From Tool to Companion: Storywriters Want AI Writers to Respect Their Personal Values and Writing Strategies

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ABSTRACT

Modern large-scale language models approach the quality of human-level writing. This promises the advent of AI writing companions performing *AI-led* writing under human control, surpassing traditional writing tools limited to revision and ideation supports. However, human-AI co-writing may endanger writers' control, autonomy, and ownership by overstepping co-creative boundaries. Our design workbook study with 7 hobbyists and 13 professional writers elicited three sets of primary barriers to the adoption of human-AI co-writing. Storywriters desire retaining control over writing rather than letting AI take the lead when they (1) prioritize emotional values in turning ideas into words over the productivity of AI-generated writing; (2) have high self-confidence and distrust AI in challenging sub-tasks (e.g., creating characters and dialogue); and (3) expect the AI control mechanism to mismatch their writing strategies. We lay the groundwork for AI companions that respect storywriters' personal values and writing methods.

CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in interaction design**; • **Computing methodologies** → **Natural language generation**; • **Applied computing** → **Arts and humanities**.

KEYWORDS

human-AI interaction, AI co-writing, AI writing support, creative writing, storywriting, personal values, ownership, trust

1 INTRODUCTION

Language models are approaching human-like text generation capabilities, with large-scale models like GPT-3 [15] and Jurassic-1 [59] writing natural language on a level which has convinced some

that AI has now passed the Turing test. This opens a new opportunity for human-AI collaboration in writing tasks. We refer to this mode of writing support as an *AI companion*, a co-writing agent which performs storywriting under the creative control of a human writer. While current AI-based systems act as tools which support grammar and style revision, as well as ideation, AI companions can directly translate writers' high-level ideas into fully expanded text with minimal to zero user input and can adapt to the writer's style, given only a few examples. AI companions can therefore take on the role of "co-creative partners" [38], in addition to acting as ideation tools. While there are currently no agents which can fully function as an AI collaborator, this radically different mode of AI writing support promises to be more powerful and autonomous than existing systems. Hence, the potential impact of such technology must be examined to steer AI companion design.

Storywriting is a complex task which imposes a high cognitive load on the writer and remains challenging, even for experienced writers. This task is modeled by the Cognitive Process Theory of Writing [34] which describes writing as a set of three interleaved processes, namely planning, translating, and reviewing. In planning, writers synthesize relevant information from their long-term memory to form ideas, organize these ideas, and set writing goals. Translating is the process of turning symbolically represented ideas into language which conveys those ideas. Finally, reviewing involves evaluating the current text against writing goals and revising it based on evaluation results to match these goals more closely. Writers frequently struggle with frustrating problems in translating such as writer's block [82] and cognitive overload [84], hindering efficient writing. AI companions promise robust translating capabilities which can address these challenges, alleviating the storywriter's burden, supercharging their abilities, and eventually promoting their intellectual well-being in creative tasks.

While AI companions promise a powerful form of support to writers, it is unclear how storywriters perceive AI companion collaboration and which barriers and facilitators influence the adoption of such technology. Writing is a personal process for many storywriters who have diverse needs, depending on their underlying motivations. On the one hand, some storywriters see writing purely as a serious leisure [90] activity allowing for personal expression [58, 80] and supporting emotional well-being [78, 83]. On the other hand, professional writers, such as ghostwriters on gig platforms, see it as a source of income. However, even professional storywriters derive satisfaction from engaging in the process of creation [12]. While existing work identifies storywriters' idiosyncratic priorities, it has not been shown how these priorities impact their expectations for AI writing support. Therefore, investigating how personal

motivations influence storywriters' requirements for AI support is of critical importance in informing AI companion design.

Machine assistance in storywriting has largely been limited to a supportive role and has not come close to realizing the potential of AI collaboration for supporting the translating process. Current tools primarily focus on supporting revision and ideation. For example, Microsoft Word, Grammarly, and ProWritingAid are all popular solutions for supporting syntactic and semantic revision (i.e., grammar, spelling, and style checking). Considering ideation, this area has been explored extensively in creative writing [16, 20, 21, 38, 39, 81, 92]. While there has also been some focus on translating support in recent years [2, 23, 93, 97], the current work on machine-assisted storywriting ultimately misses out in investigating writers' needs for AI-led writing support in the translating process, revealing a crucial gap.

To go beyond revision and ideation in AI-assisted storywriting, there is a need to determine how to divide writing responsibilities between the writer and the AI companion and best utilize the capabilities of both. In general terms, this is a vitally important issue of balancing automation and control in a human-centered AI system [88]. In this type of mixed-initiative system, understanding users' social expectations [44] of the behavior of a collaborator is a key priority, exemplifying the need to match relevant social norms in AI interaction [1]. Much like a human collaborator, an AI companion can become an interference to the writer's creative process if it encroaches on their boundaries by taking away too much control over writing, creating frustration and conflict.

Broadly, several factors are known to impact people's acceptance of AI. Individuals' personality traits can induce fear and distrust towards AI [73, 89]. Additionally, cultural factors [74] such as fear of unemployment due to AI deployment [49, 63]), portrayals of AI in popular culture [5, 6], degree of familiarity with modern AI technologies [76], and expectations of privacy in interaction [62] all influence perceptions of AI. However, an explorative study on the factors specific to *storywriters' perceptions and practices* that might impact on AI is an untrodden pathway.

Therefore, we investigate the following research questions: *What primary considerations impact storywriters' perception of co-writing with an AI companion? And how?* Specifically, we consider: (1) What are the major barriers and facilitators impacting storywriters' adoption of different types of AI collaborator support? (2) What value do storywriters expect an AI companion to bring to, or take away from, their writing practices? and (3) For which kinds of writing subtasks and to what extent are storywriters willing to collaborate with AI companions in the writing process?

To answer these questions, we conducted an interview study with 20 expert writers, comprised of 7 hobbyists and 13 professionals. We highlighted that co-writing with AI companions promises increased efficiency in expressing writers' narrative plans with low user effort, alleviating their writing burden. Collectively, our findings highlight the effects of writers' emotional values in writing, productivity, trust in AI's writing ability, self-confidence, and planning method. Based on these factors, we identified three key sets of barriers hindering the adoption of AI co-writing. Writers wished to maintain control over translating ideas to words when they: (1) prioritized emotional values of writing attached to writing over increased productivity and prolific writing; (2) had high

self-confidence and distrust in AI's ability to perform challenging writing sub-tasks (e.g., character generation and dialogue generation); and (3) perceived that the AI control mechanism mismatches their planning strategies. We also revealed two main facilitators driving storywriters to relinquish control in translating. Writers were willing to let the AI do the writing when they: (1) emphasized productivity to achieve prolific writing (specifically professionals) and (2) felt diminished self-confidence about performing challenging writing sub-tasks.

Our work makes the following contributions: (1) We identify three main barriers and two facilitators of storywriters' adoption of AI companions. (2) Our results further characterize how such barriers and facilitators are influenced by relevant factors (e.g., writers' occupation and division of writing sub-tasks in AI companion design). (3) Our results generate implications for understanding and designing AI companions in the context of writers' value structure, writing practices, and intellectual well-being.

2 BACKGROUND AND RELATED WORK

2.1 Factors Influencing Perception of AI

Numerous factors influence humans' perception of AI. These include psychological factors and practical concerns within the individual, as well as extraneous cultural influences.

Several individual differences impact perception of AI. First, examining the impact of psychological factors shows that individuals' attitude towards AI is influenced by their personality traits [73]. In [89], it was shown that fear and distrust towards AI are associated with neuroticism, while openness and agreeableness are related to acceptance of AI. Additionally, personal values have been shown to impact artists' attitude towards AI co-creation in creative tasks. For example, [38] describes how poem writers' individual sense of ownership impacts their cognitive model of usage when interacting with an AI collaborator. Another factor impacting users' attitude is their existing familiarity with AI technologies, which is associated with increased confidence in AI and reduced fearfulness of intelligent agents [76]. Finally, for individuals in some professions, fear of being replaced or losing income is also a major consideration [63]. This can be seen in journalism, where journalists are concerned that data collection and writing tasks will be replaced by AI [49, 53]. Likewise, in [45] radiologists describe a sense of fear that their expertise would become redundant due to AI, although moderate to advanced knowledge of AI technology was associated with increased acceptance.

Looking beyond the individual, cultural factors have also been shown to impact humans' perception of AI. Portrayal of AI in popular culture through movies and other media influence notions of its capabilities and potential impact [5, 6]. Additionally, social and informational privacy expectations for interaction with human-like AI agents displaying social capabilities (social robots) are influenced by cultural norms [62]. Results in [74] suggest that users are willing to forego privacy when they desire a closer connection to the AI.

The existing literature shows the effect of several personal and social factors influencing how people perceive intelligent agents. However, the impact of writers' personal values in AI-assisted writing is currently underexplored.

2.2 AI Support for Writing and Other Creative Tasks

Human-machine co-creation [27, 41, 61, 87] has been explored across many fields in the arts. In [19], 111 papers on creativity support tools (CSTs) are reviewed. We highlight a few areas where CST interaction has been evaluated.

