

Acquiring Creative Narrative Generation Techniques from the Behaviors and Cognition of Individuals with Autism Spectrum Disorder

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Abstract

This study aims to identify and systematize creative and rhetorical narrative generation techniques inspired by the behaviors and cognition of individuals with Autism Spectrum Disorder (ASD). In our previous study, we analyzed several narratives created by people with ASD and extracted distinctive narrative generation techniques from their storytelling processes. We then conducted simulations by applying these techniques to the narrative generation tasks. Based on this foundation, this study categorizes the previously acquired techniques into two hierarchical levels: macro- and micro-level narrative techniques. We present the detailed structure and characteristics of each level and discuss how they can be applied to create novel and engaging narratives.

Keywords: Autism Spectrum Disorder (ASD), Story generation, Rhetorical techniques, Generative AI, Deviation story

1. Introduction

In the fields of education and welfare, the characteristics of individuals with Autism Spectrum Disorder (ASD) are generally regarded as “subjects requiring support,” with cognitive biases and unique interpretive styles generally viewed as issues to be resolved.

However, when reexamined from the perspective of creativity, these characteristics are perceived as having the potential to generate ideas and unique logical structures that transcend conventional frameworks. This study aims to reinterpret the behavioral characteristics exhibited by individuals with ASD not as subjects requiring support but as valuable creative resources for storytelling. In particular, we analyze a real-life example called Higashi-Yodogawa Station Story, extract rhetorical techniques from it, and apply these extracted techniques to generative AI to explore new methods for storytelling.

2. Relationships to Previous Research

First, we introduce a study that, like ours, deals with generative AI and ASD. Haroon et al. proposed *NeuroBridge*, a conceptual system that uses generative AI to bridge communication gaps between individuals with ASD traits and typically developing individuals through perspective-taking by the typically developing individuals [1]. This system uses generative AI to imitate the behavior of individuals with ASD traits to “support” typically developing individuals in understanding the communication of ASD traits. In contrast, our research directly utilizes ASD traits as a “creative resource” for story generation, narrating communication gaps as “unexpected developments in the story.” In this respect, our research differs in its application objective from that of Haroon et al..

Aoki found that individuals with ASD traits have a pronounced tendency to focus on “subtle background elements” in stories [2]. This study is unique in that it applies this knowledge to the field of narrative generation, attempting to structurally narrativize excessive attention to minute details and to misperceptions. Furthermore, Ono,

Ogata, and Aoki [3] and Ayaya [4] compiled anecdotes from individuals with ASD to support their findings. The above [3] used a generative AI to simulate the reasons for an individual's behavior under certain circumstances. It also analyzed the author's anecdotal evidence.

From the perspective of rhetorical techniques, this paper is related to Kanai's study on the "defamiliarization effect" of a story caused by shifting the viewer's focus in a movie [5]. We comprehend the problem of the cognitive style of individuals with ASD compared to typically developing individuals from the perspective of creative defamiliarization effect.

3. Higashi-Yodogawa Station Story: An Incident Caused by an Individual with ASD Tendencies

In this section, we summarize the experience of Mr. X, an individual with ASD, at Higashi-Yodogawa Station.

3.1. Overview

This story is based on the misidentification of a location during a meeting experienced by Mr. X (hereafter referred to as X), who has ASD traits and tendencies. Although X and Mr. Y (hereafter referred to as Y) had arranged to meet at Suita Station, they actually headed to Higashi-Yodogawa Station, and the time of the meeting approached with the location mistaken. By analyzing the cognitive discrepancies and misunderstandings that occurred during this series of events in chronological order, we extracted patterns of rhetorical expression based on ASD thinking.

3.2. Details of the rendezvous

X stayed at a hotel near Higashi-Yodogawa Station on May 28th and 29th, 2025. Meanwhile, Y was staying near Suita Station, and the two were based near different stations.

On Wednesday, May 28th, X and Y arranged to meet on the Osaka-bound (Osaka-facing) platform of Higashi-Yodogawa Station and successfully reunited. Later that evening, they discussed their plans for the next day (May 29th) at a café in Suita Station, agreeing to meet at 8:30 the next morning on the Higashi-Yodogawa Station side of the Ibaraki-bound platform at Suita Station. During this explanation, Y used the words "there are roofs and chairs," "Suita Station," and "the other side." These words left a strong impression on X, triggering his later independent conclusion and memory replacement.

