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Effects of Automation Quality on Attention to Auditory Stimuli and Mistake Detection in a Multi-Tasking Setting

Robert Duncan*

Department of Human Development and Family Studies, Purdue University, West Lafayette, IN 47907, USA

Introduction

We used the performance parameters of reaction time and halting frequency to explore how multitasking affected the resolution of response bistability to yellow traffic lights. Additionally, we looked at whether people's actual actions-measured by implicit foot pedal responses-differed from their intended actions-measured by explicit verbal commands-in relation to these characteristics. In a dual-task paradigm, participants identified spoken words as either "animals" or "artefacts" by pushing buttons while responding to random traffic light changes that were presented over a static background photograph at an intersection. Reaction times in the dual-task condition were found to be slower than in the single-task condition. Additionally, the conservativeness of both types of commands was the same, and verbal commands were quicker than foot pedal responses. The processing cycle demonstrates how three interrelated factors interact to determine our awareness of the state of the outside world: top-down input selection orientation to sources of information relevant to goals, policies at the level of executive control that determine the current tasks and goals, and bottom-up input selection orientation to alert the operator to a source of new information. Think about an air traffic controller who is keeping an eye on the radar screen to monitor the progress of the aircraft in relation to their flight plans and to maintain a safe separation [1,2]

Description

An aircraft may radio in to request a course or altitude adjustment, a blinking aircraft icon would indicate an aircraft ready for sector acceptance, and a symbol turning red could indicate a potential clash. When a new event suddenly appears, monitoring is interrupted, attention is redirected to the new input, and executive control systems create new behavioural goals. The percentage of limited capacity central processing to allocate to each task over time will be determined by the priorities set by executive control for the two tasks if two or more new events occur close together in time, such as a blinking aircraft icon and a radio message. To understand the spoken message, decide on an action, and evaluate the acceptance request, central processing will be required. One or both of the tasks will be delayed due to this central conflict. The decision of how to prioritise the two tasks will conflict with carrying out central operations on the two tasks because executive control also necessitates central processing resources. Failure to pay attention to pertinent information is associated with a high percentage of operational errors. In line with this, mistakes commonly happen during the first of the three phases of situation awareness, the information collection phase. We have coined the phrase "input selection" to describe the procedure of paying attention to outside occurrences. However, research on attention has identified different types of sensory selection that are related to both the foundation of the selection (e.g., auditory, visual) and the sensory modality (e.g., spatial, feature, object). Selection in vision is primarily accomplished by paying attention to the spatial placement of task-relevant [3].

Two crucial driving performance metrics, reaction time and conservatism as measured by halting frequencies, are strongly correlated with multitasking and consistency of intention-behaviour. In particular, more cautious drivers make more frequent stops in hazy circumstances. multitasking is the simultaneous management of multiple tasks while utilising quick task switching (also known as "task switching"; The term "intention-behaviour consistency" refers to the degree of discrepancy between what drivers report intending to do and what they actually perform in a driving circumstance as shown by implicit and explicit replies. Verbal answers can be used to communicate intentions. The low salience of the sensory signals is not the sole cause of failures to notice unattended stimuli. Studies of intentional blindness may best explain how highly salient items or uncommon events are routinely disregarded when they are not related to the aims of the current task. One of the first examples of task goals causing blindness was from a head-up display simulation study (HUD). Had airline pilots observe a mock landing in order to test the effectiveness of a HUD in commercial aircraft [4].

He discovered multiple instances where seasoned airline captains missed the sight of a Boeing 747 jumbo jet crossing the runway directly in front of their aircraft. Despite their many advantages, HUD displays seem to encourage a lack of awareness of the surroundings. When pilots were paying attention to a HUD, a meta-analysis of instances indicated a statistically elevated miss rate in the identification of unexpected events. It is intriguing to consider potential explanations for why HUD displays are linked to more scene information being missed The pilot chooses to focus on the cockpit instruments rather than the outside environment in a typical head-down display. It has been demonstrated that alerting signals that can automatically capture attention provide specific difficulties for operators (for a detailed discussion. False alarms are especially annoying since they divert operators' attention for no reason. This is because the signals are good at getting people's attention. Operators have been known to disconnect alerts that have a high likelihood of false alarms, jeopardising the security of the system. The magnitude of the alert should be graded in proportion to the possibility of an actual malfunction, rather than being an all-or-nothing binary response, according to the evidence, which implies that the false alarm problem could be somewhat reduced [5].

Conclusion

The standard, deviant, and target event types were separated into epochs from 0 to 1 s in the continuous EEG signal. Each channel's epochs were decimated to 25 Hz, normalised to zero mean, and band pass filtered between 0.1 and 4 Hz. To ensure that the classifier could only use data in the frequency range of primarily ERP activity, a low-pass filter was applied. The classifier used for single-trial identification was trained on EEG trials that were also utilised for average ERP analysis to allow for an accurate comparison with the average ERP analysis results. Thus, only trials devoid of artefacts were employed. In order to reduce subject-specific effects, we also combined the data sets across all individuals for each task condition. This was especially pertinent to the investigations that were conducted.

***Address for Correspondence:** Robert Duncan, Department of Human Development and Family Studies, Purdue University, West Lafayette, IN 47907, USA; E-mail: duncan97@purdue.edu*

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References

1. Block, Richard A., Peter A. Hancock and Dan Zakay. "How cognitive load affects duration judgments: A meta-analytic review." *Acta Psychologica* 134 (2010): 330-343.

2. Brown, Scott W. "Attentional resources in timing: Interference effects in concurrent temporal and nontemporal working memory tasks." *Perception Psy* 59 (1997): 1118-1140.

3. Capizzi, Mariagrazia, Angel Correa and Daniel Sanabria. "Temporal orienting of attention is interfered by concurrent working memory updating." *Neuropsychologia* 51 (2013): 326-339.

4. Capizzi, Mariagrazia, Daniel Sanabria and Ángel Correa. "Dissociating controlled from automatic processing in temporal preparation." *Cognition* 123 (2012): 293-302.

5. Coull, Jennifer T. "Orienting attention in time: Behavioural and neuroanatomical distinction between exogenous and endogenous shifts." *Neuropsychologia* 38 (2000): 808-819.

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