and creativity [82], making it more user-friendly and accessible. Additionally, it can fulfill various user needs within a single platform, which is popular for users [19, 53]. For instance, in our study, users utilized ChatGPT to gather information about collaborators and simulate user interactions. Given the limitations of ChatGPT, future work could explore integrating its capabilities into research tools to create a more powerful platform to support UX practitioners. Future work is also warranted to raise awareness of UX-focused commercial tools and investigate why these are not more widely adopted by UX practitioners.

[2]https://www.usertesting.com/blog/ai-insight-summary
[3]https://www.syntheticusers.com/
[4]https://userdoc.fyi/
[5]https://www.visualeyes.design/

6 LIMITATION AND FUTURE WORK

Participants recruited for this study did not encompass all possible roles within the UX field, such as usability test moderators, and the distribution of types of UX roles was not balanced. In addition, most of the experimental data were concentrated on the participants' recollections, which introduces the possibility of retrospection bias, potentially affecting the accuracy and objectivity of the reported experiences. To mitigate this limitation and enhance the robustness of the findings, future studies should consider incorporating a mix of data collection methods, including observation and logs. Moreover, in this study, we solely investigated the social dynamics of collaboration among UX practitioners utilizing AIGC. Future research could center on examining the perception of AIGC among UX practitioners who lack familiarity with AIGC tools or who have discontinued their use after initial adoption. In addition, given the potential shift in UX collaboration dynamics that may accompany the update of AIGC tools, it would be interesting to explore how the impact of AIGC tools evolves as they become increasingly integrated into the UX workflow.

7 CONCLUSION

We conducted focus groups and semi-structured interviews to understand the impact of AIGC tools integration on social dynamics in UX collaboration and the expectations of UX practitioners for the development of future AIGC tools and teams. Based on the responses of 26 participants who had varying UX experience and worked in different Chinese design industries, we found that the impact of AIGC tools integration on social dynamics in UX collaboration manifested in two ways. At first, AIGC tools mitigated conflicts by quickly visualizing concepts, providing evaluation perspectives in debates, and assisting participants in understanding collaborators' workload. However, they also introduced two potential new conflicts: the quality of AI-generated content sometimes surpasses that of collaborators, and skepticism of the reliability of AI-generated content. Secondly, we also found that AIGC tools promoted a team culture characterized by exploring and sharing. The role of some participants expanded to instructors and leaders. Finally, participants' expectations focused on developing AIGC tools

to enhance understanding of target users and prototype evaluation, as well as promoting AIGC learning through team-based motivation. Based on these findings, we discussed in depth the potential benefits and concerns of using AIGC tools for conflict resolution, summarized the important role of teams in motivating and managing AIGC tool learning and use, and proposed several suggestions for future AI design research. In sum, our work has taken the first step toward investigating the dynamics of coordinating real-world UX collaboration through AIGC tools.

REFERENCES

[1] Hussein A Abbass. 2019. Social integration of artificial intelligence: functions, automation allocation logic and human-autonomy trust. *Cognitive Computation* 11, 2 (2019), 159–171.

[2] Maliheh Aghanasiri. 2016. *User experience designer+ Multidisciplinary team: Guideline to an efficient collaboration.* Ph. D. Dissertation. University of Cincinnati.

[3] Blake E Ashforth, Spencer H Harrison, and Kevin G Corley. 2008. Identification in organizations: An examination of four fundamental questions. *Journal of management* 34, 3 (2008), 325–374.

[4] Eva Bittner, Sarah Oeste-Reiß, and Jan Marco Leimeister. 2019. Where is the bot in our team? Toward a taxonomy of design option combinations for conversational agents in collaborative work. (2019).

[5] Éric Brangier and Sonia Hammes-Adelé. 2011. Beyond the technology acceptance model: elements to validate the human-technology symbiosis model. In *Ergonomics and Health Aspects of Work with Computers: International Conference, EHAWC 2011, Held as Part of HCI International 2011, Orlando, FL, USA, July 9-14, 2011. Proceedings*. Springer, 13–21.

[6] Zana Buçinca, Maja Barbara Malaya, and Krzysztof Z Gajos. 2021. To trust or to think: cognitive forcing functions can reduce overreliance on AI in AI-assisted decision-making. *Proceedings of the ACM on Human-Computer Interaction* 5, CSCW1 (2021), 1–21.

