Where to Look for Reflection in Writing Tasks: Challenges and Perspectives from a Study on Interactive Story Authoring for Mental Health

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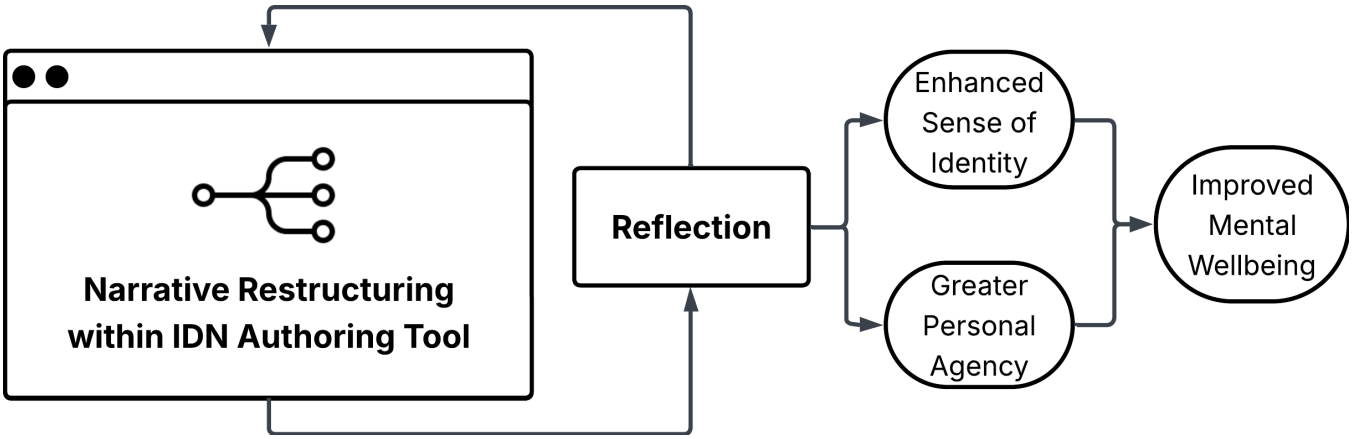

Figure 1: A high-level overview of my conceptual framework.

Abstract

My work seeks to investigate the design of interactive digital narrative (IDN) authoring tools to facilitate a process of narrative restructuring and reflection in college students. In this position paper, I discuss two attempts made after a recent study to assess the degree of reflection students underwent when creating nonlinear stories to reflect on a stressful event, and the subsequent challenges that arose in analysis. I propose that reflection during creative tasks, as a deeply internal cognitive process, may best be assessed through the measure of proxies tied to the creative activity itself, and discuss what that might look like in the context of narrative restructuring and reflection within an IDN authoring tool. The question I raise for discussion during the RiCE workshop is thus: can we assess degree of reflection through the extent in which one engages in a creative task and the resulting impacts that task has on the individual?

CCS Concepts

• **Applied computing** → **Psychology**; • **Human-centered computing** → **HCI design and evaluation methods**.

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Keywords

Interactive narrative authoring, reflection, mental health, therapy, college students

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1 Introduction

As a Ph.D. student in human-centered computing, my dissertation work falls upon a niche topic - that of the potential for interactive, or nonlinear narrative authoring to foster a therapeutic process of narrative restructuring and reflection in college students. Demand for mental health support remains high, particularly for populations such as college students. Given the technological literacy of these younger generations, the market for self-help, independent digital interventions has exploded in recent years, particularly in mobile app stores. However, many of these applications are not backed by research, with little to no evidence of their efficacy [15, 16]. Among these apps, another critical gap exists - a distinct lack of interventions which incorporate the patient's narrative.

The concept of narrative restructuring is one I extract from practices such as narrative therapy and narrative medicine, where the therapist works with the patient to co- and re-author dominant, challenging narratives they are currently struggling with [4, 6, 7, 20]. The scholarship on interactive narratives for mental health is still

nascent, but suggests that nonlinear narratives possess the capability to facilitate the kind of co-authoring and narrative restructuring often found in narrative-based therapeutic interventions [3, 9].

In my work, I posit that tools used to author nonlinear narratives can be used to support an independent process of narrative restructuring, providing a more accessible means for college students to re-author their narratives of stressful experiences. One popular example of such a tool is Twine [1], an open-source interactive narrative authoring platform that enables users with no prior programming experience to create hypertext works: nonlinear narratives that consist of a series of web pages connected via hyperlinks. It does this with a fairly straightforward interface, primarily consisting of a large, open canvas referred to as the 'story map' and populated by story chunks called 'passages', which are linked together to form the nonlinear story.