The following day, Thursday, May 29th, X left his hotel and headed to Higashi-Yodogawa Station, as he had done the day before. Using clues from the previous day's conversation, such as "roofs and chair" and "opposite side," X mistakenly reconstructed their meeting at Suita Station as Higashi-Yodogawa Station. After arriving at the Ibaraki-bound platform, X felt that the conditions were not met and moved to the "opposite side," ultimately moving to the Osaka-bound platform. X felt a sense of relief when he found the "roofs and chairs" on the platform, but he

simultaneously experienced spatial inversion and became confused by the new perspective.

As the meeting time approached, X received a call from Y and realized his mistake. X hurried back to the Ibaraki-bound platform and took the next train to Suita Station, where he eventually met Y. After meeting up, through the conversation with Y, X realized for the first time that he had mistakenly interpreted the promise to "wait at Suita Station" as "wait at Higashi-Yodogawa Station."

In this incident, partial and fragmental keywords such as "roofs and chairs" and "opposite side" triggered a memory reconstruction within X, resulting in a misrepresentation of the location.

3.3. Time series analysis of the behaviors and thoughts

Table 1 summarizes the chronological progression of X's behavior and thoughts on that day (May 29th). We show his behaviors and internal thought processes at each stage and consider the cognitive characteristics and factors that lead to misperceptions within X.

A third viewpoint (of a doctor as third author in this paper) pointed out that X's memories were mainly based on visual information such as "roofs and chairs" and "shadow depth." This suggests that people with ASD tendencies have a "visual memory advantage."

4. Extracting Rhetorical Techniques from Higashi-Yodogawa Station Story

In this study, we redefine ASD as rhetorical techniques based on the cognitive process described above. While typical rhetorical techniques function as "linguistic devices (metaphors, repetition, etc.) intended to impress the reader," the rhetorical techniques in this study are positioned as "expressive techniques that creatively adapt ASD thinking structures."

The first group drew their own conclusions and interpreted information based on these conclusions. This group was divided into four specific methods:

- **Rhetorical Technique 1-1: Information Trivialization:** A technique of reconstructing accurate information by dividing it into parts, reducing it, and reconstructing it to maintain an incorrect conclusion. For example, "meet at Suita Station" as "located on the side toward Suita Station."
- **Rhetorical Technique 1-2: Literal Interpretation:** A technique for eliminating the abstract meaning of language and understanding it literally and physically. For example, it misinterpreted "the other side" as "the other side of the platform."
- **Rhetorical Technique 1-3: Information Isolation:** A technique that ignores context and focuses only on a single piece of information. For instance, identifying a location based solely on the station's amenities (e.g., the roofs and chairs) rather than its name.

Table 1 Timeline and considerations of the case [6].

Time	Behavior	Thought Content	Analysis
A (20 minutes before the meeting)	X leaves the hotel and heads to Higashi-Yodogawa Station.	The assumption is that the meeting will take place “in the same way as the previous day.”	Based on impressions from the previous day (the “roofs and chairs”), Higashi-Yodogawa Station was unconsciously selected.
B	X moves to the Suita Station side of the Ibaraki-bound platform.	He misinterpreted “Suita Station” as “standing on the Suita Station side,” interpreting it as a positional description.	A tendency to process language literally has been observed in these observations.
C (10 minutes before the meeting)	X moves to the Osaka-bound platform and feels relieved after confirming the presence of the “roofs and chairs.”	He becomes confused by a sense of spatial inversion compared to the previous day’s scenery; the “map-like perspective” is lost.	He experiences difficulty in spatial cognition and a lack of a bird’s-eye (overview) perspective.
D	X receives a phone call from Y and feels as if he is being told, “Why are you there?”	He recalls content that was not actually said.	Misrecognition based on past experiences, and failure to accurately infer the other person’s internal state of mind.
E	X hastily moves to the Ibaraki-bound platform.	He realizes his mistake and feels panicked.	The context of the meeting promise is open to correction at this stage of the process.
F (at the time of meeting)	X meets Y at Suita Station.	He assumes that Y is angry and experiences intense self-blame when he does so.	Cognitive egocentrism and the influence of past memories were also confirmed in this process.