[7] Columbia Engineering Boot Camps. 2021. What is ux design? differences between UX and Ui Design. https://bootcamp.cvn.columbia.edu/blog/what-is-ux-design/

[8] Adam M Chekroud, Julia Bondar, Jaime Delgadillo, Gavin Doherty, Akash Wasil, Marjolein Fokkema, Zachary Cohen, Danielle Belgrave, Robert DeRubeis, Raquel Iniesta, et al. 2021. The promise of machine learning in predicting treatment outcomes in psychiatry. *World Psychiatry* 20, 2 (2021), 154–170.

[9] Li-Yuan Chiou, Peng-Kai Hung, Rung-Huei Liang, and Chun-Teng Wang. 2023. Designing with AI: An Exploration of Co-Ideation with Image Generators. In *Proceedings of the 2023 ACM Designing Interactive Systems Conference* (Pittsburgh, PA, USA) *(DIS '23)*. Association for Computing Machinery, New York, NY, USA, 1941–1954. https://doi.org/10.1145/3563657.3596001

[10] Stephen J Clune and Simon Lockrey. 2014. Developing environmental sustainability strategies, the Double Diamond method of LCA and design thinking: a case study from aged care. *Journal of Cleaner Production* 85 (2014), 67–82.

[11] Design Council. [n. d.]. The Double Diamond. https://www.designcouncil.org.uk/our-resources/the-double-diamond/

[12] Biplab Deka, Zifeng Huang, Chad Franzen, Joshua Hibschman, Daniel Afergan, Yang Li, Jeffrey Nichols, and Ranjitha Kumar. 2017. Rico: A Mobile App Dataset for Building Data-Driven Design Applications. In *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology* (Québec City, QC, Canada) *(UIST '17)*. Association for Computing Machinery, New York, NY, USA, 845–854. https://doi.org/10.1145/3126594.3126651

[13] Julie V Dinh and Eduardo Salas. 2017. Factors that influence teamwork. *The Wiley Blackwell handbook of the psychology of team working and collaborative processes* (2017), 13–41.

[14] David Elliott and Eldon Soifer. 2022. AI technologies, privacy, and security. *Frontiers in Artificial Intelligence* 5 (2022), 826737.

[15] Hugo Jair Escalante, Isabelle Guyon, Sergio Escalera, Julio Jacques, Meysam Madadi, Xavier Baró, Stephane Ayache, Evelyne Viegas, Yağmur Güçlütürk, Umut Güçlü, et al. 2017. Design of an explainable machine learning challenge for video interviews. In *2017 International joint conference on neural networks (IJCNN)*. IEEE, 3688–3695.

[16] Mingming Fan, Yue Li, and Khai N. Truong. 2020. Automatic Detection of Usability Problem Encounters in Think-Aloud Sessions. *ACM Trans. Interact. Intell. Syst.* 10, 2, Article 16 (may 2020), 24 pages. https://doi.org/10.1145/3385732

[17] Mingming Fan, Ke Wu, Jian Zhao, Yue Li, Winter Wei, and Khai N Truong. 2019. VisTA: integrating machine intelligence with visualization to support the investigation of think-aloud sessions. *IEEE Transactions on Visualization and Computer Graphics* 26, 1 (2019), 343–352.

[18] Mingming Fan, Xianyou Yang, TszTung Yu, Q. Vera Liao, and Jian Zhao. 2022. Human-AI Collaboration for UX Evaluation: Effects of Explanation and Synchronization. *Proc. ACM Hum.-Comput. Interact.* 6, CSCW1, Article 96 (apr 2022), 32 pages. https://doi.org/10.1145/3512943

[19] K. J. Kevin Feng, Tony W Li, and Amy X. Zhang. 2023. Understanding Collaborative Practices and Tools of Professional UX Practitioners in Software Organizations. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) *(CHI '23)*. Association for Computing Machinery, New York, NY, USA, Article 764, 20 pages. https://doi.org/10.1145/3544548.3581273

[20] Joel E Fischer. 2023. Generative AI Considered Harmful. In *Proceedings of the 5th International Conference on Conversational User Interfaces* (Eindhoven, Netherlands) *(CUI '23)*. Association for Computing Machinery, New York, NY, USA, Article 7, 5 pages. https://doi.org/10.1145/3571884.3603756

[21] Fiona E Fox, Marianne Morris, and Nichola Rumsey. 2007. Doing synchronous online focus groups with young people: Methodological reflections. *Qualitative health research* 17, 4 (2007), 539–547.

