



SAMMONS CENTER
FOR INNOVATION AND RESEARCH
IN OCCUPATION BASED TECHNOLOGY

Request for Proposals

The Sammons Center for Innovation and Research in Occupation Based Technology invites proposals for funding awards of up to \$3000.00 for a product that will enable people to actively engage and participate in everyday occupation. These products can be devices, technology apps, teaching and learning technologies, and other innovative ideas. The Sammons Center WILL NOT fund personnel or indirect costs. The grant applicant may use funds from the award towards fees that directly support the innovation, such as consulting fees for the design of a product including mechanical, print, video, or computer based applications.

APPLICATION

Proposals are accepted throughout the year with no set deadlines. Fill out pages 1-9 and pay close attention to the comments to guide you through the application. Please submit your proposal to Dr. Holly Grieves, Co-Director, Sammons Center at holly.grieves@wmich.edu.

Tricia Foster

PHD, OTR/L

Name(s) of Lead Innovator(s)

Credentials of Lead Innovator

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Grant Proposal:

Using Wearable Technology to Understand Child Stress During Parent-Child Interactions

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Section A: Resume or CV of lead innovator and team members
(Attached)

Section B. Project Description

Project Overview: This project, led by a WMU OT professor and supported by occupational therapy doctoral student researchers, seeks to explore the use of wearable technology to understand young children's physiological stress responses during everyday parent-child interactions. By measuring electrodermal activity (EDA) during parent-child play, we will capture real-time physiological stress responses, gaining insight into if these responses vary across the course of the play and by activity type. Additionally, we will analyze if these physiological stress responses relate to more commonly captured subjective measures of regulation and sensory processing skills. The outcomes from this project will be used to help understand how children's regulation and stress might change in unseen ways during everyday activities and interactions, especially within the most important context of development - parent-child interactions. This knowledge can ultimately help to build more responsive and supportive occupational therapy interventions.

Background: Occupational therapists often work with young children to support behavioral self-regulation, considered the ability to modulate emotion, cognition, and behavior in order to achieve a goal (Lotto et al., 2024). Child regulation is linked with child and parent stress, and later success in social and academic skills (D'Cruz et al., 2024; Golden et al., 2025; Houseman, 2017). Parent-child interactions and co-regulation between parents and children are also important contributors to children's self-regulation and overall well-being.

While behavioral observations and self (either parent or child) report are often utilized to understand children's regulation, these may not always accurately reflect a child's internal states (Hedman et al., 2020). A reliable way to assess physiological stress responses objectively is by using biosignals, such as electrodermal activity (EDA) measured by eccrine sweat gland activity produced by sympathetic nervous system activation, in tandem with heart rate (Schupak et al., 2016; Hedman et al., 2020; Rahma et al., 2022). By utilizing EDA and heart rate as objective physiological measures of stress, we can gain more insight into how a child may respond to different stimuli in order to provide a more supportive and nurturing environment. (Blair and Ku, 2022). The use of EDA and heart rate in conjunction with observation and self-report measures may cultivate a more comprehensive understanding of children's regulation by providing insight into underlying internal indicators of stress that may otherwise be overlooked (Duker et al., 2023).

Study Questions:

- Is the use of wearable technology feasible for young children during parent-child interactions?
- Do physiological indicators of EDA and heart rate vary across the play session and across various activities?
- Do physiological indicators of EDA and heart rate correlate with more subjective reports of children's regulation and sensory processing?
- Do children's physiological measures of stress relate to parents' physiological measures of stress during parent-child interactions? (collaborative project)

Section C. Pictorial Demonstration of Innovation

empatica  Solutions  Scientific Evidence  Resources  Company 

FDA-CLEARED

CE CERTIFIED

EmbracePlus

The world's most advanced smartwatch for continuous health monitoring

Combining the precision of Empatica's digital biomarkers with raw data, powerful sensors, and a beautiful design.

[Discover the platform](#)



Section D. Line-Item Budget

Item:	Cost	Use/Justification
Empatica Embrace Watch and 3-year data subscription	\$1620.00 (this is 25% academic discount off of regular price of \$2160.00)	This is the primary method of understanding children's physiological stress responses
Sensory Profile Record Forms - Toddler (25 forms)	\$74.00	Parent reported measure of sensory processing
Sensory Profile Record Forms - Child (25 forms)	\$74.00	Parent reported measure of sensory processing
Participant gift cards/payment	75\$ x 12 = \$900.00	Gift card/payment for research participants
Total Costs:\$2668		

Section E. Implementation Plan

Stage	Outcome	Contributors
Stage I: Fall 2025: Grant development	Grant and research project development	Dr. Foster and 6 OTD student researchers
Stage II: Fall 2025: Grant proposal Methodology refinement IRB application	Submit for grant funding Apply for IRB approval	Dr. Foster and 6 OTD student researchers
Stage III: Spring 2026 Recruitment Technology training Data Collection	Recruitment, technology training, and beginning of data collection	Dr. Foster and 6 OTD student researchers
Stage IV: Summer 2026 Recruitment Data Collection	Recruitment and data collection	Dr. Foster and 6 OTD student researchers
Stage V: Fall 2026 Data Collection	Data collection	Dr. Foster and 6 OTD student researchers

Section F. Evaluation Plan

Stage	Outcome	Outcome Evaluation Plan
Stage I: Spring 2027 - Data Analysis	Data analysis of Embrace EDA quantitative data Comparative analyses between physiological data and other subjective measures of child regulation	Dr. Foster & Research Students
Stage II: Spring 2027 - Spring 2028	Dissemination (manuscript preparation; conference presentations) and next steps (additional funding for broader research)	Dr. Foster & Research Students

If your proposal is accepted, you will be required to provide an interim report (six months after funds are awarded) and final report (one year after funds are awarded). Please submit your proposal to Dr. Holly Grieves, Co-Director, Sammons Center at holly.grieves@wmich.edu.