MICHIGAN STATE
UNIVERSITY

11/1/2017

Dr. Jonna M. Kulikowich, Professor
Educational Psychology Search Chair
306 CEDAR Building
University Park, PA 16802

Dear Dr. Jonna Kulikowich and Search Committee Members,

I am writing to apply for the Assistant Professor of Educational Psychology position at Penn State University. I am a doctoral candidate in Educational Psychology and Educational Technology at Michigan State University and will defend my dissertation in April 2018.

My research focuses on students' development of capabilities central to engaging in STEM that are uncommon at K-12 levels, namely, work with data. This research involves designing and assessing student learning and engagement in the context of classrooms and other settings, such as out-of-school programs. My work informs, and is informed by, psychological and developmental theory and by research about student learning in STEM.

As an example of my work informing both psychological and STEM-related research, my dissertation, *Examining Data Practice Through the Lens of Engagement Theory: A Person-Oriented Approach Using an Experience Sampling Method* examines students' engagement in the practices of measuring and modeling that integrate across STEM domains. Specifically, this study examines how more than 200 learners in out-of-school STEM programs construct measures of real-world phenomena and develop models that account for variability or uncertainty. In recognition of contemporary conceptions of engagement as a dynamic and multifaceted construct, I use measures from an Experience Sampling Method that are responsive to changes in the context. While many scholars have argued that data practices can be understood in terms of the capabilities learners developed through work with data, my research shows that they can be better understood in terms of engagement theory and its cognitive, behavioral, and affective aspects.

My research has been published in peer-reviewed journals, including, for example, the *Journal of Research in Science Teaching* and the *Journal of Technology and Teacher Education*. In total, I have published or have in-press eight peer-reviewed journal articles (including four first-author publications) and four papers presently under review, including one on the use of real data through a virtual experiment platform. In addition to publishing in journals, edited books, and conference proceedings—complimentary to the aims of the learning sciences cluster hire—two of which are in the *International Conference of the Learning Sciences*. I have experience applying and receiving extramural support for research. Most recently, using an approach developed in my dissertation, I contributed to the grant application for Jennifer Schmidt's National Science Foundation-funded project *Profiles of Science Engagement* (PSE) and plan to stay involved as a senior personnel over the next three years. Finally, due to the cutting-edge nature of the methodological aspects of my work, I develop software, such as packages for the statistical software *R* to make it

College of Education

Department of Counseling, Educational Psychology, and Special Education

Educational Psychology & Technology Program
620 Farm Lane, Room 447 East
Lansing, MI 48824

248-973-7613
jrosen@msu.edu

easier to carry out Latent Profile Analysis (through the *tidyLPA* package) and sensitivity analysis, as well as scaffolds for learners, such as a science simulation that outputs quantitative data in real-world units.

In addition to research experience, I have substantial and diverse (i.e., especially online but also hybrid and face-to-face) teaching experience. I have taught or assisted 21 course offerings during my time as a graduate student. As an experienced instructor at the university level—and as a teacher at a public high school in a past career—I know that learning about powerful ideas and developing ambitious capabilities takes time, application, and a network of support. Accordingly, in my teaching, I focus courses on semester-long tasks that are supported by the structure of assignments and an emphasis on student-directed discussion. For example, in a research methods course, students identified a problem related to teaching with technology, constructed measures, and analyzed the data they collected and shared their work through a class social media page. This approach has been well received with student ratings consistently rating my teaching between "Superior" and "Above Average." I am prepared to teach classes in educational psychology and the learning sciences, including both classes in learning theory, theories of instruction, and assessment of student learning, as well as in achievement motivation. I am also prepared to teach introductory statistics (i.e., the general linear model and its extensions*)* and measurement (i.e., reliability, validity, classical test theory) classes as well as advanced courses, particularly mixed effects or multi-level models and latent variable models, including measurement and mixture models. I am highly interested in teaching classes around these topics and in proposing and teaching classes on learning analytics and the creation of data products, such as interactive web applications and data visualizations, and reproducible workflows.

I have been involved in service in large education research associations (Division C of the American Educational Research Association and Division 15 of the American Psychological Association). I also have also been involved in a leadership position for the Technological Pedagogical Content Knowledge special interest group in the Society for Information Technology and Teacher Education, having served as co-chair. Finally, I am active in my program, having mentored junior Ph.D. students on multiple practicum committees and served on a search committee for an academic specialist position.

With respect to the required and preferred qualifications for the position, I have demonstrated expertise in researching the intersection of learning in STEM disciplines and the collaborative design of learning environments and rigorous interventions in the applied context of classrooms and schools. Because of these overlapping interests, the opportunity to contribute as an Assistant Professor in the Educational Psychology program and to work as part of the learning sciences cluster aligns with my training and research and teaching experiences in a synthesis of educational psychology and educational technology and science education. I am experienced and interested in teaching courses at any level in learning theory and quantitative methods, and have a particular interest in novel uses of quantitative (and computational) methods in educational psychology, as evidenced by my dissertation research and ongoing work for the PSE project. In summary, the work I carry out focuses on designing activities around engaging in work with data in STEM and assessing student learning in such contexts. I am prepared to contribute to the Educational Psychology program through research, teaching, and service and to immediately build from and upon the areas of existing scholarly and programmatic strengths related to the learning sciences.

I look forward to hearing from you soon. Thank you.

Sincerely,
Joshua M. Rosenberg
Joshua Rosenberg