[22] Fiona Fui-Hoon Nah, Ruilin Zheng, Jingyuan Cai, Keng Siau, and Langtao Chen. 2023. Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. , 277–304 pages.

[23] Nishit Gajjar, Vinoth Pandian Sermuga Pandian, Sarah Suleri, and Matthias Jarke. 2021. Akin: Generating UI Wireframes From UI Design Patterns Using Deep Learning. In *26th International Conference on Intelligent User Interfaces - Companion* (College Station, TX, USA) *(IUI '21 Companion)*. Association for Computing Machinery, New York, NY, USA, 40–42. https://doi.org/10.1145/3397482.3450727

[24] Colin M Gray, Austin L Toombs, and Shad Gross. 2015. Flow of competence in UX design practice. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. 3285–3294.

[25] Jiajing Guo, Zhen Li, Stanislaus Ju, Monisha Manoharan, and Adelle Knight. 2020. DLS Magician: Promoting Early-Stage Collaboration by Automating UI Design Process in an E&P Environment *(IUI '20)*. Association for Computing Machinery, New York, NY, USA, 95–96. https://doi.org/10.1145/3379336.3381462

[26] Shunan Guo, Zhuochen Jin, Fuling Sun, Jingwen Li, Zhaorui Li, Yang Shi, and Nan Cao. 2021. Vinci: An Intelligent Graphic Design System for Generating Advertising Posters. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama, Japan) *(CHI '21)*. Association for Computing Machinery, New York, NY, USA, Article 577, 17 pages. https://doi.org/10.1145/3411764.3445117

[27] Philipp Hacker, Andreas Engel, and Marco Mauer. 2023. Regulating ChatGPT and Other Large Generative AI Models. In *Proceedings of the 2023 ACM Conference on Fairness, Accountability, and Transparency* (Chicago, IL, USA) *(FAccT '23)*. Association for Computing Machinery, New York, NY, USA, 1112–1123. https://doi.org/10.1145/3593013.3594067

[28] Patrick Harms. 2019. Automated usability evaluation of virtual reality applications. *ACM Transactions on Computer-Human Interaction (TOCHI)* 26, 3 (2019), 1–36.

[29] Lena Hegemann, Yue Jiang, Joon Gi Shin, Yi-Chi Liao, Markku Laine, and Antti Oulasvirta. 2023. Computational Assistance for User Interface Design: Smarter Generation and Evaluation of Design Ideas. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (Hamburg, Germany) *(CHI EA '23)*. Association for Computing Machinery, New York, NY, USA, Article 430, 5 pages. https://doi.org/10.1145/3544549.3583960

[30] Scarlett R Herring, Chia-Chen Chang, Jesse Krantzler, and Brian P Bailey. 2009. Getting inspired! Understanding how and why examples are used in creative design practice. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 87–96.

[31] Andrea B Hollingshead, Gwen M Wittenbaum, Paul B Paulus, Randy Y Hirokawa, Deborah G Ancona, Randall S Peterson, Karen A Jehn, and Kay Yoon. 2005. A look at groups from the functional perspective. *Theories of small groups: Interdisciplinary perspectives* (2005), 21–62.

[32] World Leaders in Research-Based User Experience. [n. d.]. A 100-year view of user experience (by Jakob Nielsen). https://www.nngroup.com/articles/100-years-ux/

[33] Nanna Inie, Jeanette Falk, and Steve Tanimoto. 2023. Designing participatory ai: Creative professionals' worries and expectations about generative ai. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–8.

[34] Minna Isomursu, Andrey Sirotkin, Petri Voltti, and Markku Halonen. 2012. User Experience Design Goes Agile in Lean Transformation–A Case Study. In *2012 Agile Conference*. IEEE, 1–10.

[35] Karen A Jehn and Corinne Bendersky. 2003. Intragroup conflict in organizations: A contingency perspective on the conflict-outcome relationship. *Research in organizational behavior* 25 (2003), 187–242.

