Revisiting the use of secondary task reaction time measures in telepresence research: exploring the role of immersion and attention

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Abstract In this experimental study, we use secondary task reaction time (STRT) to measure Attention to a media presentation and compare STRT to traditional self-report measures of Telepresence (immersion, social reality, spatial presence, and transportation) and enjoyment. Further, we compare the STRT measure with the composite items of Telepresence–Immersion. The results indicate that STRT may be useful for measuring some sub-dimensions of Telepresence. Implications are discussed.

Keywords Telepresence · STRT · Telepresence measurement · Immersion

1 Introduction

Telepresence has primarily been studied with self-report (pencil-and-paper) measures gathered after an exposure to a media experience. While numerous researchers have commented on the necessity of more objective measures over the past decade (Alcañiz et al. 2009; IJsselsteijn et al. 2000), few have proven fruitful. This study will incorporate the concept of Attention, measured by secondary task reaction time (STRT), in an attempt to clarify the self-report Telepresence measures.

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1.1 Telepresence

There is general agreement that Telepresence is "the perceptual illusion of non-mediation" (Lombard and Ditton 1997. Para 2). Bracken and Pettey more recently developed the following definition based on their work with popular media and Telepresence: Telepresence is a "psychological state in which media users voluntarily suspend the experience of mediation in order to feel a sense of connection with the mediated content they are using (i.e., connection to characters, involvement in the story line)" (Bracken et al. 2010, pg. 2; Pettey et al. 2010).

1.2 Telepresence and the nature of reality, concepts, and the virtual

Pinker (2007) argues that all *communication* is the ability to paint a picture in another's mind. Biocca (2003) refers to evolutionary primacy playing a role in shifts in Telepresence. He suggests that the "ability to shift ones' spatial presence must be based on mechanisms that most likely served an evolutionary value" (pg. 4). Biocca argues that we can conceive of situations when our ancestors needed to conceptualize/visualize or "experience the presence" of a place to explain a past or plan a future action. Drawing a map in the dust or using a rock as symbol for a mountain has evolutionary value when planning a hunt or giving directions. Biocca suggests this ability might be linked to the beginning of self-consciousness as well as embedding that self-consciousness within a social context.

Telepresence is based on our ability to conceptualize/visualize these types of images in our mind. There is an interaction between the real world imagery, the virtual imagery, and our mental imagery. Biocca suggests there are three poles: *physical space*, *mental imagery space*, and