18 Task difficulty and user motivation effects on performance, and telepresence in a teleoperation task

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Abstract

Telepresence has been identified as a design ideal for teleoperation systems. However, little objective evidence of the determinants of telepresence exists and telepresence-based design guidelines are limited. This was one in a series of empirical investigations of user, system and teleoperation tasks factors hypothesised to influence telepresence. Teleoperator user motivations to task performance and task difficulty were evaluated for effects on ratings of presence and teleoperator performance in a Fitts’ task. Results demonstrated user payoffs for speed and accuracy significantly affected performance compared to a control group, but weren’t important to telepresence. Task difficulty, controlled through movement amplitude, dictated completion time and was surprisingly insignificant in effect on telepresence. This was attributed to user task experience, which was confounded with difficulty. The relationship of telepresence to performance was also analysed based on speculation that telepresence causes performance. As in previous research, a correlation analysis revealed a significant positive relationship.

Introduction

Within the recent past, the concept of telepresence has realized significant attention as a potential teleoperator design criterion. Witmer and Singer (1994)