Considering writing, recent years have seen significant interest in the formidable task of designing computer-assisted writing tools. In [101], the authors outline the challenges inherent to prototyping NLP systems and present several solutions. They explore approaches for supporting writers' experience of translating ideas to text using sketching and rapid prototyping techniques which enable the design of novel NLP-based writing assistance systems, balancing users' needs with technical limitations. Looking at tools which have emerged for supporting creative writing specifically, there has been significant focus on co-ideation support. The tools in [81] and [93] (evaluated in [16]) allow writers to explicitly request next-sentence suggestions for collaborative brainstorming. In [39], writers can request random plots, story themes, and writing prompts acting as "story triggers." By contrast, the collaborative writing support tools in [92] and [21] automatically provide user-editable, next-sentence suggestions after each sentence the writer produces, providing a source of inspiration. In [38], the collaborative tool supports metaphor creation based on the writer's context. Breaking away from suggestion-based co-ideation approaches, visual line sketch interaction has recently been used as a novel AI steering mechanism for a GPT-based language model in [20], giving writers an intuitive understanding of the AI's output and allowing them to control the protagonist's fortune while collaboratively generating a narrative outline. Beyond ideation, tools such as [93], can provide translating support by offering sentence-level suggestions, although they afford limited control over suggestion topics and direction, sometimes deviating from the narrative [16]. In [2], the ensemble-based system offers the ability to translate a sequence of story events to full sentences. The conversational interaction approach in [23] enables users to generate story text via natural requests (e.g., "help me describe how Taylor is feeling"), while [97] supports dynamic, text-based video game adventure building. Finally, [57] presents a dataset allowing designers to explore GPT-3's capabilities as a writing collaborator.

Besides writing support, in drawing, [28] explores how users collaborate with AI in drawing pictures via an AI agent called Drawing Apprentice. The system is intended to act as a "casual creator" [24], which is a type of creative technology which creatively engages users and increase enjoyment instead of focusing on creating a better end-product. In [71], evaluation of DuetDraw, a system which allows artists to collaboratively sketch with an AI drawing partner in real time, shows that artists always want to lead the drawing process and clearly distinguish their role from that of the AI. Additionally, [68] explores the use of adaptive conceptual guidance via contextual examples to assist novice artists in sketching. Finally, [98] evaluates presents an intelligent tutoring system teaching novices fundamentals of sketching.

Considering music, creative co-creation can support both composition and performance. In [60], AI music co-creation is supported via steering tools which enable composition. Creative AI can also support human-human collaboration in pair composition [91]. Considering musical performance, [65] presents an AI drummer which communicates its confidence through visual cues to improve communication in collaborative improvisation, promoting a flow state and building musicians' trust in the agent.

A vital aspect of human-AI co-creation is to consider how artists' existing practices and values will be considered in design. This will allow the system to adapt to the input of the user to offer a collaborative experience [29]. Rather than trying to replace the artists in a particular role, the system should afford task delegation to the AI [71].

2.3 Psychological Ownership and Control

Writers and other creators often feel a sense of ownership over their work which is closely tied to their control over the creative process. The concept of ownership has been well described in psychological literature as a relationship between an individual and a target of ownership where that person feels that the target belongs to them [75, 95]. Ownership is strongly tied to control over objects which produces positive and pleasurable emotions, both in the case of individual and group ownership. Objects that can be controlled are seen as objects of ownership, while those outside of the control of the individual are excluded from this category [35]. Emotional connection is a key reason individuals value possessions [30]. There is also a sense in which possessions are an extension of an individual, since possessions reflect and contribute to one's identity; this aspect of ownership can be defined as relatedness [7].

Work on psychological ownership has also been extended to the domain of writing. Writers often have a strong personal connection and a feeling of ownership towards work they produce, particularly in the case of storywriting, but also in other forms of creative and academic writing [69]. In fact, Murray [67] goes so far as to say that all writing is in some sense autobiographical, whether this is explicit or implicit.

2.4 Challenges Facing Writers in Planning and Translation

Writers commonly face challenges in planning and translating. One of these is writer's block which can be described as a state in which writers are unable to generate an idea of what to write about next or to determine how to translate an idea into language [82]. Although some writers are more prone to suffering from writer's block, this can have a strongly negative emotional impact on any writer, including emotional numbness, anxiety, and frustration [85]. In [72], the authors propose a set of strategies for addressing writer's block, including systematic questioning in which writers are asked a series of questions to stimulate thinking, and freewriting, where the writer writes uninterrupted for 10-15 minutes to translate as many ideas as possible without performing revision.

Writers also face cognitive overload since writing is a complex, dynamic task in which they must apply several skills simultaneously [84]. The authors in [94] describe two contributing factors in human cognitive processing constraints: (1) dual task interference, where writers attempt to perform two tasks in temporal proximity, thus degrading the performance of both tasks; and (2) the transience of short-term memory which causes ideas to be lost if the writer is

disrupted (e.g., they halt because they are unsure of what to write next). For mitigating cognitive overload, [48] proposes using outlining to produce a structured plan which summarizes the writer's ideas to reduce planning during translating, while [36] describes using rough drafting to reduce revision effort during translating.

3 METHOD

Our objective is to establish storywriters' considerations impacting their perception of AI writing companions. In particular, we aim to understand how the values writers ascribe to writing influence their willingness to collaborate with AI companions in planning and translating and in different writing roles within those processes. We also hope to explore how writers' current storywriting methods impact their perception of AI co-writing mechanisms and how AI companions can address their current needs.

To this end, we used the design workbook method [37] to elicit storywriters' intuition, perception, and reflection with a set of five speculative AI companion designs. Design workbook is an established method to elicit user feedback and reflection on conceptual designs within a design space [9, 17, 99]. This approach effectively alleviates the potential constraints in implementing the design prototype while enabling participants to envision using the companion in their writing process. The speculative nature of our workbook facilitated the exploration of key issues and perspectives beyond any one particular design. The designs we presented to participants portrayed several modes of interaction with AI companions based on existing writing methods, as detailed in subsection 3.3. They illustrate different divisions of writing roles between the human and the AI co-writer in planning and translating. This allowed us to uncover the considerations which impact storywriters' perception of AI support in different writing processes. It also provided insight into the extent to which writers are willing to collaborate with AI companions in various writing sub-tasks. Finally, participants' reactions offered glimpses into the perceived value AI-assisted writing would add to different parts of the writing process and highlighted where AI companions can disrupt the writer.

3.1 Participants

We used purposive and snowball sampling to recruit 20 (13 women, 7 men) storywriters, including 7 hobbyists (H1-H7) and 13 professionals (P1-P13). Our study included both types of writers since we suspected that writers with different underlying motivations for writing would have different perceptions of AI companions. See Table 1 for information about participant demographics, writing approach, and writing experience. Hobbyist writers were recruited through social media platforms (e.g., Reddit threads and Facebook groups) and by disseminating recruitment information in local hobbyist writing circles, while we reached out to professional writers through the Upwork.com[1] gig working platform. All recruited professional writers do writing work via Upwork, although they also engage in paid writing outside the platform. We aimed to include writers from different domains of storywriting: short stories, flash fiction, novels, game stories, memoirs, poetry, news articles, promotional material (copywriting), and technical material. All writers reported an intermediate level of technological aptitude or better,

except P7, and at least an intermediate writing tool aptitude in using word-processors and similar technology. Our participants resided on 4 continents: Africa, Asia, Europe, and North America. Participant ages ranged from 21 to 55 (median 39).

We recruited the two main groups of writers using a slightly different set of criteria. For hobbyist writers, we selected participants with at least one year of experience. In the case of professionals, we recruited writers with at least two years of experience and an Upwork.com project success rate of 90% or greater. We set these criteria to ensure participants were not novice writers. We used the criterion of two years for professionals rather than one year since it generally takes longer to become established as a professional writer. All participants were fluent in English. Writers were paid an honorarium for participation. The institution's research ethics board has approved the protocol.

3.2 Interview Methodology

This study used semi-structured interviews which included questions and a design workbook feedback component. Our interviews used open-ended questions focusing on participants' current practices and the challenges they face. The design workbook component provided participants an opportunity to explore a set of design concepts based on several models for AI writing companions and offer their insights. Our methodology is also partly inspired by the Speed Dating approach [26, 102] where participants compare potential scenarios of use for an envisioned system to help assess their current needs and ways to address them. It also allows designers to surface critical design issues and ultimately provides insight into the underlying factors influencing users' perceptions. Due to the COVID-19 pandemic, our interview process is simplified with designs presented in an electronic slideshow format rather than a physical booklet, similar to [17]. All interviews were conducted through Zoom web conferencing software. The AI companion designs and details of the protocol were refined through five pilots which were conducted with five graduate and undergraduate computer science students who are familiar with interaction design techniques.

Our design workbook contains several static pages (slides) which allowed us to simulate usage scenarios for each design concept by displaying pages to participants in order. This explorative approach suits our objectives better than an interactive evaluation, for two main reasons. First, an interactive system would constrain participants to the current limitations of generative language models. We would like to go beyond the current state-of-the-art and explore speculative scenarios where AI companions can perform writing roles at a human level. We wanted our participants to focus on different human-AI co-writing mechanisms and how they fit to their own writing practices. Showing "live" results could draw the participants' attention to the specific defects in the selected language model or flaws in technical implementations, like latency or UI details. For example, we found that GPT-3 has a highly irregular latency for requests, which sometimes exceeds 30 seconds. This delay may cause a significant disruption to the interview process. Therefore, we used textual examples from existing stories which we extended, where needed, to show different simulated AI companion

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[1]https://www.upwork.com

Table 1: Self-reported general technology skill level, writing tool aptitude, planning method, and genres of writing experience for hobbyists (Hx) and professionals (Px).