[36] Youngseung Jeon, Seungwan Jin, Patrick C. Shih, and Kyungsik Han. 2021. FashionQ: An AI-Driven Creativity Support Tool for Facilitating Ideation in Fashion Design. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama, Japan) *(CHI '21)*. Association for Computing Machinery, New York, NY, USA, Article 576, 18 pages. https://doi.org/10.1145/3411764.3445093

[37] JongWook Jeong, NeungHoe Kim, and Hoh Peter In. 2020. Detecting usability problems in mobile applications on the basis of dissimilarity in user behavior. *International Journal of Human-Computer Studies* 139 (2020), 102364.

[38] Alexander Jones and Volker Thoma. 2019. Determinants for successful agile collaboration between UX designers and software developers in a complex organisation. *International Journal of Human–Computer Interaction* 35, 20 (2019), 1914–1935.

[39] Jussi Karlgren, Renee Li, and Eva M Meyersson Milgrom. 2020. Text mining for processing interview data in computational social science. *arXiv preprint arXiv:2011.14037* (2020).

[40] A Baki Kocaballi. 2023. Conversational ai-powered design: Chatgpt as designer, user, and product. *arXiv preprint arXiv:2302.07406* (2023).

[41] Janin Koch, Andrés Lucero, Lena Hegemann, and Antti Oulasvirta. 2019. May AI? Design Ideation with Cooperative Contextual Bandits *(CHI '19)*. Association for Computing Machinery, New York, NY, USA, 1–12. https://doi.org/10.1145/3290605.3300863

[42] Emily Kuang, Ehsan Jahangirzadeh Soure, Mingming Fan, Jian Zhao, and Kristen Shinohara. 2023. Collaboration with Conversational AI Assistants for UX Evaluation: Questions and How to Ask them (Voice vs. Text). In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–15.

[43] Emily Kuang, Xiaofu Jin, and Mingming Fan. 2022. "Merging Results Is No Easy Task": An International Survey Study of Collaborative Data Analysis Practices Among UX Practitioners. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems. To Appear*. Association for Computing Machinery, New York, NY, USA. https://doi.org/10.1145/3491102.3517647

[44] David Allen Larson. 2010. Artificial Intelligence: Robots, avatars, and the demise of the human mediator. *Ohio St. J. on Disp. Resol.* 25 (2010), 105.

[45] Page Laubheimer. 2016. How UX Professionals Collaborate on Deliverables. https://www.nngroup.com/articles/ux-deliverables-collaboration/

[46] Mark R Leary and June Price Tangney. 2011. *Handbook of self and identity*. Guilford Press.

[47] Jie Li, Hancheng Cao, Laura Lin, Youyang Hou, Ruihao Zhu, and Abdallah El Ali. 2023. User Experience Design Professionals' Perceptions of Generative Artificial Intelligence. *arXiv preprint arXiv:2309.15237* (2023).

[48] Yuwen Lu, Chengzhi Zhang, Iris Zhang, and Toby Jia-Jun Li. 2022. Bridging the Gap between UX Practitioners' work practices and AI-enabled design support tools. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts*. 1–7.

[49] James G March. 1991. Exploration and exploitation in organizational learning. *Organization science* 2, 1 (1991), 71–87.

[50] Michelle A Marks, John E Mathieu, and Stephen J Zaccaro. 2001. A temporally based framework and taxonomy of team processes. *Academy of management review* 26, 3 (2001), 356–376.

[51] Todd J Maurer and Manuel London. 2018. From individual contributor to leader: A role identity shift framework for leader development within innovative organizations. *Journal of Management* 44, 4 (2018), 1426–1452.

[52] Hendrik Meth, Alexander Maedche, and Maximilian Einoeder. 2012. Exploring design principles of task elicitation systems for unrestricted natural language documents. In *Proceedings of the 4th ACM SIGCHI symposium on Engineering interactive computing systems*. 205–210.

[53] Alexandra Milliken, Wengran Wang, Veronica Cateté, Sarah Martin, Neeloy Gomes, Yihuan Dong, Rachel Harred, Amy Isvik, Tiffany Barnes, Thomas Price, and Chris Martens. 2021. PlanIT! A New Integrated Tool to Help Novices Design for Open-Ended Projects. In *Proceedings of the 52nd ACM Technical Symposium on Computer Science Education* (Virtual Event, USA) *(SIGCSE '21)*. Association for Computing Machinery, New York, NY, USA, 232–238. https://doi.org/10.1145/3408877.3432552

[54] Asil Oztekin, Dursun Delen, Ali Turkyilmaz, and Selim Zaim. 2013. A machine learning-based usability evaluation method for eLearning systems. *Decision Support Systems* 56 (2013), 63–73.