My conceptual framework (Figure 1) hypothesizes that an iterative, intertwined process of narrative restructuring and reflection within an interactive digital narrative (IDN) authoring tool can foster an enhanced sense of identity, greater personal agency, and improved mental wellbeing. In essence, through the active exploration of alternative narratives, the locus of control is shifted back towards the patient and an enhanced sense of identity emerges from a stronger conceptualization of their life story, which leads to improved mental wellbeing. This is supported by the observation of similar outcomes in existing narrative-based therapeutic techniques like narrative therapy [2, 8, 10, 12, 14]. However, IDN authoring tools as they currently exist do not provide the kind of guidance or support one might receive from a therapist or counselor. Thus, my work aims to investigate the design of scaffolds within IDN authoring applications to help facilitate a therapeutic process of narrative restructuring and reflection in college students.

1.1 Twine User Study

After an initial exploratory interview study to derive high-level design aims for these scaffolds [3], I recently conducted a study with 14 college students with the aim of generating more specific design implications by uncovering insights as to how narrative restructuring and reflection can emerge through the process of creating a nonlinear story. In this study, students were asked to create nonlinear narratives in Twine with one simple aim: to improve their outlook on a recent stressful experience. They were given a general two-step process to follow, derived from insights from the first study: (i) to first externalize the stressful experience they have chosen in the form of a linear narrative, followed by (ii) to transform that linear narrative into a nonlinear one with the aforementioned aim in mind. They were also provided some generic reflective questions in case they got stuck (ex: *"How do you feel about your story? Ideally, how would you want it to end?", "What is/was the best and worst-case scenario?"*). Otherwise, they were left to navigate the task on their own, allowing the process of nonlinear narrative restructuring and reflection, as well as any associated challenges, to emerge naturally. To closely examine this process, students' screens were recorded as they created their stories, and I conducted retrospective video interviews [5, 18] where I scrubbed with them through the recording of them making their story step by step, probing them for insights into their overall process of story creation and reflection. An example of a participant's story is shown in Figure 2.

In this position paper, I present specific challenges that emerged when attempting to assess reflection through these retrospective interviews and through the participants' stories themselves. As a late-stage doctoral student, the Reflection in Creative Experience (RiCE) Workshop came at an opportune moment where I am actively navigating many of the challenges it seeks to discuss - namely, how do we capture reflection in creative tasks and how to design creativity support tools that foster reflection.

2 Capturing Reflection in Retrospective Video Interviews

In the semi-structured interview guide used for the Twine user study, a central focal point was the identification of what we explained to participants as 'moments of reflection'. The definition of reflection we provided sought to capture the broadness of the concept, while also highlighting key concepts found in prior work [11, 17, 19]. Thus, reflection was characterized to participants as: "any process by which you contemplate or meditate on something to draw a new conclusion, come up with a solution, or change your thoughts or perspective on the thing you are reflecting about." As we went through each passage created in their story, I regularly probed for whether in creating any given passage, they experienced a moment of reflection that fell under this provided definition. The hope was to be able to neatly tag passages for later analysis, but in practice, this proved to not be feasible.

The two main issues that arose were challenges in specificity and internal awareness of these moments. For instance, it was common for participants to identify multiple passages as a 'moment of reflection'. While the interview guide did allow for this possibility, the range of passages that could be attributed to a single moment could be as little as one or as many as an entire branch or the entire initial linear portion of their story (several passages long). The variance and lack of specificity made analysis challenging, but even more concerning was that quite a few participants struggled with identifying these moments at all. Instead they would say reflection happened throughout, finding it difficult to specify where it happened during story creation. This is natural, given the metacognitive nature of reflection, but without the participants' ability to cleanly identify these moments, an analysis that attempted to rigidly identify patterns in user behavior was precluded, and results from the interviews were limited to high-level observations and qualitative themes. In response to these challenges, I briefly explored a different approach - that of assessing reflection through the written stories themselves.

3 Assessing Reflection in Nonlinear Stories

If reflection could not be effectively assessed through retrospective interviews, I was left to search for it within the nonlinear stories the participants had created. Utilizing an adapted version of the four-category scheme created by Kember et al. to assess level of reflection in written work [13], I went through participants' stories with an additional coder, using single passages as the unit of analysis. Each passage was assigned one of four categories - (i) Habitual action,