ID	Self-reported Tech Savviness	Self-reported Writing Tool Aptitude	Planning Approach	Genres of Writing Experience
H1	Intermediate	Advanced	Structured	Short story, novel, poetry, creative non-fiction, personal blog
H2	Advanced	Intermediate	Freeform	Short story, novel
H3	Advanced	Advanced	Structured	Short story, novel, technical
H4	Intermediate	Advanced	Freeform	Short story, novel, journalistic
H5	Intermediate	Intermediate	Structured	Short story, poetry, copywriting, flash fiction
H6	Advanced	Advanced	Freeform	Short story, novel
H7	Intermediate	Advanced	Structured	Novel
P1	Intermediate	Advanced	Freeform	Short story, novel, copywriting
P2	Advanced	Advanced	Structured	Short story, novel, copywriting, game writing
P3	Intermediate	Intermediate	Freeform	Short story, novel, copywriting
P4	Advanced	Advanced	Structured	Short story, novel, copywriting, journalistic
P5	Advanced	Advanced	Structured	Short story, novel, copywriting, journalistic, creative non-fiction
P6	Advanced	Advanced	Structured	Short story, novel, copywriting
P7	Novice	Intermediate	Freeform	Novel
P8	Intermediate	Advanced	Structured	Short story, novel, copywriting, journalistic
P9	Intermediate	Intermediate	Structured	Novel, game writing, screenplay
P10	Advanced	Advanced	Structured	Creative non-fiction (memoir)
P11	Intermediate	Advanced	Freeform	Short story, novel, copywriting
P12	Intermediate	Advanced	Freeform	Short story, novel
P13	Intermediate	Advanced	Structured	Short story, novel, game writing, video script

responses. Second, it would be infeasible to implement and evaluate five different types of AI writing companions to support an interactive design probe. Using low-cost interactive methods such as Wizard-of-Oz (WoZ) [25] is not practical since it is not possible for the wizard to write simulated AI-generated text in a reasonable time (a few seconds), particularly when long text is required. Furthermore, it would be labor intensive for participants to write a story using each prototype.

The data collection process had two main components: a background screening survey and a semi-structured interview which incorporates a design workbook session. Construction of the design workbook is discussed further in subsection 3.3. Our screening survey recorded information on participant demographics, general technological skill level, and aptitude in using writing software. It also probed each potential participant's years of writing experience and the type (genre) of writing they had experienced. The interview sessions lasted for approximately 60 minutes and were conducted by the lead author. Participants were audio and video recorded while the interviewer took notes. Our interviews consisted of three main components: (1) introductory questions about participants' background and writing practices, (2) the design workbook session, and (3) a debriefing interview exploring writers' values ascribed to the writing process. The interviews started with an introduction where the interviewer explained the procedure to participants and asked participants questions about their: (1) genre of writing, (2) primary motivations and goals in storywriting, (3) primary challenges they encounter in the writing process, (4) current and past use of AI-assisted writing tools, and (5) current practices for their planning and translating processes. During the design workbook session, participants viewed the designs and gave feedback. For each design, the interviewer explained the design concept and presented the corresponding pages to illustrate a scenario where an AI

companion based on the current design would assist the user in a writing task to address a particular need. After each design concept, the interviewer asked questions to elicit a response and initiate a conversation framed around the role(s) the AI companion would take on in the design. Participants were encouraged to elaborate on the scenarios to describe how they would fit into their current workflow. Additionally, the interviewer asked probing questions as the conversation developed to form an understanding of the writer's values in writing and of how writers envisioned aspects of the given AI companion would impact their current writing practices. In the debriefing interview, the interviewer asked follow-up questions based on participant feedback during the design workbook session. Participants were asked to rank the designs according to perceived applicability and support in their current writing tasks (ranking data can be found in supplementary materials).[2] The interviewer then asked participants to justify their ranking, establishing the factors impacting their preferences. Finally, writers answered follow-up questions further exploring their value perceptions in writing.

3.3 Creating the Design Workbook

We constructed our design workbook to effectively convey five main conceptual models describing how the writer would interact with AI companions. Our design space describes these diverse types of AI companions in terms of the division of control between the human and the AI co-writer in different planning and translating tasks across the writing process, which is outlined in Figure 2. Note that the designs are intended to elicit reactions from participants to
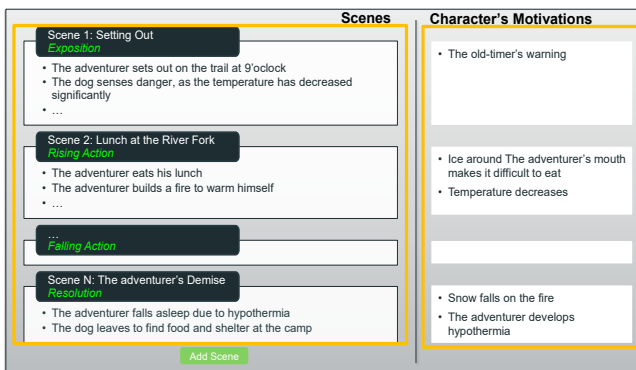
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[2]The ranking data was collected to set the stage of the conversation about their perception about types of AI writers, not to evaluate the perceived quality of the designs.
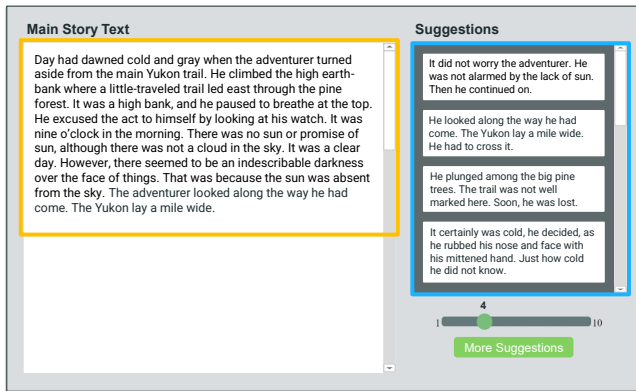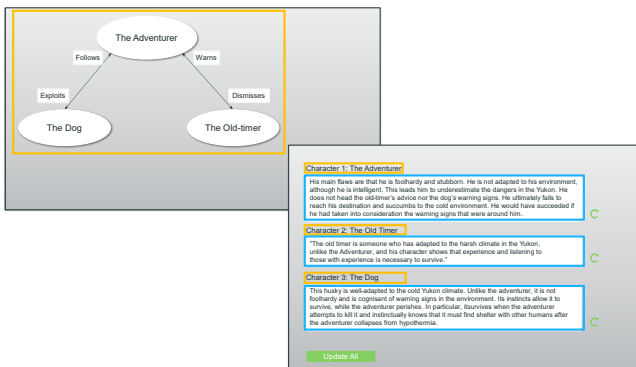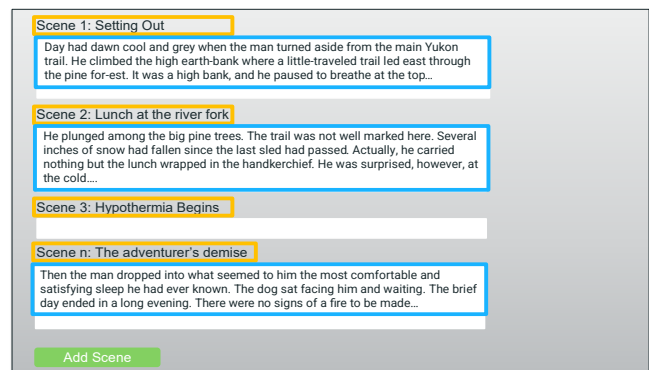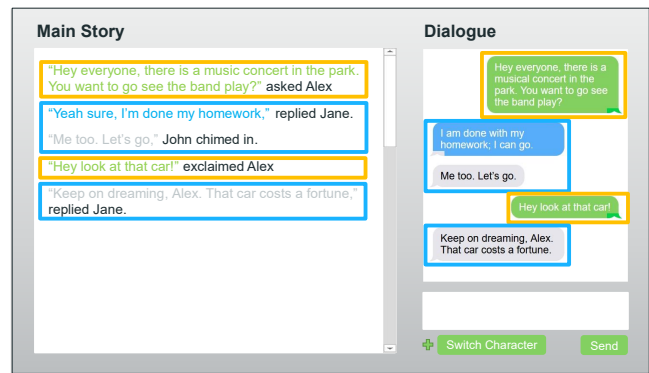
(a) Linear writing with unguided suggestions
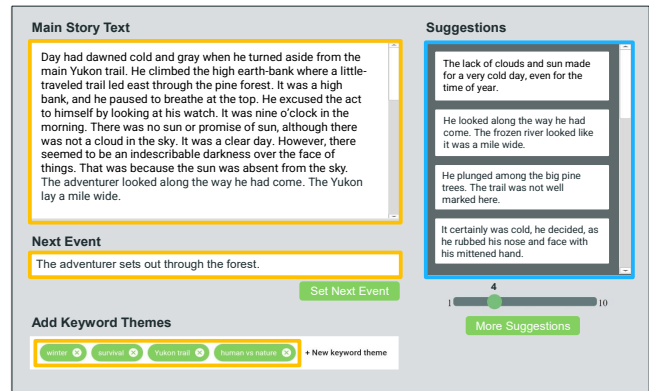
(b) Keyword-based writing with guided suggestions

(c) The scene-based design; (left) scene list; (right) expanded scenes based on scene-list

(d) Character web and character arcs in the character-driven design

(e) Dialogue generation in the conversation-driven design

Figure 1: Samples of the AI companion designs in our design workbook. Each design has been annotated for clarity, with orange boxes indicating user input text and blue boxes marking text that the AI is intended to generate.

help answer our research questions and do *not* in themselves aim to offer a design contribution.