[55] João Pacheco, Stoyan Garbatov, and Miguel Goulão. 2021. Improving collaboration efficiency between UX/UI designers and developers in a low-code platform. In *2021 ACM/IEEE International Conference on Model Driven Engineering Languages and Systems Companion (MODELS-C)*. IEEE, 138–147.

[56] Kara Pernice. 2018. Affinity diagramming for collaboratively sorting UX findings and design ideas. *Retrieved Feb* 7 (2018), 2021.

[57] Linda L Putnam and Dennis K Mumby. 2013. *The SAGE handbook of organizational communication: Advances in theory, research, and methods*. Sage Publications.

[58] Mitra Raappana and Tessa Horila. 2019. Team communication in the workplace. *Workplace communication* (2019), 28–40.

[59] Nils Randrup, Douglas Druckenmiller, and Robert Owen Briggs. 2018. Toward a philosophy of collaboration. *International Journal of e-Collaboration (IJeC)* 14, 2 (2018), 19–36.

[60] Niko Reunanen, Zeynep Falay von Flittner, Virpi Roto, and Kirsikka Vaajakallio. 2020. Combining machine learning and Service Design to improve customer experience. In *Service Design and Service Innovation Conference*.

[61] Sapna Rijal et al. 2010. Leadership style and organizational culture in learning organization: A comparative study. *International Journal of Management & Information Systems (IJMIS)* 14, 5 (2010).

[62] Maria Rosala. 2019. How to analyze qualitative data from UX research: Thematic analysis. *NN-Nielsen Norman Group* (2019).

[63] Eduardo Salas, Marissa L Shuffler, Amanda L Thayer, Wendy L Bedwell, and Elizabeth H Lazzara. 2015. Understanding and improving teamwork in organizations: A scientifically based practical guide. *Human resource management* 54, 4 (2015), 599–622.

[64] Joni Salminen, Sercan Sengün, Soon-gyo Jung, and Bernard J Jansen. 2019. Design issues in automatically generated persona profiles: a qualitative analysis from 38 think-aloud transcripts. In *Proceedings of the 2019 Conference on Human Information Interaction and Retrieval*. 225–229.

[65] Leticia San Martín-Rodríguez, Marie-Dominique Beaulieu, Danielle D'Amour, and Marcela Ferrada-Videla. 2005. The determinants of successful collaboration: a review of theoretical and empirical studies. *Journal of interprofessional care* 19, sup1 (2005), 132–147.

[66] Isabella Seeber, Eva Bittner, Robert O Briggs, Triparna De Vreede, Gert-Jan De Vreede, Aaron Elkins, Ronald Maier, Alexander B Merz, Sarah Oeste-Reiß, Nils Randrup, et al. 2020. Machines as teammates: A research agenda on AI in team collaboration. *Information & management* 57, 2 (2020), 103174.

[67] Isabella Seeber, Lena Waizenegger, Stefan Seidel, Stefan Morana, Izak Benbasat, and Paul Benjamin Lowry. 2020. Collaborating with technology-based autonomous agents: Issues and research opportunities. *Internet Research* 30, 1 (2020), 1–18.

[68] Aron Wolf Siegel and Jan Maarten Schraagen. 2017. Team reflection makes resilience-related knowledge explicit through collaborative sensemaking: observation study at a rail post. *Cognition, Technology & Work* 19 (2017), 127–142.

[69] Dominik Siemon. 2022. Elaborating team roles for artificial intelligence-based teammates in human-AI collaboration. *Group Decision and Negotiation* 31, 5 (2022), 871–912.

[70] Ehsan Jahangirzadeh Soure, Emily Kuang, Mingming Fan, and Jian Zhao. 2021. CoUX: collaborative visual analysis of think-aloud usability test videos for digital interfaces. *IEEE Transactions on Visualization and Computer Graphics* 28, 1 (2021), 643–653.

