

An Examination of Collaborative Scanning

Major Joseph P. McLaine
United States Military Academy
West Point, New York

ABSTRACT:

In our everyday lives, not only is visual search an extremely common occurrence, it is very often a collaborative process; when available, we distribute the task of searching for the intended target of our attention with others. This experiment was designed to examine the role that shared visual information, in the form of a team member's eye gaze location within the visual scene, would have on collaborative success during a dynamic scan task. The experimenter examined the effect and importance of sharing different information modalities during a simulated Search and Rescue (SAR) flight, specifically verbal communication and shared visual information. The experiment was conducted in the Flight Simulation Laboratory at the University of Illinois' Beckman Institute, and consisted of a team of two students working together to locate a downed pilot. Each subject wore a head-mounted eye tracker, and the experimenter controlled for the type of information sharing between the teams, with three conditions: Verbal Communication Only (VCO) where teams could only talk about where they were looking and what they saw, Visual Information Only (VIO) where teams could only see where their partner was looking within the scene but could not talk to them, and Verbal and Visual Information (VVI) where teams had both forms of communication available to them. Although previous research utilizing similar basic visual search paradigms has shown significant benefits with visual forms of information collaboration, it has not addressed what effect dynamic, real-world scenarios may have on the ability to replicate findings. Overall, the experimenter found that teams within the visual information conditions (VIO and VVI) both found more targets and had significantly faster times to collaboration than teams utilizing only verbal communication during the SAR task.

KEYWORDS: collaboration, visual attention, teamwork, eye-scanning, distributed cognition, human performance

CONTACT: MAJ Joseph P. McLaine, MADN-BSL, United States Military Academy, West Point, NY, Tel: (845) 938-5641, Email: joseph.mclaine@usma.edu