Our designs are grounded in existing writing methods (e.g., character-driven writing, the Snowflake method [46]). We adapted these methods to incorporate AI companions. Additionally, we were guided by conceptual underpinnings of AI writing support - level

of control and different writing sub-tasks, as described in [34]. We strove to ideate diverse AI types which span these two dimensions. This is discussed in more detail for each design in this subsection. First, the authors conducted a review of existing writing methods. We then met weekly for three weeks (approx. 3 hours in total) to discuss and brainstorm potential designs based on writing methods

identified by the lead author. In brainstorming, our research questions acted as a starting point and anchor. While we incorporated several writing methods, we did not include those which could not be adapted to AI co-writing. We also merged or discarded design ideas which were deemed to be too similar and discarded those which were not applicable for supporting planning and/or translating. The designs were then rapidly created using presentation software prior to the pilots. We ultimately developed five designs with five corresponding underlying interaction models. Therefore, we named the designs accordingly and ordered them, with the most traditional ("status quo") approaches appearing first and more unconventional or controversial designs shown later. Following each pilot interview session, we iteratively refined these designs based on feedback received. This allowed us to streamline our designs by resolving aspects which were confusing or distracted from the intended concept being conveyed. See Figure 1 which contains snapshots of the designs. A PDF version of the design "workbook" can be found in supplementary material.

3.3.1 Design 1: Linear approach. Linear writing aims to address writer's block and support co-ideation with unguided suggestions. This follows a similar approach to existing predictive text solutions such as [93] where users receive a potential completion based on their existing text. The AI companion provides a set of suggestions for the next sentence(s) which are intended to fit the current context of the writer's narrative. Suggestions are unguided in the sense that the user cannot direct the system's focus to a certain aspect of the text or describe the intended narrative direction. Thus, the "best" suggestions are generated based purely on the previous text. Writers have some additional control in that they can specify the number of sentences they receive in each suggestion and access previous suggestions in the suggestion history.

3.3.2 Design 2: Keyword-based approach. In this design, the AI companion generates guided contextual suggestions directed by the writer's idea for the next narrative event. This approach builds upon the linear design, aiming to mitigate blocking and provide ideation assistance while giving writers a greater degree of control over suggestions. Users specify a high-level description of the next event and a set of keywords which help guide the AI's focus towards specific themes within the main text. In creating this design, we aimed to build on writers' practice of sketching a rough description of narrative events in brackets within the text or in the margins when they are unsure of how to express the full portrayal of that event [85]. We also drew inspiration from [21] where keywords are used to develop slogans.

3.3.3 Design 3: Scene-based approach. In scene-based writing, the AI companion affords low-effort translating support while writers focus on top-down narrative planning based on the different scenes within the story. Writers first provide the story theme and setting, as well as an early synopsis of the narrative they envision. They then create a scene list and specify the motivating factors which are driving the events in each scene. These motivating factors are plot facts which shape the characters' motivations in each scene. The AI companion subsequently generates the story text for each scene to create a full first draft of the story. To support refinement, writers can later update the scene list and select which scenes should be

updated in the story. The corresponding scene text is then updated accordingly. This design is inspired by the Snowflake method of writing [46] which involves building an iteratively refined scene list that provides a high-level story outline.

3.3.4 Design 4: Character-driven approach. The character-driven approach allows writers to rapidly generate characters at any stage of storywriting. It is inspired by the character-driven writing method which is commonly used to write stories centered around character building and characters' relationships [8, 32]. For example, this approach is used in writing video game stories [52]. Writers start with ideas about characters and then develop the character arc and properties of each character. We envision a scenario where the writer provides the system with a description of the properties of each character, which includes the character's physical appearance, role, personality, flaws, and strengths, as well as their goals and challenges. Writers provide a description of the relationships between characters in a character-web format. The AI companion then generates a set of character arcs based on the character descriptions and relationships between characters. These describe potential scenarios of how the character develops across the story.

3.3.5 Design 5: Conversation-driven approach. The final approach focuses on supporting the writer in developing dialogue among characters and aims to provide natural, context-aware dialogue generation which reflects characters' attributes. This design may be used for writing dialogue directly, ideating about character development, or developing narrative events involving particular characters. It is inspired by collaborative text-based roleplaying where writers attempt to imagine themselves as a particular character and talk to characters in their story. This activity is supported in online roleplaying communities such as Forum Roleplay [96]. We envisage that the writer can choose two or more characters involved in a conversation and define the conversation context. The writer then takes on the role of one character who initiates a conversation with the other character(s) via a chat-like interaction where the writer is in control of directing the conversation. If they desire, they may take on the role of different characters throughout the conversation. The output of the chat may then be used as inspiration (similar to [51]) or as dialogue in the story, which the writer may edit as they desire.

3.4 Analysis

All audio from the video recordings was fully transcribed prior to analysis. We performed a reflexive thematic analysis [13] since this is a rigorous process which was adaptable to our needs. We applied both inductive and deductive analysis methods. We inductively developed codes through open coding and iteratively refined existing codes by comparing them to the interview transcripts. These codes were then grouped into categories based on commonalities between them. Additionally, we deductively grouped codes into categories based on AI companion designs, known writing approaches, writing processes, and related concepts. We then used the relationships between categories to develop a set of themes which relate deductive and inductive categories. Ultimately, we created 112 codes and 18 main themes, such as: "Storywriters' self-assessed skill in

Designs	Translating		Planning			
	Dialogue	Narrative	Setting narrative goals	Organizing narrative ideas	Generating characters	Generating plot
Linear	Shared	Shared	Writer	Writer	Writer	Shared
Keyword-based	Shared	Shared	Writer	Writer	Writer	Shared
Character-driven	Writer	AI	Writer	Shared	Shared	AI
Scene-based	AI	AI	Writer	Shared	Writer	Writer
Conversation-driven	Shared	Writer	Writer	Shared	Shared	Shared

Division of control: | Writer | Shared | AI |

Figure 2: AI companion design space describing the division of control for writing sub-tasks in each AI companion design. The AI companion designs from our design workbook are listed in the left column. For each design, cells are color-coded to show the division of control between the writer and the AI companion in planning and translating sub-tasks, including those where the writer has control (yellow), AI and writer share control (green), and the AI has control (blue).

performing writing tasks impacts their willingness to give up control over specific parts of the writing process" and "'Labor of love': storywriters are concerned that AI companions which dominate in translating will take away from the joy and pride of writing." Throughout this process, the three authors met virtually every week for 4 months to discuss the codes and developing themes. We continued conducting interviews until thematic saturation was reached. We continuously checked the appropriateness of the developed themes against our research questions, as recommended in [14]. Based on these discussions, the lead author wrote several memos which eventually developed into the key insights in our findings.

4 FINDINGS

We found that storywriters' perception of AI support is strongly influenced by emotional values they attribute to writing, their desire for productivity, trust in AI and self-confidence, and their planning method. Our findings highlight how these considerations impact the type and extent of AI support which writers desire. See Table 2 which summarizes these findings. We relate our results to the AI companion design space depicted in Figure 2.

When illustrating their perceptions towards AI, storywriters grounded such descriptions on common challenges in their current writing workflow which echo previous work, including *high effort and cognitive overload in translating* [34, 84] and *writer's block in planning* [4, 10, 70, 82]. Currently, many participants frequently apply writing assistance tools (e.g., Grammarly) to aid in auto-checking spelling, grammar, and style, where these tools provide satisfactory support for spelling and grammar revision, although they sometimes cause frustration by failing to capture the user's intent and personal writing style.

4.1 Emotional Values of Writing and Productivity

One unique strength of modern large-scale language models in writing is their capacity for the translating task, namely the process of turning ideas into words [34]. The primary pattern identified in our analysis is the way writers' personal values shape their desire to take (or relinquish) control over the translating process. We group these values into two sets. Some storywriters, mostly hobbyists, tend to desire greater control in translating their ideas to text and would not like to let an AI companion do the writing. These writers prioritize their *fulfillment*, *ownership*, and *integrity*, which we collectively refer to as the *emotional values of writing*. By contrast, professional storywriters who desire greater *productivity* in producing writing deliverables are willing to give up control and are receptive to the notion of letting the AI take the lead in translating while they focus on high-level planning.

4.1.1 "Labor of love": storywriters who emphasize the emotional values of writing expect direct control over the translating process, diminishing the AI companion to an ideation tool. Work on AI co-creation such as [71] has revealed that artists would like to retain creative control while delegating tedious tasks to AI agents. This suggests that writers might prefer to have control over planning while delegating manual tasks in translating to the AI companion. On the contrary, we found that some writers do not want to let the AI lead the translating process. A key reason for this hesitation is that these writers emphasize the *emotional values of writing*. This seems counterintuitive, since the process of expressing ideas is often arduous and restricts writers' focus on planning (e.g., plot generation and character generation). Indeed, several writers described translating as the most tedious part of the overall writing process (H1, P2, P5, H5, P9), with P9 calling it "the grind of turning out chapters." However, we found that storywriters prioritizing the emotional values of writing see their engagement in this process as a "labor of love." We show how these writers' values drive them to reject AI-led support in translating, even when it promises to relieve their writing burden.

