”Apples and Oranges” - Evaluating Reaction Time measures as a paradigm to contrast expert vs. novice performance in complex, dynamic task environments.

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Abstract

Previous research has effectively employed the fast-paced action puzzle video-game Tetris for understanding the acquisition of extreme expertise in complex, dynamic environments. A common approach when contrasting expert to novice performance has been the dissection of their interactions with the environment into disjoint sub-tasks – such as Reaction Time (RT), measured by the input latency to new events on screen. The crucial, underlying assumption to this paradigm is task consistency at all levels of expertise. Using data collected from participants of the Tetris World Championship 2019 and from novices in our lab, we show that this assumption does not hold. While for novices the RT task type remains the same across all conditions, for experts - depending on environmental parameters - the nature of the RT task undergoes a shift and under specific conditions does not represent a RT task anymore. Thus, expert vs. novice sub-task comparison may not be a valid paradigm.

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