Narrating the route: Route memorability in navigation instructions augmented with narrative

by Lydia Youngblood

It has been well-established that the use of GPS devices with metric turn-by-turn directions during wayfinding hinders spatial knowledge acquisition (SKA) [1]. In an attempt to develop alternative methods of route communication that help instead of hinder SKA, some have found that layering additional information onto route instructions facilitate the memorability of routes. In addition, instructions rich in visual imagery improve their memorability [2].

From oral histories to mnemonic devices, humans have an excellent ability to remember object sequences and their relationships inside of narratives, the tellings of stories [3]. In addition, narrative as an aid to wayfinding has not yet been explored. This research aims to identify whether augmenting verbal route instructions with a narrative increases the memorability of a route.

Design of narrative instructions

Key components of narrative were found in a review of the literature in order to design a narrative for the study. A narrative should consist of *existents*, including characters in a setting, and of *events*, including actions that the characters take and happenings that occur to them that result in transformations that are not predictable. These events must be causally related and purposefully sequenced. The resulting narrative centered around Johann Strauss II, and focused on connecting each landmark in a route to a narrative event. These events in turn were connected to each other, creating an overarching narrative from the first to the last landmark.

Methods

The narrative instructions (NAR) were tested in on an urban route with simple landmark-based directions (LM) as a control (N=18, 10 female). The study consisted of three phases: Phase 1: Learning, Phase 2: In-person tasks, and Phase 3: Online tasks. Users were tested using a mixed methods approach. Quantitative methods included:

Phase 2:

- Describe the route [*repeat route verbally to researcher*]
- Landmark sequencing task [*which landmark came first in a photo pair?*]

Phase 3 (one week later):

- Route recognition [*given a landmark; pick the correct action*]
- Landmark sequencing task

Novel in the research was the incorporation of a semi-structured interview after the route description and asking the user why they ordered each photo pair, in order to better understand strategies the user used to remember the route. Additionally, confidence in answers was assessed.

Results

Quantitative results show little difference between the two groups in task performance and confidence (see Fig. 1). User-generated route descriptions were rated, with both groups performing well. 80 (NAR) and 87.5% (LM) of routes were rated 'good' or 'fair,' meaning that the route was able to direct the listener towards their destination with little or no additional assistance, a good result given the reported difficulty of the task. The photo sequencing tasks showed non-significant differences, though the route recognition showed slight significance in favor of the landmark group (*p =0.048*). These results indicate that narrative instructions did not increase route memorability.

The qualitative results, however, suggest otherwise. In every stage, participants brought up the narrative. At times narrative events were mentioned as additional attributes of a landmark. Other times, the user stated that the narrative helped a landmark to 'stick in their mind,' or to help order the photos.

"...I feel like [landmark] had a lot of essence to the story. It's like... the people, the line... I think it also connects with the fact that he also came to this tree to join the other people. So I guess that's probably why…It also affected like his emotions while walking. So I guess that's why I also remember it."

"Is it not the same? Ah! This is the street where the dog wants to pee and these are the houses with the flowers... this was first."

"I think the fact of having a story behind the instructions helped me a lot. By remembering some important facts of the story which I associate with images I saw, it is easier to remember the order of facts even if there are some things that I don't remember."

Conclusion

Results show no significant differences between the narrative and control groups when measured using quantitative methods. However, in interviews, the narrative group often cited the narrative when sequencing photos and during verbal recall. These results suggest that incorporating narratives into route directions can be further explored, but that the phenomenon may not be well-measured using quantitative methods. This research further confirms the potential of landmark-based instructions to facilitate route memory and contributes to the growing body of work augmenting route directions with additional information.

Fig. 1: Results from rating route descriptions and percent correct answers for both groups. The route recognition task shows the only significant difference.

Ratings of route descriptions

NAR
LM

Poor Fair Good
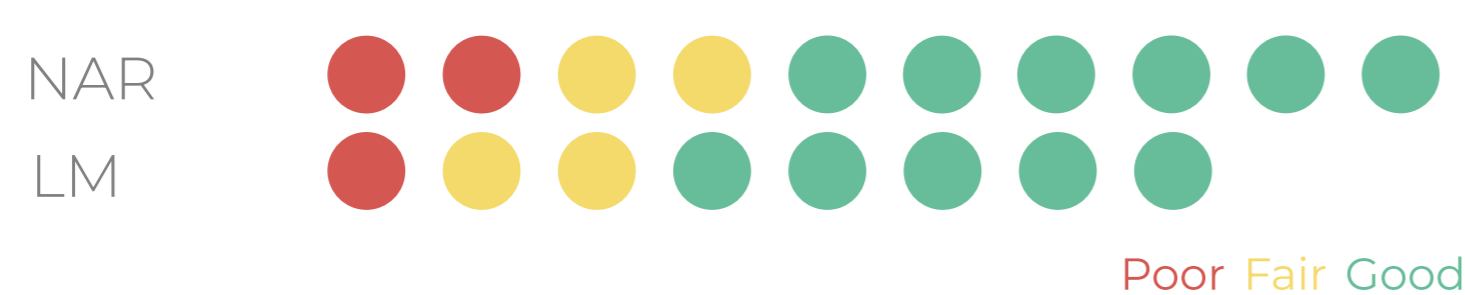
Percent correct (%):

Phase 2 landmark sequencing	Phase 3 landmark sequencing	Route recognition
NAR **80**	NAR **93**	NAR **84**
LM **92**	LM **96**	LM **95**
		p = 0.0478

References

[1] Ishikawa, T. (2019). Satellite navigation and geospatial awareness: Long-term effects of using navigation tools on wayfinding and spatial orientation. The Professional Geographer, 71 , 197-209. doi: 10.1080/00330124.2018.1479970.

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