Some writers want control over translating because they find *fulfillment* in writing by closely engaging in the process of expressing their ideas. This tendency was particularly prevalent in hobbyist writers, none of whom wanted to miss out on the joy of turning

Table 2: Five major barriers and facilitators impacting the desire to adopt AI companions are grouped into three types. The impacted writing process in column 4 describes the major area(s) of writing wherein each consideration influences writers' perceptions. Sub-tasks within each process are specified, where relevant.

#	Barriers & Facilitators Impacting Desire to Adopt AI Companions	Type	Impacted Writing Process
	Writers' Personal Values		
1	Prioritizing *emotional values of writing* (fulfillment, ownership, and integrity) leads to desiring control, rather than delegating writing to AI companions.	Barrier	Translating
2	Emphasizing *productivity* makes professional writers more willing to relinquish control over writing to achieve prolific writing output.	Facilitator	Translating
	Perceived Competence of AI and Writers		
3	*Distrust* in AI companions' capacity leads to desiring control over sub-tasks requiring commonsense reasoning.	Barrier	Planning (generating characters), Translating (dialogue, narrative)
4	*Diminished self-confidence* makes writers more willing to delegate challenging writing sub-tasks to AI companions.	Facilitator	Planning (generating characters), Translating (dialogue)
	Writers' Planning Approach		
5	Mismatch between the AI companion control mechanism and their *planning method* (e.g., freeform, structured) for generating and organizing ideas drives storywriters to reject AI companion support.	Barrier	Planning

ideas into words. For example, H2 clearly describes that they would not continue a story if they do not enjoy writing it, saying:

> "It's a labor of love, not a labor of hate…if you look at your piece of work and you're…just hating yourself and going into depressionville it's like…the piece is done, just throw it away."

For H2 and other hobbyist writers, the act of writing goes beyond completing a task. They attach personal feelings to the writing activity and do not want to engage in a writing project which does not provide them enjoyment ("the piece is done, just throw it away"). Rather, they see writing as a difficult task which should provide enjoyment ("labor of love"). Expanding on this theme, we saw that writers who are motivated by emotional values achieve pleasure by persevering in the writing process. P3 expressed that "the pleasure of writing is tearing [the language] from your mind, as hard as that can be sometimes." They derive pleasure from engaging in the difficult or even painful task of finding the best way to express their ideas as words ("tearing [the language] from your own mind"). Writers like them value the fulfillment they achieve by being actively involved in the process of translating their ideas to words, even though it can be arduous. In response to Design 3: *Scene-based approach*, H3 went on to say that such AI-led writing "would not be very satisfying" since they would not like "the text written for [them]." Thus, they emphasize that they would not achieve satisfaction if the AI companion did the writing.

Our analysis also revealed that some storywriters desire to control the process of expressing their ideas in stories since they want to establish *a sense of ownership* over their writing. Not only do these writers want to feel that the story ideas are their own, but they also want to feel that the end product belongs to them by actively engaging in the process of translating. P3 described ownership as a key motivation for controlling various aspects of the writing process:

> "[...] it's a combination of the plot, characters and the language style…that makes you feel like you have control over [the writing process…I] want [the story] to be my own so I want it to take place where I want it, and for [the characters] to talk how I want it."

Writers like them want the story to "be [their] own" and a key way they accomplish this is by controlling the "language style" in translating. In particular, they would like the characters' speech to reflect their intended style of dialogue ("talk how [they] want it"). Additionally, they want to control the generation of "plot and characters" in planning, particularly the story setting ("take place where I want it"). Moreover, H4 described why they would dislike an AI-led approach as in Design 3: *Scene-based approach* which takes over the translating process, saying: "I don't want to feel like someone else is doing my work [...] I don't want to be the editor of my piece, I want to be the writer of my piece." Here they express their sentiment that this type of AI companion would overstep the boundaries of a collaborator and make them feel that another writer is "doing [their] work." They would then no longer feel that they command the language and that the writing product ("[their] piece") belongs to them, but rather that they are relegated to only being "the editor."

We found that storywriters who prefer AI companions which allow the writer to lead the writing process are driven by a desire to maintain a sense of their personal *writing identity*. Indeed, these writers saw writing as a deeply personal product. Writers like H3 feel that their writing style is as integral to them as their fingerprint, who reacted to Design 3: *Scene-based approach* as follows:

> "[Just as] we all as humans have distinctive fingerprints, we have distinctive writing styles [...] I would not want my fingerprint of writing destroyed by letting someone else do it [...] it's important: picking that vocabulary, picking how the character should speak, and how characters should not speak like one another."

They would like to control the language style ("picking that vo-cabulary"), particularly the character dialogue ("picking how the character should speak"). H3 relates this control to their personal writing identity ("fingerprint of writing"). By allowing an AI to lead the writing ("letting someone else do it") and not engaging in applying their personal language style, they feel that their identity would not be reflected in the end product and that their "fingerprint of writing" would be destroyed.

Finally, some storywriters would like to command the writing process as this allows them to maintain a sense of *integrity and pride* in their writing. They felt that sacrificing control over translating to increase efficiency would threaten their integrity. Specifically, these writers were concerned that letting the AI do the writing would be dishonorable and that it would feel like cheating. They felt it would be dishonest to use generated content in the final product rather than merely utilizing it as a source of inspiration. H4 exemplifies this attitude in response to Design 3: *Scene-based approach*, indicating that "it just feels like you're cheating. [If] you got stuck you're just gonna hit this button…[and] it'll fill it all rather than give you ideas." Here, H4 expresses that creating an entire draft ("fill it all") with the scene-based AI companion ("hit this button") after creating an outline would make them feel that they are being dishonest ("cheating"). Additionally, some participants expressed concerns that using an AI companion to do the writing may damage their reputation if their audience realizes they are utilizing AI-generated text. They considered that publishing stories containing AI-generated text to be dishonorable and felt that they would be *"called out by [their] readers and by [their] conscience"* (P7) for using an AI companion. Here, P7 alludes to their fear that readers will react negatively ("call [them] out") if they discover story text was written by AI, even in part. The writer is also concerned that they would damage their own sense of honor ("called out by their conscience") if they let an AI collaborator do the writing.

In contrast to translating support, all storywriters are receptive to leveraging AI companion for *co-ideation* in plot and character generation since it is not perceived as a threat to their creative control. For instance, writers like H4 who do not want to give up ownership favor using AI companions for ideation support over translating. H4 expressed this attitude:

> "I want to feel ownership over the project in general, but I feel like I'd be much more open to collaboration about the ideas and building things rather than the actual words […] I would rather collaborate with the AI to build a charac-ter or build a plot and build these things, than actually have it write things for me."

Here, H4 expresses that collaboratively generating ideas about char-acters and plot ("build a character or build a plot") does not threaten their ownership of the writing product, while "havi[ing] the AI write things for [them]" would make them feel that they lose con-trol and ownership over the project. These agents are expected to provide collaborative support which augments existing ideation practices and supports different parts of writing to overcome block-ing.

Participants felt that the types of ideation support afforded by AI companions would build on their current practices for developing

story narratives and characters and help break through writer's block. Several writers described facing writer's block (H2, H3, H4, H5, H6, H7, P2, P5, P8). They described resorting to the following ideation methods which help overcome this challenge: subconscious ideation while performing an unrelated activity (H2, P1, P2, P7), writing prompts from online sources (e.g., Reddit r/WritingPrompts community[3]) (H2, H3, H4, H6, P11), inspiration from other literary works and other media (H2, H3, H7, P2, P3, P5, P6, P9), collaborating with colleagues and members of their social circle (H1, P4, P8, P10, P11), and conversation roleplaying (H3, H7, P11, P12).

Using AI companions as an ideation mechanism was perceived as an excellent support for plot and character generation by pro-viding serendipitous writing insights shedding light on unthought aspects of story narratives, character arcs, and conversations. First, participants perceived suggestion-based approaches to be helpful in creating brainstorming prompts for plot generation (H1, H5, P2, P3, P6, P7, P10, P11). Unguided suggestions in Design 1: *Linear ap-proach* provide inspiration from cold start. Participants like H1 felt that suggestions that were "totally random and unexpected" could "give [the writer] ideas of where to go" when they are unsure of the narrative direction. By contrast, guided suggestions in the Design 2: *Keyword-based approach* support controlled ideation based on the writer's foreknowledge of next events in the story (H1, H5, P2, P6, P10). H1 describes the value of being able to direct suggestions to match narrative direction when developing ideas, expressing that "when writing about a specific theme it can keep your story going in that direction […] I could see that being quite useful and it could help generate ideas [about that topic]." Looking next at character generation, some participants expressed that Design 4: *Character-driven approach* can provide a "fresh perspective," much like an external human collaborator which gives a writer new in-sight into how a character can evolve (P7). This design was also seen as being effective in creating initial characters (P11) and adding characters further in the writing process (P6). Additionally, several storywriters also indicated that the Design 5: *Conversation-driven approach* would offer an opportunity for understanding characters better by supporting a conversation roleplaying ideation method. For example, H3 indicated that this approach would help them to add depth to characters, saying:

> "The characters need to be 3D and you almost have conversations with them [characters] in your head while you're writing […] having something like this to just give you a prompt, I would love it since it would let me do that [conversation roleplaying]."

H3 refers to adding depth to characters ["be 3D"] and describes how this design would fit with their existing ideation practice of con-versation roleplaying ("have conversations with them [characters] in your head"). Finally, considering ideation in dialogue develop-ment, some writers (H1, H3, P12) described that they would use conversation generation as a source of inspiration for advancing conversations. P12 indicated that conversing with the AI compan-ion would elicit novel conversation directions: "It would be helpful in […] giving me an idea, and I might do it [converse with the AI] a couple [of] times to get a few lines and then I'm ready to go, and

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[3]https://www.reddit.com/r/WritingPrompts

I've got an idea of where I'm heading." After conversing with the AI to generate "a few lines" of dialogue they envisioned that they would develop an idea of the direction of the conversation ("an idea of where [they are] heading").

