

Thank you for submitting an application for the MU-MUSE Program. Below is your submission.

Student Name [REDACTED]

[REDACTED], Millersville University

Millersville, PA 17551

US

Major Psychology (BA)

Overall GPA 3.38

GPA in Major 3.35

Faculty Mentor Nicole Sorhagen

Faculty Department Psychology

Faculty MU Email nicole.sorhagen@millersville.edu

Project Title Exploring the dynamic aspects of mother-child interactions

Starting Date 05/13/2019

Ending Date 07/22/2019

Other Funding for this project

MU-MUSE

Project Abstract:

Research on parental responsiveness and sensitivity has shown that sensitive and responsive parenting enriches the cognitive and emotional development of the child (Bornstein, 2013). However, there is much variation in the ways researchers have defined maternal sensitivity and responsiveness. Inconsistencies in defining these constructs make it difficult for researchers to fully understand how they affect a child's development. Maternal responsiveness and sensitivity also bare similarities to scaffolding and guided play, two processes where the parent provides assistance that is appropriate based on a child's abilities (Wood, Bruner, & Ross, 1979; Weisberg et. al., 2013). These four constructs being so similar make it difficult to understand their differences, if any at all. With support of the MU-MUSE fellowship, Dr. Sorhagen and I will test whether maternal responsiveness and sensitivity, scaffolding, and guided play are distinct constructs; or if they are measuring the same thing.

Attached:

Grant Uploaded

Project Narrative

Faculty Letter of Endorsement

cc: Faculty Mentor

MUSE Committee

Millersville University Mentored Undergraduate Summer Experience



Dr. Nicole Sorhagen

Exploring the dynamic aspects of mother-child interactions

Exploring the dynamic aspects of mother-child interactions

1. Student Statement

From the moment we let out our first cry, we became researchers. We investigated our surrounding, with every wailing breath leading us to find comfort on a strange, new planet. When we were placed in the perfect cradle of our mother's arms, we analyzed the feeling of her skin and the grip of her hold and the smile on her face. This scenario highlights human's instinctive propensity for research. This inclination towards research practices certainly has had a hold on my life, and it led me to the world of psychology.

The Millersville Psychology Department has equipped me with a growing understanding of child and adult development, diagnostic tools for clinical disorders, psychological theories pertaining to topics of culture and diversity, statistical analysis, and research methods and design. Along with this knowledge, I have learned how to develop topics of research, analyze data, conduct experiments, gather participants, and write empirical papers. During the Fall 2018, I had regular meetings with Dr. Sorhagen where we discussed theories and research related to child development and mother-child interactions. The original purpose of these meetings was to develop my own unique study in conjunction with Dr. Sorhagen's own research for my Psychology Honors thesis. While I am no longer in the Honors program for personal reasons, the project described in this MU-MUSE fellowship is a collaboration that incorporates and utilizes the research that I have been working on for the past five months. Through these meetings, Dr. Sorhagen and I developed a strong research relationship and I am excited to collaborate with her. Through my working with her, I have learned tremendously about the process of research.

Receiving the MU-MUSE grant would allow me to continue learning under the guidance of a great mentor. My involvement in this project will enable me to acquire a rich set of skills that are unique/distinct to the ones learned in the classroom. Some of these skills include learning

the basics of data management through tasks like organizing videos for coding, learning how to use coding software, learning about the progress of preregistration, learning how to use the Open Science Framework (OSF) platform, and performing data analysis with exposure to advanced statistics using statistical software. These skills will help set me up with future employment, such as a lab manager position, as well as increase my marketability for graduate school.

Acceptance into this 10-week program will also give me the ability to grow in my scientific and critical thinking, further expose me to the challenging and exciting aspects of research, and help me become a better communicator and collaborator in the research process. Following the timeline outlined later in this proposal will help me achieve these outcomes. That way, I be able to best assist Dr. Sorhagen with her research, as well as continue to nurture my natural love of research.

2. Project Narrative and Learning Plan

Parental responsiveness and sensitivity have been researched extensively in the child development field. The results of this research overwhelmingly find that sensitive and responsive parenting enriches the cognitive and emotional development of the child (Bornstein, 2013). However, variations in the ways researchers have defined maternal sensitivity and responsiveness exist. While some researchers measure these maternal traits by recording response times to the child's behavior (Tamis-LaMondma, Bornstein, & Baumwell, 2001), others focus on the appropriateness of the mother's response (Stams, et al., 2002). Different researchers use a combination of multiple indicators including contingent responses, warmth, attention maintenance, and stimulation (Hirsh-Pasek & Burchunal, 2006; Landry, Smith, & Swank, 2006). This is a problem because inconsistencies in defining these constructs makes it difficult for researchers to fully understand how they affect a child's development.

Moreover, Dr Sorhagen and I have been discussing how maternal responsiveness and sensitivity is similar to scaffolding. Rooted in sociocultural theory, scaffolding is the process of providing assistance that is contingent and appropriate based on a child's abilities (Wood, Bruner, & Ross, 1979; Vygotsky, 1978). Another similar construct is guided play, which is the process of a parent setting up a free-play environment in conjunction with well-structured parental guidance (Weisberg et. al., 2013). Evidence shows both processes lead to better learning and cognitive development for the child (Mermelshtine, 2017; Weisberg et. al., 2013). These constructs being so similar make it difficult to understand their differences, if any at all. The research that I will be doing for this project will help future researchers identify distinctions between these constructs.

