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# Spatial Anxiety, Strategies, and Direction Type Affect Wayfinding Efficiency

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## Introduction

Finding our way from place to place is essential to everyday functioning. Often, we rely on directions from others when attempting to find unfamiliar destinations, such as airports and hospitals. One important goal is to determine the factors that influence the efficiency with which people follow directions during wayfinding.

Previous research specifies four important variables related to wayfinding efficiency: spatial anxiety (e.g., anxiety when finding the way through an unfamiliar environment), wayfinding strategies (e.g., maintaining a sense of direction based on global or local cues), direction type (e.g., cardinal descriptors or landmarks), and gender. For example, Saucier et al. (2002) investigated how direction type and spatial anxiety affected wayfinding efficiency. As expected, men navigated more efficiently when following cardinal directions than when following landmark directions. In contrast, women navigated more efficiently when following landmark directions than when following cardinal directions (see also Ward et al., 1986). Contrary to predictions, the relation between spatial anxiety and wayfinding efficiency was not significant.

The goal of the present experiment was to specify the relations among spatial anxiety, wayfinding strategies, and wayfinding efficiency using cardinal and landmark descriptors. We predicted that people reporting greater spatial anxiety would be less efficient navigators. Moreover, people reporting greater preference for global orientation strategies would be more efficient navigators. Finally, we expected that wayfinding efficiency would vary as a function of direction type and gender.

## Method

Sixty-four undergraduate students (32 men, 32 women) participated for extra credit in psychology courses.

A fictitious model town (6 ft. 6 in. x 4 ft.) served as the experimental space. The town contained 17 landmarks marked by unique pictures and labels and 30 streets marked by blue tape and street names. Bound sets of note cards contained written directions for wayfinding.

Participants completed 12 wayfinding trials, 6 containing landmark descriptors and 6 containing cardinal descriptors. Routes started at a landmark, included four turns, and ended at a destination. The order of routes and the assignment of routes to direction type were counterbalanced.

The experimenter noted the four cardinal directions and the landmarks and gave the participants 30 seconds to familiarize themselves with the town. On each trial, the experimenter placed the toy car at a starting location and said, "Go." Participants read a set of directions and moved a

toy car so it followed the directions. Mean navigation time and the total number of errors were calculated for the 6 trials using each direction type.

Participants also completed a self-report questionnaire designed to assess spatial anxiety and wayfinding strategies. The spatial anxiety scale measures perceived anxiety during wayfinding (Lawton, 1994). The wayfinding strategy scale measures preferred strategies during wayfinding (Lawton & Kallai, 2002). Orientation strategies involve maintaining an overall sense of direction based on global cues, whereas route strategies involve maintaining a sense of direction in relation to the route traveled.

## Results and Discussion

One objective was to specify the relations among spatial anxiety, wayfinding strategies, and wayfinding efficiency. As predicted, people who reported higher spatial anxiety were less efficient navigators. Moreover, people who reported greater reliance on global orientation strategies were more efficient navigators. A second objective was to examine whether wayfinding efficiency differed based on direction type and gender. Men and women navigated faster and more accurately when following cardinal directions than when following landmark directions. These findings provide valuable information about the processes by which people find their way from place to place.

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