4.1.2 Professional storywriters who prioritize productivity are willing to give away control in translating, envisioning AI companions as writing collaborators. Our analysis revealed that some professional writers are receptive to the notion of letting the AI take the lead in writing and are willing to relinquish control to increase their productivity by collaborating with the AI. This is because these professionals prioritize productivity over the emotional values of writing to achieve financial gain. Thus, this finding expands on existing research investigating other domains of work with output-based compensation which has demonstrated that increased income is a key incentive driving worker productivity [3, 11, 54, 55, 86].

Storywriters prioritizing productivity felt that AI-led writing would reduce the effort required in expressing their ideas, thus reducing their workload. Writing the first draft and "getting the words onto the page" (P5) is often challenging and labor-intensive. For instance, P2 described how they would like to use an AI companion based on Design 3: *Scene-based approach* to provide translating support in this task.

> "It [the AI companion] would take out the busy work of writing out the details…of what happens in a scene. This would definitely save a lot of time [in the first draft...]"

They envisioned that AI-led writing would improve productivity by alleviating their burden in the tedious process of writing each scene ("busy work of writing out the details") for the first time when confronted with a blank page. Some writers (P2, P4, P5, P8) hoped that this form of AI-led writing would allow them to deliver writing products to clients more quickly, decreasing the stress of meeting deadlines.

A key reason why writers who prioritize productivity do so is that they see writing as a job for financial gain. While this was not the case for all professionals, 6 of the 13 professional writers (P2, P4, P5, P8, P10, P13) we interviewed showed this tendency, all of whom are gig workers on Upwork.com. For example, P8 "takes on a high volume of work" and "needs the writing process to [be] efficient" to meet their clients' time constraints. They went on to describe generating an income as their main motivation for writing:

> "I work 100% as a ghostwriter…it is a business for me…it is my living [...] I entered it [writing] as a business [to] pay the bills."

This reveals how writers like them are primarily motivated to write so that they can increase their income to support their livelihood ("it is my living") and meet financial obligations ("pay the bills").

Writers who were receptive to AI-led writing support saw AI companions which assisted in the translating process as writing partners which would augment their own writing ability. This goes beyond what is expected of writing support tools. For instance, P13 described co-writing with an AI companion as follows:

> "It would be really a partnership [...] an AI like this would be partnering with me to make me better at what I'm doing, [better than what]

> I can do on my own, [and to] make [writing] more efficient, so that I can speed up my process and be able to deliver the end goal at a quicker rate."

They describe how this "partnership" would allow them to improve their writing ability ("partnering with me to make me better at what I'm doing"), much like collaborating with another writer. Additionally, they expect that the AI co-writer will allow them to surpass the level of writing efficiency they could achieve on their own ("[better than] what I can do on my own [and to] make [writing] more efficient...").

Likewise, P4 indicated that a scene-based AI companion would be helpful in developing a story from an outline. However, they would also like to establish a sense of ownership over the generated content:

> "I think it definitely would help because sometimes even when you have an outline [...] it can be difficult to figure out what do I do with it? How do I make it interesting; how do I make it really fill out the rest of text? So having at least a starter [when] writing scenes could definitely help out [...] I'd probably take the content that it has generated and then [...] put a little of my own spin on it, or [...] maybe reword things [...] add, or edit."

Here, P4 describes the challenge of writing the first draft from an outline ("once you have outline, it can be difficult to figure out what do I do with it"). They envision that the AI companion would reduce their writing burden by giving them a first draft as a starting point ("a starter"). However, they would like to establish their writing identity and ownership in this process ("put a little of [their] own spin on it") by exercising control over the writing style by modifying the generated content ("reword things [...] add, or edit").

Participants' reactions to AI companions which dominate in translating ultimately reveal that all writers aspire to have some degree of control over expressing their ideas. Even those valuing productivity most highly wanted to have some control because they want to form a sense of ownership and have the writing reflect their identity. Therefore, what we see is not a dichotomy, but different shades of ways that writers assign value to their writing practices. We have highlighted the corresponding differences in the type and degree of control storywriters seek in translating.

4.2 Trust in AI Companions and Self-confidence

Our storywriters reported having varying degrees of trust in AI companions and in their own writing abilities in specific writing tasks (e.g., generating characters). In contrast to the personal values ascribed to writing, *trust and self-confidence* impact writers' perception of AI support at the more fine-grained level of specific writing sub-tasks within high level processes such as planning. We highlight how trust and self-confidence influence storywriters' acceptance of AI companions in different writing roles.

4.2.1 Distrust in AI companions' capabilities leads storywriters to desire control over roles requiring commonsense reasoning, such as

character generation. Participants understood the notion of an AI companion and attended to discussing their perception of AI writers' high-level writing capabilities, going far beyond what can be commonly expected from writing support tools (e.g., grammar checking, style transfer, etc.) and including (1) Capturing the background and attributes of characters in character generation, (2) reflecting personality and the current narrative context in translating dialogue, and (3) incorporating the interplay between events in translating narration in scene descriptions.

Looking first at character generation, some writers expected AI companions to be ineffective in this area since they distrusted the AI's capabilities to grasp the contextual, nuanced aspects of characters. Specifically, they felt that an AI companion modelled after Design 4: *Character-driven approach* would not effectively capture characters' complex goals and personality (H7, P2, P5, P6, P9). Since character development is a complex process, there was a perception that an AI companion would find it challenging to grasp all the attributes of a character based only on the writer's character outline. We found that the cause of this distrust is a perception that the AI would lack intuition. The participants' expectation matches tests showing that generative language models like GPT-3 sometimes show a lack of commonsense reasoning [64]. Writers felt that this type of reasoning is required to accurately interpret their description of the characters by relating their goals and personality to the wider narrative context. For example, P2 expressed doubt whether the AI would be able to do understand the writer's intention in describing character attributes:

> "Can it [the AI] really understand a character's goals [the writer] stated so that they connect to the story…and [can the AI understand] the disposition of the character…? A writer might say, 'oh he's a happy go lucky guy.' What does that really mean? Does that mean, he is a positive person? Or [does it mean] he is self destructive in a way that he ignores problems?"

Here, they describe their distrust in character generation. First, they feel that the AI may not understand the writer's description of characters' goals and would not be able to relate them to the rest of the story ("connect to the story"). They also use the ambiguous term "happy go lucky" as an example of a personality description ("disposition of the character") which can only be resolved by having an intuitive understanding of the character and their background within the context of the story.

Some writers were hesitant to accept AI support in translating dialogue because of distrust in the AI companion's capabilities to capture the narrative context and portray characters' emotions. They felt that AI companions would not be able to create compelling dialogue. Specifically, they did not trust that an AI companion design based on Design 5: *Conversation-driven approach* would achieve the natural colloquialism of a conversation, being overly perfect in grammar and formal in style. While technically "correct," this style of language would not match the reader's expectation of a natural conversation within the characters' current context. They perceived dialogue to be one of the most challenging parts of writing and felt it would be difficult for an AI to achieve something

which is already demanding for a human writer (P7, P9, P10). P7 expressed this concern by saying:

> "We were taught to write a certain way […] using complete sentences with a sentence and a verb and preposition. Everything has to be grammatically correct. And I'm afraid that AI would pick up on that […] it would be very structured and very proper and that's not how we speak in real life […] artificial intelligence […] would have a really hard time making it sound natural."

Here, they describe a prescriptive and grammatically correct form of writing taught to beginners ("everything has to be grammatically correct") which is "structured and very proper" but does not match the way humans typically converse ("not how we speak in real life"). Several participants also felt that the AI would not be able to match the scene context and intended narrative direction when generating dialogue (P2, P6, P7, P9, P10, H6). P9 indicated they would not trust the AI to create context-aware dialogue:

> "It would be a struggle [for the AI to convey] the information that you want to get into the scene to move the plot forward with what the character would actually say in that situation […] I think you…have to be a good writer to do dialogue so that could be quite a challenge for the AI."

Writers like P9 indicated that they felt that dialogue writing demands significant skill for writers ("you have to be a good writer to do dialogue"). When comparing the perceived capabilities of an AI writer to human writers, they felt that the AI would not measure up to an experienced writer. Therefore, they are concerned that the generated dialogue might diverge substantially from the narrative context ("what the character would actually say in that situation") and would not match the writer's idea for advancing the narrative ("move the plot forward").

Finally, some writers expressed scepticism about the ability of the scene-based AI companion to perform complex scene writing as they did not trust that the AI would have an intuitive understanding of the interplay between events and characters. They were concerned that the generated narrative text would not be compelling since it would lack coherence between events and characters which are referenced within the text (P1, P6, P9). Specifically, they felt that it would not be possible for the AI to understand the writer's intention based on the scene outline without requiring a prohibitively high level of detail. P6 expressed that "there are [characters and events] that I'm thinking of that…impacts what's happening now, and what's happening now is going to impact that later and I can't…input every single thing into the AI, right?" They explain their concern that the AI's lack of intuitive understanding would mean that they would be obliged to provide an overly detailed outline for a complex narrative ("input everything into the AI") which describes characters, events and the relationship between events ("what's happening now is going to impact that later").

