

INTRODUCTION

Spatial attention is frequently influenced by previous experiences, often without explicit awareness. This influence of previous experiences on spatial attention can lead to statistical learning and the formation of **habitual attention**, the tendency to prioritize locations that were frequently attended to in the past. For example, when asked to search for a letter T among many letter Ls on a computer screen, participants typically attend to all locations equally. However, if the T was found more often in one region of the screen across trials, participants became faster at locating the “T” when it appeared in the high-probability location than other locations (Jiang, Swallow, Rosenbaum, & Herzig, 2013).

GOAL: The present study evaluated whether habitual attention transfers from a relatively impoverished task to a more realistic task as a first step in exploring the real-world applications of trained statistical learning.

PARADIGM

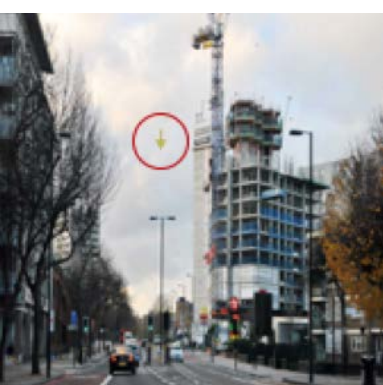
PHASE 1 – Blocks 1-10 – T-L Search



50% Rich Q	17% Sparse Q	25%	25%
17% Sparse Q	17% Sparse Q	25%	25%

Each block of the T-L search contained 24 trials. In the first 12 trials of each block the target T appeared evenly across quadrants, the second 12 trials the T appearing 50% in one “rich” quadrant.

PHASE 2 – Blocks 11-20 – Map Search



25%	25%
25%	25%

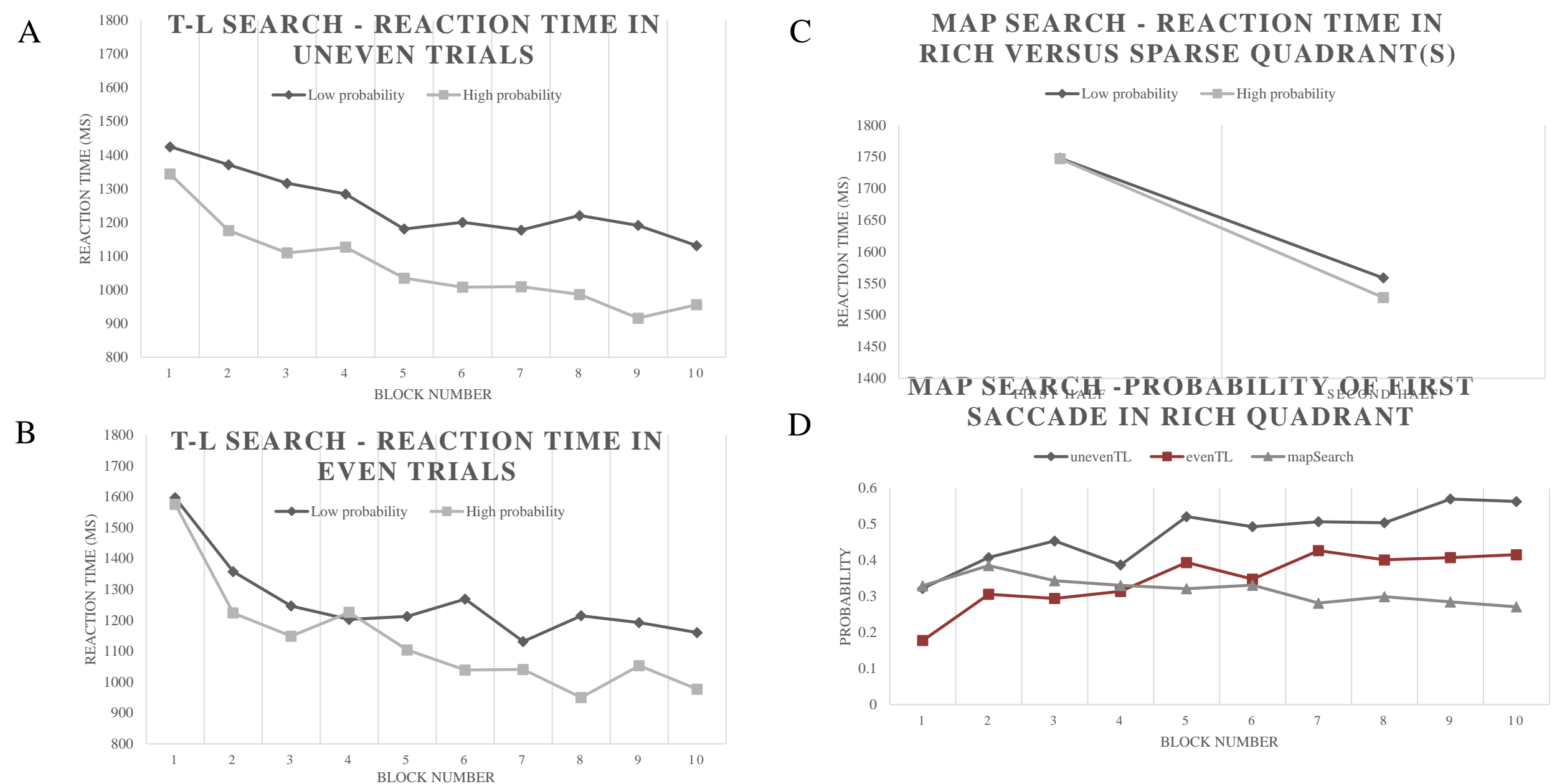
Each map search block contained 12 trials. The arrow appeared evenly across quadrants in all trials.

METHOD

We tested 20 participants (13 female) between the ages of 18 and 24. We used 10 blocks of a T-L search task (phase 1) to induce the spatial preference for a certain quadrant. The T-L task was followed by 10 blocks of a realistic map search task (phase 2), where the target stimulus was presented evenly across quadrants. The program was coded with Psychtoolbox (<http://psychtoolbox.org/>) implemented in MATLAB (www.mathworks.com).

Using an EyeLink 1000 eye tracker, we recorded participants’ reaction time and location of their first saccade in every trial. We used this information to evaluate whether the spatial preference for searching in the “rich” quadrant trained in the T-L task persisted in the more realistic map task, indicating a transfer of habitual attention.

RESULTS



DISCUSSION

The experiment was able to replicate the findings of previous research (Jiang & Swallow, 2014; Jiang, Swallow, Rosenbaum, & Herzig, 2013) wherein visual attention was trained using a letter search task (see Figures A and B). Participants were significantly faster at finding the T when it appeared in the high probability, rich quadrant (light gray) than in the low probability sparse quadrants (dark gray).

Transfer of search preference for the rich quadrant did not persist in the map search task according to reaction time (Figure C). However, eye tracking data (Figure D) show that individuals searched first for the target stimulus in the previously rich quadrant consistently over chance (over 25%) in the map search task (see orange line), supporting a transfer of habitual attention.