- Rhetorical Technique 1-4: Generating False Reasons:** A technique that uses one’s own rationalizations to maintain a mistake. For example, mistakenly persuading a person that something is “irrational” by saying “there are circumstances I’m unaware of.”

The second group involves past experiences that excessively influenced judgment. A specific example of this corresponds to Rhetorical Technique 2 (*Misperception of the Other Person’s Internal State*). This technique incorrectly infers another person’s intentions based on a

past event (e.g., being scolded). For example, one may feel as if they are being scolded over the phone when, in fact, it is not the case.

The third group has confusion about location and direction, which is Rhetorical Technique 3 (*Loss of a Bird’s-Eye Perspective*). This technique makes it impossible to grasp one’s own location using a map-like perspective, resulting in an “inverted” perception of real space. For instance, even though the station is supposed to be in the same place as it was the day before, one may experience the sensation that the entire station is reversed. This is also thought to be characterized by “ambiguous words,” “interesting words,” and, related to these, “visual information.”

The last group is one in which visual memories remain strong, and corresponds to rhetorical technique 4 (*Over-Evaluation of Visual Information*). This technique prioritizes visual memory over verbal information as the basis for judgment. For example, deciding on a meeting place based on the visual image of “roofs and chairs.”

5. A Framework for Narrative Generation Using the Obtained Rhetorical Techniques

At Higashi-Yodogawa Station, as explained in Section 3, the ideal (or ordinary) ending is that X and Y meet at Suita Station the next morning, that is, on Thursday, May 29th, based on a promise made at a coffee shop at Suita Station on the evening of Wednesday, May 28th, to meet at 8:30 the next morning on the Higashi-Yodogawa Station side of the Ibaraki-bound platform at Suita Station. Here, we consider this to be an ideal story, which deviates from the actual Higashi-Yodogawa Station. Figure 1 shows the correspondence between the two stories.

As shown in Figure 1, X’s actions on the platform at Higashi-Yodogawa Station form the core of his deviated story. By receiving a phone call from Y, X ultimately returns to the ideal story flow, but without that call, it can be inferred that he would have continued his deviation.

Figure 2 shows the change in X’s internal state when it deviates from an ideal story. At the initial promise stage, X likely understood that his ultimate goal was to “go to Ibaraki Station.” However, the process of getting there, “meeting at Suita Station,” is inferred to have changed to “meeting at Higashi-Yodogawa Station.” This indicates that his purpose has changed over time. From then on, a deviation based on this change in purpose is likely to occur.

In relation to the rhetorical techniques explained in Section 4, due to the *Trivialization of Information* (1-1), the purpose of “meeting at Suita Station” is trivialized to something other than the purpose, and as a result, it changes to a location within Higashi-Yodogawa Station, the meeting place from the previous day. (However, we believe that further review is needed to determine whether this example can be called a trivialization.) Next, through the use of various rhetorical techniques, including those mentioned above in Section 4, reasons for action were

generated on the spot, and a story flow was created that deviated significantly from the original story.

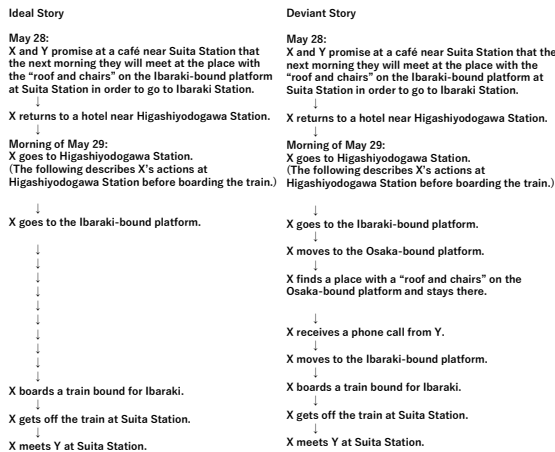


Figure 1 Ideal and deviation stories [6].