4.2.2   Storywriters with diminished self-confidence in performing challenging writing roles are more receptive to AI companion collaboration. Writers' confidence in their own abilities in roles like character generation and translating dialogue, which require an intuitive understanding of context and emotion, influences their perception of AI writing assistance. We found writers are more receptive toward AI companion support in these types of roles when they are less confident in their skill but tend to be hesitant to accept AI collaboration in areas where they feel adept. This sense of self-confidence is distinct from storywriters' trust in AI companions described in subsection 4.2.1. Trust impacts storywriters' perception of AI co-writers based on their judgement of the AI's capabilities. By contrast, self-confidence is determined by writers' trust in their own writing ability. While many storywriters distrusted AI's ability to perform roles like dialogue writing and character generation, our analysis revealed that their self-confidence was another confounding factor influencing their perception of AI assistance in performing challenging tasks requiring commonsense reasoning, particularly context-awareness and an intuitive understanding of emotion. Ultimately, the effects of trust and self-confidence are not contradictory or redundant, and both should be considered in AI companion design.

Storywriters are more willing to give up control and collaborate with the AI in challenging parts of writing where they feel their own abilities are weaker. We found that participants who perceived themselves to be less adept in dialogue writing would like to collaborate with the AI in this area. This can be seen in reactions to Design 5: *Conversation-driven* approach, like the following:

> "I'm not super strong with dialogue…it's not like anyone is going to read my writing because I have fantastic dialogue…I would be most willing to pass the buck in that area." (P5)

Here, H5 describes giving up control ("pass the buck") since they have lower confidence in their ability to write dialogue compared to other areas ("not super strong with dialogue"). Likewise, their weakness in character generation tends to motivate storywriters to accept AI help in this role. For instance, P11 finds character generation difficult and said that they would accept help from an AI companion based on Design 4: *Character-driven approach.*

> "One of my weakest points is character creation…so I think that having that [character generation] available to me, would really help me and make that process a lot easier for me."

They emphasize their lack of self-confidence in developing characters ("one of my weakest points") as a key consideration for being receptive towards AI assistance in this area.

By contrast, storywriters would like to be more heavily engaged in areas where they feel confident since this helps maintain a sense of ownership over the writing product. This attitude can be seen in P8's justification of why they dislike the conversation-driven AI companion design where they expressed that:

> "[Writing] the dialogue makes me feel like I have some control…the dialogue has always been mine…I think it's probably why I've managed to make a living as a writer, because the one thing that they [clients] 100% need me to

do when I write [writing dialogue], I don't find it difficult."

For writers like P8 who are proficient in writing conversations ("I don't find it difficult"), engaging in translating dialogue establishes a sense of ownership ("the dialogue has always been mine") and they would not like the AI to take over this task. Similarly, storywriters like H2 who felt confident in character generation expressed that they would not accept assistance in this area. They indicated that " [they] wouldn't use this [the character-driven design] since [they] "don't have any problems with characters getting stuck," indicating that they are confident in their own abilities to develop characters.

4.3   Planning Method

Our analysis showed a distinct pattern of two broad types of writers based on where and how frequently in the writing process they perform planning. See Table 1 which shows each participant's planning approach. These two groups are consistent with the two well-known approaches to planning in writing: structured and freeform. Structured writers create and adhere to a preconceived story outline while writing. By contrast, freeform writers (sometimes referred to as "partners") switch rapidly between planning and translating throughout the writing process to iteratively plan the narrative while writing and do not create a structured outline. We elaborate why AI companions should match the writer's planning method.

4.3.1   Storywriters expect the AI companion control mechanism to match their planning method for generating and organizing ideas. Writers following a structured approach prefer AI companions which allow them to guide the translating process through a high-level narrative outline. They need to do ideation and idea organization before they start writing. This group of writers indicated that Design 3: *Scene-based approach* fits well into their current workflow as it supports top-down planning, with many ranking the design highly (H5, P5, P8, P9, P10). For example, P10 describes how they would like to use a scene list to plan the narrative and convey the structure to the scene-based AI companion.

> "I would actually rely on [the scene-based companion] quite a bit. It would be incredibly helpful to show how the scenes are put together and to compartmentalize so we can see what the skeleton is…to then generate a draft. Even if it's later in the writing process, I think this would be helpful for revising [the draft]."

Here, P10 describes how the scene-based design would help support their planning process by dividing the story into scenes ("compartmentalize") and show the relationship between scenes and the overall story structure ("what the skeleton is") before they "generate a draft". They also describe how this design would support revision ("revising [the draft]").

By contrast, writers that engage in an unstructured (freeform) writing approach expect AI companion support which does not require the rigid structure of a plot outline as this would constrain their process of generating and organizing ideas. They need to do ideation and organizing ideas while they are writing. Therefore, freeform writers would like AI companion support which allows them to interleave iterative planning with their translating process

so that they can rely on the story they have written so far to guide their ideation. For example, most freeform writers reacted positively to Design 2: *Keyword-based approach* (H2, H4, H6, P1, P3, P11, P12). Writers like H2 valued the fact that this design does not "require a whole outline" and supports incremental planning by generating small chunks of text based on a brief description and keywords about the next narrative event when they are "stuck on a specific sentence." These writers indicated that they would find it challenging to adapt their planning method to write with an AI companion which requires structured outlining and disliked the Design 3: *Scene-based approach* (H2, H4, H6, P3, P11, P12). For instance, H4 ranked this design lowest, describing how it would not match their approach to planning:

> For my own writing style, it [the scene-based companion] would not be helpful…I'm more of a plan as you go writer…and I don't write out full summaries or outlines…to have them in the future…it's just not me."

Here, they describe themselves as a "plan as you go writer," indicating that they engage in planning as they write. They explain that this type of support would "not be helpful" since it would force them to plan the narrative ahead of time with "structured summaries or outlines," rather than planning while performing translating.

5 DISCUSSION

5.1 Respect for Writers' Value Perception as a Guiding Principle of AI Writers

The existing discourses about AI design have been focused on performance, such as speed and costs, and social values, including privacy and fairness [47]. Within the domain of AI co-creation, our study sheds light on a new dimension of considerations – *personal values*. Our findings have highlighted that storywriters expect the design of a human-AI co-writing mechanism shall respect their value perceptions of writing tasks. Previous work in AI co-creation [71] has emphasized that artists want to clearly distinguish their role from that of the AI and that they would like to take the lead in the process of creation through fine-grained control at every step, only delegating "chores" and follow-up work which are troublesome or tiring (e.g., coloring regions of an image). However, we have revealed that this is not always the case for storywriters. While writers who highly value their own fulfillment, ownership, and integrity want to lead a particular writing task of translating, those that emphasize their productivity and financial gain are willing to let the AI do the writing. To illustrate the importance of considering writers' values in AI co-writer design, we present an example of a storywriter and describe how an AI companion should behave to meet their idiosyncratic needs.

Mary[4] is a professional writer who works for clients on Upwork.com and other gig platforms, writing fictional novels, short stories, and scripts for video games and videos. She depends on writing for her livelihood. Meeting clients' deadlines is therefore vitally important to her, and thus she wants to achieve prolific writing. At the same time, she would like to achieve satisfaction by producing a writing product which meets her personal standards,

satisfies the client, and engages the reader. She feels a moderate sense of ownership over her writing and wants it to reflect her own voice and identity, even if an AI writer performs translating. Having control over writing style allows her to establish this sense of ownership, although she is willing to give up control over the story plot and character arcs based on clients' instructions and input from collaborators. When developing a narrative, Mary follows a structured, plot-driven writing approach. Mary trusts that AI will be able to create compelling characters and dialogue which reflects characters' personality and the narrative context. However, in scene generation, she feels that it would not be able to match her writing style. Finally, Mary has a high degree of self-confidence in character development and does not find this area challenging.

Considering Mary's profile, an ideal AI companion will prioritize Mary's need for productivity but also consider her desire to control writing style, and her structured writing method. Her role in the writing process should be to generate character and plot ideas and to iteratively revise content while the AI does the "heavy lifting" of writing the body of the text. Given Mary's structured writing approach and primary requirement for productivity, the writing companion should support scene generation based on her plot outlines. It should allow her to tailor the generated content to match her own voice, taking care to adapt to her writing style. The AI companion should also provide collaborative dialogue generation and guided text suggestions which match the style of existing text, further increasing her efficiency while giving control over style. In addition, the AI should afford collaborative ideation to increase efficiency in the planning process.

The AI companion described above is ideal to writers who share the value systems and priorities with Mary. This persona highlights professional storywriters who prioritize productivity as the major type of user of AI companions which lead the translating process. However, our participants manifested diverse characters in terms of the emphasis on different values as it relates to the other considerations such as trust, self-confidence, and writing method. Moreover, differences in these dimensions did not follow any predictable patterns, and it was not possible for us to identify concrete types of writers for which AI support mechanisms can be standardized. AI companions, therefore, need to adapt to the idiosyncratic character of the writer, much like human collaborators which negotiate and adapt to different working styles among each other. This implication poses design challenges in creating contextually adaptive AI agent, as foreshadowed in [50].

5.2 Implications of Storywriters' Trust

Users' distrust has been shown to negatively influence their reliance on automated systems, particularly when trust to AI is lower than self-confidence [56]. Our findings have revealed how diminished trust or increased self-confidence can lead storywriters to reject AI writing assistance in particular writing roles. Considering trust in working with an AI companion, previous work has focused on tasks with a well defined "correct" outcome. These include tasks like controlling an automated pasteurization plant [56], controlling central heating for a plant [66], and playing chess [18]. However, evaluating the effect of trust in creative tasks like storywriting is

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[4]a pseudonym, previously referred to as P13

challenging since the most desirable outcome is inherently subjective. For example, a next-sentence suggestion might not match the writer's intention within the narrative context, but it may inspire a novel story direction.

