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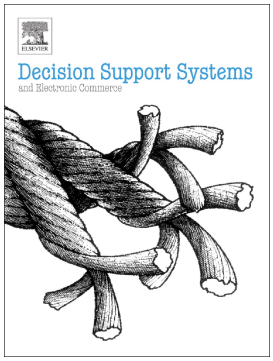

Information systems and task demand: An exploratory pupillometry study of computerized decision making

Dennis D. Fehrenbacher, Soussan Djamasbi

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Information Systems and Task Demand: An Exploratory Pupillometry Study of Computerized Decision Making

Dennis D. Fehrenbacher*, Dennis.Fehrenbacher@monash.edu, Department of Accounting, Monash Business School, Monash University, 900 Dandenong Road, Caulfield East, Victoria 3145, Australia

Soussan Djamasbi, djamasbi@wpi.edu, Foisie School of Business, Worcester Polytechnic Institute, 1000 Institute Road, Worcester Polytechnic Institute, Worcester, MA, 01609, USA

*corresponding author

Abstract:

Information systems (IS) play an important role in successful execution of organizational decisions, and the ensuing tasks that rely on those decisions. Because decision making models show that cognitive load has a significant impact on how people use information systems, objective measurement of cognitive load becomes both relevant and important in IS research. In this paper, we manipulate task demand during a decision making task in four different ways. We then investigate how increasing task demand affects a user's pupil data during interaction with a computerized decision aid. Our results suggest that pupillometry has the potential to serve as a reliable, objective, continuous and unobtrusive measure of task demand and that the adaptive decision making theory may serve as a suitable framework for studying user pupillary responses in the IS domain.

Keywords: pupillometry; task demand; adaptive decision making; eye tracking; cognitive load

1. Introduction

Recent advances in technology has afforded IS researchers the opportunity to take advantage of specialized hardware and software that allows them to examine physiological measures indicating a change in user behavior. For example, a number of IS studies have used eye movement data to better understand users' viewing and search behaviors (e.g., Cyr et al. 2009, Djamasbi and Hall-Phillips 2014). Because eye movements reveal a great deal of information about user attention and awareness, eye tracking is becoming increasingly popular in industry research (Djamasbi 2014). As improvements in hardware technologies continue to lower the price of eye tracking systems, a greater number of scholars

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