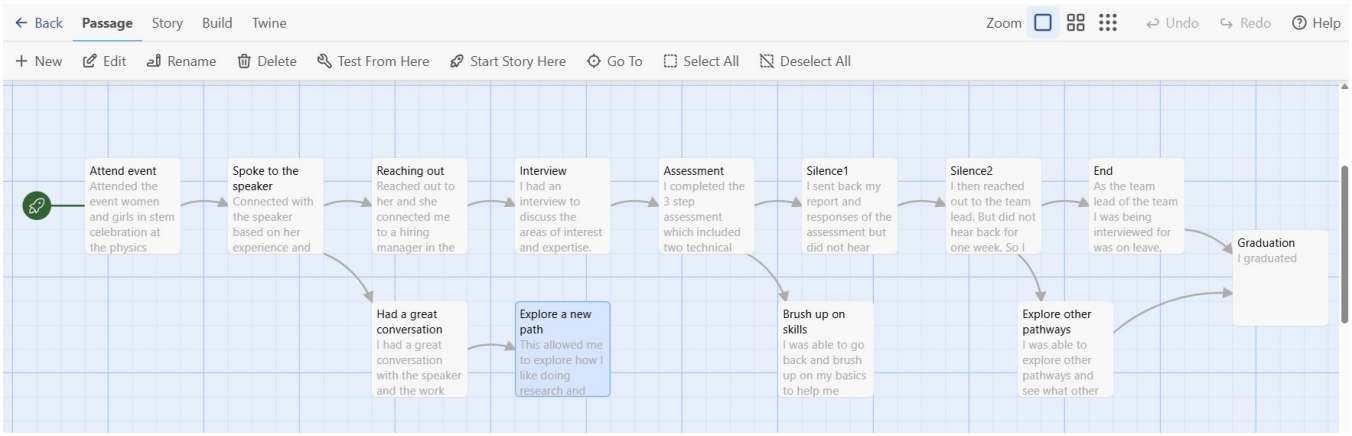

Figure 2: Sample reflective story made by a participant in Twine.

adapted to 'Non-reflective', (ii) Understanding, (iii) Reflection, and (iv) Critical Reflection. From this, new challenges arose.

It quickly became clear that the story content may not consistently illuminate the degree of internal reflection authors experienced. While some participants did provide explicit reflection within their story text, there were many who did not, which caused this analysis to fail as well. Take the following passage, titled "Lessons Learned" at the end of one participant's story:

> "Some of the things I could have done better during this semester include:
> - Not worrying about the amount of work my team members are doing(not in my control)
> - Focusing more on what I need to do to ensure the project is successful
> - Communicate to the TA early and often about issues within the group
> - Offer to help my team members sooner
> - Be more direct with my team members; tell them my concerns
> - Think about the fact that I will no longer care about the semester, the group project, or my team members after the semester
> - In future group projects, I need to form a group on my own or join another group; I shouldn't wait to be assigned by the professor"

This participant clearly laid out all of the takeaways from the reflection that occurred during their story creation within their text.

In contrast, the passages of another participant with a similar story about a stressful group project did not explicitly illustrate their reflection in this way. Instead, their story ending looked like:

> "They critized me one by one, I explained and argued with them one by one, we are only people with different perspective, but we should know each other."

This ending was where their initial linear externalization of the story naturally concluded - i.e., it was where the real life events had last left off at the point of sitting down to write their story. The 'lessons learned' in this case were instead hidden in the branches the participant created during the nonlinear expansion phase, where the bulk of reflection and narrative restructuring takes place. Here is an example of the start of such a branch from the same participant:

> "Telling them what I am doing, make them feel they matter will be better."

While the first author received a code of 'Critical Reflection' for their lessons learned passage, we could not easily come to an agreement on where the second author's passages fell within the coding scheme. The need to infer reflection for some passages while others were explicit made reaching intercoder agreement incredibly difficult. We can also observe through these examples how easy it is for attempts to measure reflection through story content to favor more descriptive writers. The quality of the creative output does not necessarily indicate the quality or extent of reflection that occurred internally during creation. However, that still leaves us with the question: if not through retrospective interviews or the stories themselves, where can we assess reflection during story creation?

4 Assessing Reflection during Creation

In my dissertation's conceptual framework, reflection is inherently tied to the process of narrative restructuring the author undergoes during story creation within the IDN authoring tool. Thus, it could be posited that the degree of narrative restructuring correlates positively with the degree of reflection the author experiences. A metric of narrative restructuring can be derived from a detailed log of each passage that is created or edited during the nonlinear expansion phase, thus quantifying the extent to which the author's initial story is transformed. This value can then be checked against post-intervention measures of identity, agency, and mental state. The hypothesis is that with greater degrees of narrative restructuring, larger positive changes in sense of agency, identity, and mental state are observed, and it can be assumed that a comparable of amount of reflection occurred to match. I plan on testing this in my next study, where I will draw from a larger participant pool to conduct a comparative evaluation of Twine against Twine with therapeutic scaffolds, allowing for robust quantitative analysis.

5 Limitations and Conclusion

There are clear limitations to this approach. Most pressingly, with this still untested framework, we are only measuring factors that conceptually surround reflection, not capturing it directly. The implications this has on attempting to measure reflection in other contexts are sizable: for each creative task or intervention being investigated, factors would need to be identified that occur both before and after reflection, measured, and cross-examined with each other. In lieu of other effective means to capture reflection during creative tasks, this would leave the scholarship without a clean, one-size-fits-all approach. However, rather than assume other methods do not exist, I instead proffer this question for discussion during the RiCE workshop: can we assess degree of reflection through the extent in which one engages in a creative task and the resulting impacts that task has on the individual?

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