Research Spotlight: The ExerGame

Psychology graduate student Cassondra Eng is working with her advisors, Dr. Anna Fisher and Dr. Erik Thiessen, and an interdisciplinary team of undergraduate research assistants to create a developmentally beneficial exergame. Exergames (a portmanteau of "exercise" and "games") are a new generation of video games that stimulate a more active playing experience. The exergame for this study aims to improve inhibitory control in prekindergarten children through an experience that promotes both cognitive engagement and physical activity. Cassie and her team of undergraduate RAs built a custom-designed exergame and are now pilot testing the children’s enjoyment of and engagement with solving the narrative task the game involves.

The exergame is modeled after the traditional “Flanker Task.” Many researchers around the world use this task to investigate the development of inhibitory control in young children. Inhibitory control refers to one’s ability to suppress responses that are not appropriate in a given moment (answering a teacher's question out of turn or taking a toy with which another child is playing). This ability is crucial to successful functioning in many areas of life, including academic success, wellbeing, and social relationships. Although inhibitory control skills keep developing well into adolescence, the development of this ability is especially flexible during preschool years.

In this exergame, children play a “gamified” version of the flanker task, meaning that specific game features were applied to the existing inhibitory control task by adding incentives (collecting ocean treasures) to encourage children to expend effort practicing the otherwise boring task. The flanker task itself, however, remains largely unchanged. The game is projected onto a wall with a connected non-slip game step mat. Children respond by stepping left or right on the physical game mat’s arrows, depending on the direction that the central fish—Frankie—is facing, with correct choices reinforced by helping Frankie collect ocean treasures. Frankie, the central fish, is either facing left or right but is flanked by four other fish. Children wear a pedometer (FitBit) during the game to record their steps as a measure of physical activity.

The long-term goal of this project is to investigate whether this exergame can potentially enhance inhibitory control skills in pre-kindergarten children.