[71] Sonal Srivastava. 2023. *Winning Together: A UX Researcher's Guide to Building Strong Cross-Functional Relationships*. CRC Press.

[72] Monika Stelmaszczyk. 2016. Relationship between individual and organizational learning: Mediating role of team learning. *Journal of Economics and Management* 26 (2016), 107–127.

[73] Kate Stewart and Matthew Williams. 2005. Researching online populations: the use of online focus groups for social research. *Qualitative Research* 5, 4 (2005), 395–416.

[74] Jakob Tholander and Martin Jonsson. 2023. Design Ideation with AI - Sketching, Thinking and Talking with Generative Machine Learning Models *(DIS '23)*. Association for Computing Machinery, New York, NY, USA, 1930–1940. https://doi.org/10.1145/3563657.3596014

[75] Katja Thoring and Roland M. Müller. 2011. Understanding the creative mechanisms of design thinking: an evolutionary approach. In *Proceedings of the Second Conference on Creativity and Innovation in Design* (Eindhoven, Netherlands) *(DESIRE '11)*. Association for Computing Machinery, New York, NY, USA, 137–147. https://doi.org/10.1145/2079216.2079236

[76] Kashyap Todi, Daryl Weir, and Antti Oulasvirta. 2016. Sketchplore: Sketch and Explore with a Layout Optimiser. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems* (Brisbane, QLD, Australia) *(DIS '16)*. Association for Computing Machinery, New York, NY, USA, 543–555. https://doi.org/10.1145/2901790.2901817

[77] Karel van den Bosch, Tjeerd Schoonderwoerd, Romy Blankendaal, and Mark Neerincx. 2019. Six challenges for human-AI Co-learning. In *Adaptive Instructional Systems: First International Conference, AIS 2019, Held as Part of the 21st HCI International Conference, HCII 2019, Orlando, FL, USA, July 26–31, 2019, Proceedings 21*. Springer, 572–589.

[78] Veera Vimpari, Annakaisa Kultima, Perttu Hämäläinen, and Christian Guckelsberger. 2023. "An Adapt-or-Die Type of Situation": Perception, Adoption, and Use of Text-to-Image-Generation AI by Game Industry Professionals. *Proceedings of the ACM on Human-Computer Interaction* 7, CHI PLAY (2023), 131–164.

[79] Qian Wan and Zhicong Lu. 2023. GANCollage: A GAN-Driven Digital Mood Board to Facilitate Ideation in Creativity Support. In *Proceedings of the 2023 ACM Designing Interactive Systems Conference* (Pittsburgh, PA, USA) *(DIS '23)*. Association for Computing Machinery, New York, NY, USA, 136–146. https://doi.org/10.1145/3563657.3596072

[80] Dakuo Wang, Justin D Weisz, Michael Muller, Parikshit Ram, Werner Geyer, Casey Dugan, Yla Tausczik, Horst Samulowitz, and Alexander Gray. 2019. Human-ai collaboration in data science: Exploring data scientists' perceptions of automated ai. *Proceedings of the ACM on human-computer interaction* 3, CSCW (2019), 1–24.

[81] Sheila Simsarian Webber, Jodi Detjen, Tammy L MacLean, and Dominic Thomas. 2019. Team challenges: Is artificial intelligence the solution? *Business Horizons* 62, 6 (2019), 741–750.

[82] Tianyu Wu, Shizhu He, Jingping Liu, Siqi Sun, Kang Liu, Qing-Long Han, and Yang Tang. 2023. A brief overview of ChatGPT: The history, status quo and

potential future development. *IEEE/CAA Journal of Automatica Sinica* 10, 5 (2023), 1122–1136.

[83] Qian Yang, Alex Scuito, John Zimmerman, Jodi Forlizzi, and Aaron Steinfeld. 2018. Investigating How Experienced UX Designers Effectively Work with Machine Learning. In *Proceedings of the 2018 Designing Interactive Systems Conference* (Hong Kong, China) *(DIS '18)*. Association for Computing Machinery, New York, NY, USA, 585–596. https://doi.org/10.1145/3196709.3196730

[84] Xiang Zhang, Hans-Frederick Brown, and Anil Shankar. 2016. Data-driven personas: Constructing archetypal users with clickstreams and user telemetry. In *Proceedings of the 2016 CHI conference on human factors in computing systems*. 5350–5359.