Our findings offer a glimpse into the impact of storywriters' trust in AI co-writers (see subsection 4.2). We showed that many writers distrust AI in performing roles that require commonsense reasoning and an intuitive understanding of the narrative context and characters' emotions. They would like to be able to effectively direct the AI co-writer when it is performing these types of roles. However, much like guiding a powerful horse, effectively controlling a language model requires the correct control mechanism to "rein in" its vast capabilities. This problem is confounded since writers want to control many dimensions of writing (e.g., topic, characters, plot, language sentiment). Improving the capabilities of generative language models and AI writing tools in capturing context and emotion is key in overcoming storywriters' existing distrust. Additionally, providing users explainability of the automated system's output promises to create an increased sense of trust [31, 42, 65, 79]. However, offering users a useful explanation is challenging due to the complexity of large language models. The ideation tool in [20] takes a decisive step in addressing both these challenges in the field of AI co-writing by providing sketching control to guide characters' fortune in the narrative and a visualization of the model's output to support sensemaking. At the same time, this sketch-based interaction approach intuitively communicates to users that there will be some degree of uncertainty in the output text, lowering their expectations for control. However, additional work is needed in AI co-creation to develop AI writing companions that go beyond ideation to establish trust in AI-led writing under human direction.

5.3 Storywriters' Sense of Integrity and Readers' Perception of AI Generated Content

Our findings have shown that maintaining a sense of integrity is important for writers who cherish the emotional values of writing. They attached feelings of pride to producing content that they perceive as authentic. They maintained that using AI-generated text in their work would feel dishonest, diminishing their sense of pride in their writing. Additionally, these writers were concerned that readers would react negatively if they realized that any part of the writing was produced by an AI co-writer. This raises the question: how does the reader's perception of stories which have been co-written with AI shape the culture of storywriting, and how does this perception impact writers' values and preferences for AI companion support?

We can look to previous studies on perceptions towards AI-generated content for potential clues to answering this question. In the case of journalism, readers generally do not perceive a significant difference in credibility between AI-generated and AI co-written articles from those written completely by human journalists [100]. However, earlier work showed that they find human-written articles to be more readable and enjoyable [22], with the difference in perceived readability being particularly pronounced when users were informed of the article source (i.e., human or AI) [40]. This

reveals a potential bias against the AI-generated content. It remains to be seen whether this will still be the case in the face of improvements in AI language generation technologies. Our findings suggest that storywriters perceive readers to be extremely sensitive to the writers' unique identity ("fingerprint of writing") reflected in their writing. Therefore, readers may be biased against content which deviates from expectations. Beyond writing, humans may also be biased against AI-generated visual art as they evaluate paintings perceived to painted by humans significantly higher than those they believe were created by AI [77]. Viewers also tend to view a piece more as "art" when it was created by a human rather than AI, since they felt the latter lacks human emotion, originality, and uniqueness [43]. However, based on the results in [33], it is unclear whether this bias exists in all art styles, as participants found the AI-generated art to be more novel and aesthetically pleasing in their study. Further studies are required to explore whether there is audience bias against AI-generated content which extends to textual forms of artistic expression such as storywriting.

5.4 Cognitive Models and Writers' Perception of AI Companions

Our findings revealed that storywriters' emotional values (e.g., ownership) and need for productivity influence their perception of AI companions and ultimately determine the role that they want such technology to play in their writing process. To describe writers' envisioned roles of AI companions requires different cognitive models. We therefore relate our findings to Gero and Chilton's discussion on three main cognitive models of usage for AI writers [38, p. 9]: co-creative partner, cognitive offloading tool, and casual creator [24]. Participants who used their tool as a co-creative partner felt that it was doing an excessive portion of the writing work, while those who utilized it as a cognitive offloading tool only allowed the tool to assist in narrow and specific word generation. Finally, those who employed the tool as a casual creator, felt that it would allow them to explore new creative directions. While their discussion emphasizes ownership as a key consideration for writers, our findings have highlighted how several additional emotional values, such as fulfillment and integrity, and productivity impact writers' perception of AI assistance. To specify, hobbyist writers emphasizing the emotional values of writing see AI companions which dominate in the translating process as co-creative partners which would overstep their boundaries, diminishing not only ownership but also fulfillment and integrity. They would prefer to use AI companions as casual creators for generating story and character ideas as part of planning, only using AI-generated output as a source of inspiration. In stark contrast, storywriters who prioritized productivity would like to employ AI co-writers as co-creative partners to help turn their ideas into words in the translating process and ease their writing burden.

5.5 Reactions to AI Companion Designs and Design Implications

Throughout our findings, we have utilized storywriters' reactions to our AI companion designs as evidence to show which barriers and facilitators influence writers' perception of AI companions and

to highlight how these considerations would be impacted by different ways of dividing roles in writing sub-tasks. We would now like to give an overview of participants' reactions to our designs and discuss a few potential design implications. First, we highlighted that storywriters are receptive to the notion of co-ideation support and expect the AI companion to act merely as a mechanism for exploring ideas. This was apparent in their reactions to the suggestion-based designs (Design 1: *Linear approach* and Design 2: *Keyword-based approach*). Storywriters felt that an AI companion based on the linear design would be helpful in developing ideas when the story direction was unclear, while a Keyword-based AI companion would be helpful for building on their pre-existing notions of plot direction. Additionally, they felt that Design 4: *Character-driven approach* would be helpful for ideating about character arcs, despite concerns that such an AI companion might not always capture the characters' complex goals and personality due to a lack of intuition (commonsense reasoning). By contrast, when envisioning translating support, it was clear that storywriters had much higher expectations. This was particularly apparent in reactions to Design 3: *Scene-based approach*. Participants expected this type of AI companion to take on the role of a co-writer which would understand their plot outline and other instructions. While several writers were hopeful that this type of agent would significantly increase their writing output for both narrative and dialogue, they expressed concerns that it would not understand the relationship between plot events and between characters. Additionally, some writers envisioned that an AI companion based on Design 5: *Conversation-driven approach* would aid in the challenging task of translating dialogue. However, there was a concern that generated dialogue would lack naturalness, failing to match the context and the characters' personality.

These differences in participants' reactions reveal the importance of managing user expectations when designing AI companions. The design for co-ideation should therefore emphasize exploration over efficiency. For example, this type of agent can generate multiple versions of the requested text to stimulate divergent narrative directions. At the same time, authors should still have the option to control the story direction, if desired, as in the keyword-based design. By contrast, AI companions which support translating should be designed to efficiently develop fully expanded text based on the writer's intention. Here, the focus should be efficiency rather than exploration. It is important that the generated text should closely match the writer's plot, as well as their writing style. In particular, it should maintain coherence between plot events and characters' development in the narrative, as well as matching the context and colloquialism of natural dialogue. Writers should also be able to provide a high-level outline which is converted into a full draft and request the AI companion to revise the text if it does not match their goals.

6 CONCLUSION AND FUTURE WORK

Collaborative writing with AI promises to significantly enhance writers' ideation capacity and ease their writing burden in translating, allowing them to focus on executive planning. Currently, writers face challenges such as writer's block and cognitive overload in the complex task of storywriting. Our design workbook study used five AI co-writing approaches to identify storywriters'

perception of diverse types of AI companion support which promise to address these challenges. Analyzing interview data revealed that storywriters' attitude towards AI companions is strongly impacted by five main barriers and facilitators. Our findings have implications for storywriters' intellectual well-being, as we describe the effects of the values writers ascribe to writing. Writers desired to maintain control and express their ideas on their own when they cherished the emotional values (e.g., fulfillment, ownership, and integrity). Additionally, they wished to perform challenging writing sub-tasks themselves when they had diminished trust in the AI or high self-confidence. Finally, writers were not receptive to AI companion support if its control mechanism did not match their planning method. By contrast, professional storywriters who prioritized productivity were willing to let the AI take the lead to achieve a high volume of writing output, reducing their workload. When they had diminished self-confidence in challenging writing roles, writers were also more receptive to AI collaboration. Our results assist in capturing storywriters' needs and ultimately set the stage for AI companion design, supporting a novel writing paradigm with vast potential in creative writing and beyond.

While our static design probe offered novel insights into storywriters' perception of AI collaboration, future work is needed to assess users' dynamic interactions with AI co-writers, since our approach was limited to speculative interaction. Although it was infeasible to tackle the task of developing a set of AI companions within the scope of this study, our contributions lay the groundwork for future AI co-writer design and evaluation. Comparing the usage of co-ideation and AI-led writing tools in hobbyist and professional writers would provide further insights into the effects of the considerations we identified. Additionally, we expected that participants' genre of writing work (e.g., short story writing or game storywriting) would influence their perception of AI companion collaboration. However, the interview data did not reveal any patterns indicating that this was the case. Further investigation focusing specifically on genre-specific writing needs might reveal patterns that were latent in our study. Finally, it would be helpful to explore the effect of writers' AI literacy on their value perception, integrity, ownership, and trust.

Another potential future direction is the application of AI companions in training novice writers. We foresee that AI companions could be beneficial in an educational context, particularly for prospective writers who do not have access to individualized writing training. Here, one issue to be explored is learners' potential overreliance on co-writing support and how this would impact their natural learning process.

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