With support of the MU-MUSE fellowship, Dr Sorhagen and I will test whether maternal responsiveness and sensitivity, scaffolding, and guided play are distinct constructs; or if they are measuring the same thing. To do this, we will use videos of semi-structured mother-child interactions collected through the National Institute of Child Health and Human Development (NICHD) Study of Early Childcare and Youth Development (SECCYD). This sample consists of 1,364 children followed from birth to age fifteen. While the sample is not nationally representative, it is one of the largest and richest longitudinal studies of American children ever conducted. Dr. Sorhagen and I currently have access to all the raw videos. We will use globally recognized models measuring scaffolding and guided play (e.g., Carr & Pike, 2012; Zosh et. al., 2018) as starting points to develop our operational definitions.

One overall expected outcome of this fellowship is to help strengthen the understanding of mothers' behaviors when they are interacting with their children. In addition, I will learn valuable research skills. First, I will familiarize myself with the prior literature addressing the

four different constructs that I have been reviewing for the last five months. Gaining experience organizing and maintaining a research projects' videos, files, data, etc. will also be a huge outcome of this project. I will learn about contemporary best practices related to research, including preregistration and the use of the Open Science Framework (OSF) platform to make preregistration and data public. Recently, open science has become a highly regarded practice in the psychology world (Nosek & Lindsey, 2018).

I will also learn about behavioral observation and coding, as well as the coding software Datavyu. I will become familiar with data management and the statistical programs R, SPSS, and Mplus. I will be exposed to advance statistical analysis, such as a Principle Component Analysis (PCA), which is a statistical procedure that will help us interpret the contrasts between the four constructs. I will also assist in calculating and interpreting interrater reliability. In the fall, we expect to present this research. Representing Millersville at a national conference and sharing the research I will have worked on is an incredibly exciting opportunity I hope to be able to experience.

This fellowship will set me up to assist Dr. Sorhagen in the next steps of this research project that tests the predictions of the individual variations in responsiveness and sensitivity and their effects on the child's future socioemotional and cognitive development.

The research project has been submitted to the IRB. We expect approval well before the May 1st deadline.

3. Dissemination Plan

Dr. Sorhagen and I plan to submit the results of the analyses we do this summer to present at the Cognitive Development Society (CDS) conference in Fall 2019. Presentation of

this project will provide us with useful feedback that we will use in the further development of our research.

4. Timeline

Week	Activities
1 (May 13 th)	<ul style="list-style-type: none"> • Organize prior research on constructs and operational definitions of relevant variables • Organize videos • Introduction to Datavyu
2 (May 20 th)	<ul style="list-style-type: none"> • Assist with preregistration • Organize videos • Datavyu training
3 (May 27 th)	<ul style="list-style-type: none"> • Assist with preregistration • Organize videos • Assist with coding • Learn basics of data management
4 (June 3 rd)	<ul style="list-style-type: none"> • Submit preregistration to OSF • Organize videos • Assist with coding • Learn basics of data management
5 (June 10 th)	<ul style="list-style-type: none"> • Assist with coding • Assist with data management
6 (June 17 th)	<ul style="list-style-type: none"> • Assist with coding • Become familiar with R, SPSS, and Mplus • Gain basic understanding of statistical analyses
7 (June 24 th)	<ul style="list-style-type: none"> • Assist with coding • Become familiar with R, SPSS, and Mplus
8 (July 1 st)	<ul style="list-style-type: none"> • Assist with data analyses (Calculating and interpreting interrater reliability, Principle Component Analysis (PCA))
9 (July 8 th)	<ul style="list-style-type: none"> • Assist with data analyses
10 (July 15 th)	<ul style="list-style-type: none"> • Assist with submitting data files to OSF

Millersville University

February 8, 2019

Dear MU-MUSE grant committee,

I endorse [REDACTED] application for the Millersville University Mentored Undergraduate Summer Experience (MU-MUSE) fellowship. Cara and I have been working together since the Fall 2018 semester. Cara has been an active contributor in the development of a large research project that will explore the internal structure, individual variation, and continuity of maternal sensitivity and responsiveness over developmental periods. I have received a Faculty Grant Course release to support aspects of this project for the Fall 2019 semester. I am seeking further support of the project through a FPCD grant (my application was recently selected as one of the Millersville submissions). The MU-MUSE fellowship will support Cara's involvement of the first stage of this project, which includes preregistering the project with Open Science Framework (OSF) and piloting the operational definitions that will be used in the next stages of the project.

Overall this project will use previously collected videos of the mother-child interactions from a large longitudinal study of US children. Through connections made through an early career fellowship, I recently received the raw videos of the mother-child interactions. The videotaped interactions consists of a semi-structured mother-child dyadic play procedure and were collected multiple times from infancy through the end of childhood. This collection is truly an invaluable resource (especially because I have them before they are publicly available) and I am excited to share this opportunity with Cara. I have much experience with this dataset (called the NICHD Study of Early Childcare and Youth Development) and have published multiple journal articles using it.

The MU-MUSE fellowship is a great opportunity for Cara to gain research experience. Through the support of the fellowship, I will teach Cara how to manage and organize the various aspects and files of a research project. She will be exposed to the process of preregistration and open science (a fairly recent change in best practices in psychology). I will teach her about behavioral observational coding and data management. She will also be exposed to advanced statistical analyses. (We have developed a detailed timeline together reflecting these expectations.)

We plan to submit the results of the preliminary analyses we perform this summer to present at the Cognitive Development Society (CDS) conference (in October, 2019). I will involve her in the process of writing up the presentation submission and, if accepted, in the presentation at this national conference.

These experiences would set her up nicely for graduate school or a research lab manager position. This would also set her up nicely to continue to work with me on the next stages of this research project during the 2019/2020 academic year.

Sincerely,

Nicole Sorhagen
Assistant Professor of Psychology