

# Exploring the Interplay between Interoception and Navigational Abilities: Insights from Virtual and Real Environments

*Tuesday, September 24, 2024 11:20 AM (10 minutes)*

Despite significant progress in understanding human navigation, debates persist regarding the role of different sensory inputs and their contribution to individual differences in navigational performance. While recent research indicates that humans predominantly rely on visual information (Huffman and Ekstrom, 2019), empirical evidence supports the significance of body-based cues as well. The environmental scale and kind of navigational tasks may explain the mixed findings.

Yet, studies have overlooked interoceptive information processing and its potential impact on navigational abilities. Here, we present two studies aiming to explore the role of interindividual variability in interoceptive information processing, in terms of interoceptive accuracy (IAcc), awareness (IAw), and sensitivity (ISe), in performing navigational tasks.

In study 1, 110 participants completed desktop-based virtual navigational tasks probing landmark, route, and survey knowledge alongside IAcc, IAw, and ISe measures. In study 2, 50 participants completed a similar protocol, but the navigational tasks involved moving in a real environment.

The recognition of landmarks seen in a virtual environment was negatively associated with IAcc. However, individuals with higher IAcc retraced a path seen in the real environment faster (study 2). This suggests that while a heightened ability to accurately perceive bodily sensations may detract from attending to external cues, at least in desktop-based virtual environments, it enhances navigation in tasks that are based on an ego-centric frame of reference and involve walking in a real environment. These findings underscore the complex relationship between the processing of body-based information and navigational abilities, offering insights to explain individual differences in spatial navigation.

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