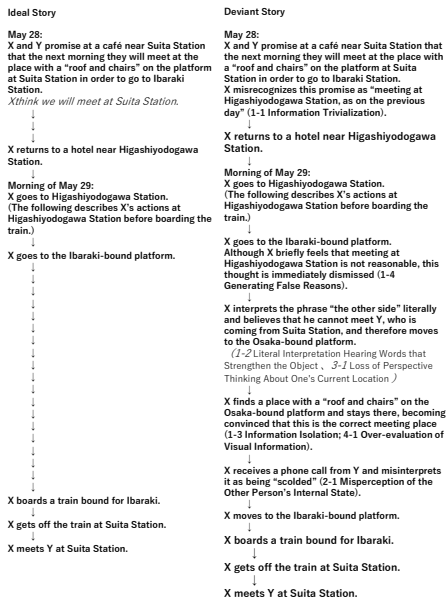


Figure 2 X's internal state in the deviation story [6].

More generally, in response to the goal of “meet at Suita Station,” X generated his own goal, namely, “meet at Higashi-Yodogawa Station.” Let us assume that in the process of achieving this (mistaken) goal, various rhetorical techniques were driven by “stimuli” that X encountered in each situation. The potential stimuli in the actual situation can be summarized as follows.

- Stimuli from conversations about the previous day’s appointment.
- Stimuli seen and heard on the same day.
- Stimuli based on the past memories.

These stimuli serve as conditions for applying rhetorical techniques. Furthermore, in some cases, they can also serve as conditions for constraining the range of results generated by the rhetorical technique to a certain range. For example, we can assume that the stimulus of the words “roofs and chairs” brought to X’s mind the conversation he had the previous day at the meeting place at Higashi-

Yodogawa Station, leading to the conclusion that the next day’s meeting place would also be the station.

The following are examples of stimuli that appear to be related to each of the rhetorical techniques. However, these findings are hypothetical and require further investigation to confirm their validity.

- **Rhetorical Technique 1-1: Stimulus for Minimizing Information:** Obtaining information on the purpose of an action.
- **Rhetorical Technique 1-2: Stimulus for Literal Interpretation:** Hearing words that strengthen the object.
- **Rhetorical Technique 1-3: Stimulus for Isolating Information:** Obtaining information about elements of a building, such as “roofs and chairs.”
- **Rhetorical Technique 1-4: Stimulus for Generating False Reasons:** Conceiving questions about one’s own behavior.
- **Rhetorical Technique 2-1: Stimulus for Misperceiving the Other Person’s Internal State:** Considering the reasons for the other person’s behavior.
- **Rhetorical Technique 3-1: Stimulus for Loss of Perspective:** Thinking about one’s current location.
- **Rhetorical Technique 4-1: Stimulus for Over-evaluating Visual Information:** Obtaining information about visual information.

In the actual *Higashi-Yodogawa Station Story*, the relationship between these types of rhetorical techniques and stimuli leads to the generation of a deviated purpose through the cognitive process shown in Figure 3. Furthermore, the story is thought to be further elaborated based on this deviated purpose and the accompanying elaboration of deviated stories can be considered a creative strategy for generating narratives.

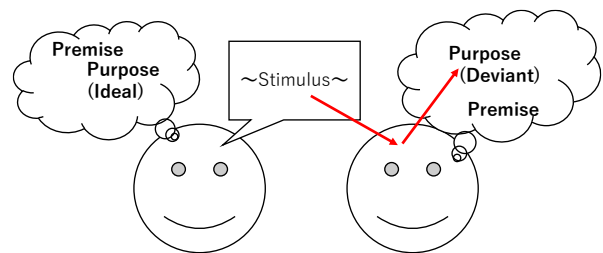


Figure 3 Story deviation due to stimuli [6].

6. Conclusion

In this study, we analyzed a narrated example called the *Higashi-Yodogawa Station Story* as a concrete example of the behavioral characteristics exhibited by individuals with ASD traits and examined a framework for story generation using rhetorical techniques extracted from it. Based on the framework examined here, we will prototype a story

generation system using the rhetorical techniques listed in [Section 4](#).

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