Washington University in St. Louis
ARTS & SCIENCES

Faculty Search Committee
Graduate School of Education
University of Buffalo, SUNY

September 30, 2021

Dear Dr. Samuel Abramovich and Search Committee Members,

I wish to be considered as a candidate for the position of Assistant Professor in the Department of Learning and Instruction at the University of Buffalo, SUNY. I completed my doctoral studies in Cognitive Psychology at the Learning Research and Development Center at the University of Pittsburgh and received a certificate in the Learning Sciences through the Pittsburgh Science of Learning Center (LearnLab). Currently, I am a postdoctoral research associate in Education and Psychological and Brain Sciences at Washington University in St. Louis, where I am continuing a productive research agenda grounded in ecologically valid learning environments and supported by an interdisciplinary perspective (e.g., Kim, Zepeda, & Butler, in prep). I have maintained a productive line of research with a **successful record of publications in high-quality journals** such as *Journal of Educational Psychology, Educational Psychology Review, Child Development, and Journal of Applied Research in Memory and Cognition,* with many forthcoming publications.

Research. The goal of my research is to make education more equitable by evaluating and preparing students from various backgrounds to engage in robust learning. To achieve this goal, I apply learning analytics to define and test models of learning processes and theories of self-regulated learning. Specifically, my work centers around understanding the interplay between metacognition and motivation in educational contexts. I focus on these two constructs as they are rarely explicitly taught and yet, are at the core of self-regulated learning; students require both the metacognitive knowledge and skills to effectively learn as well as the motivation to engage in learning. To pursue a comprehensive understanding of these processes and constructs across different levels of analysis (e.g., individual vs. classroom) and contexts (e.g., laboratory, classroom), my program of research incorporates a variety of methodological approaches (e.g., experiments, observational studies, correlational repeated measure designs, and connecting study data to large educational databases). This integrative approach is exciting as it allows me to test and build upon theory while exploring the practical implications of research on metacognition and motivation for educational practice. Specifically, my program of research has three synergistic strands:

(1) Investigating how metacognition, motivation, and learning independently and jointly affect each other within a particular context (e.g., a physics course)
(2) Examining the longitudinal relationships among metacognition, motivation, and learning across contexts over longer timespans (e.g., development over school years or across exams)
(3) Characterizing teacher and student beliefs, practices, and preferences in authentic educational contexts to inform applied research

Self-regulated learning theories alongside theories of metacognition and motivation help guide these investigations. For example, self-regulated learning theories suggest that improving one aspect of self-regulation (e.g., metacognition) should help bolster other complementary constructs (e.g., self-efficacy, mastery approach goals, task value). Based on my work published in the *Journal of Educational Psychology* and recognized in APA's Podcast Journal's Dialogue, direct instruction and practice of metacognitive skills with self-guided materials positively affected middle school students' motivations (incremental theories of intelligence, mastery-approach goals, self-efficacy, task values), learning behaviors (guessed less on a novel learning experience), and performance in physics (Zepeda et al., 2015). This study shows that student metacognitive knowledge and skills can play a critical role in learning and motivational outcomes. Some of my work also suggests that motivation can also be used to facilitate the use of learning strategies that create desirable difficulties (Wang et al., 2021b; Zepeda et al., 2020), highlighting the interactive nature of motivation and metacognition.

In addition to examining localized effects of metacognition and motivation, I also examine how these constructs change and develop across time and contexts with various longitudinal methods (e.g.,

repeated measure designs, daily diaries, experience sampling). Understanding how these processes operate over time provides a rigorous test of theory while also informing the design of effective interventions that span across contexts. This work has revealed that metacognitive skills have a powerful impact on learning regardless of time or context, whereas some motivational constructs are more nuanced and depend on other factors (Wang et al., 2021a, 2021b). Additionally, some of my recent work has shown that proximal factors (exam strategies and self-efficacy) explain the positive relation between distal motivational factor (grit) and exam performance, revealing that interventions aimed at the more local (and adaptive) factors might be more effective in supporting student learning (Zepeda & Nokes-Malach, in prep).

In my third strand of research, I focus on having an accurate representation of what occurs in authentic educational contexts, which is imperative for informing applied research and theoretical models of cognition and motivation. In particular, I examine how metacognition and motivation are captured by the beliefs, practices, and preferences of students and teachers via classroom observations (Boden et al., 2020; Zepeda et al., 2019) and self-reports (Butler et al., in prep; Zepeda & Nokes-Malach, 2021; Zepeda et al., under review-a, under review-b). This approach provides insight into how students and teachers engage in metacognition and motivation while pinpointing when, where, and for whom differentiated support would help.

Going forward, this foundation will enable me to pursue three directions that I am particularly excited about. The first is to investigate how personalized interventions can help students regulate their learning more efficiently and effectively, with an emphasis on creating more equitable learning experiences. As some of my work has shown, students differentially use self-regulatory strategies (Butler et al., in prep; Zepeda et al., under review), and these mechanisms interact differently depending on students' environments and experiences (e.g., their opportunities; Wang et al., 2021b). This work suggests that personalized interventions could be effective in helping students in regulating their learning. The second is to evaluate the robustness of self-regulatory processes on learning across different contexts that vary along particular dimensions (e.g., knowledge: conceptual vs. procedural/factual; interactions: individual vs. classroom) to inform theory and practice. The third is to leverage technology to support student metacognition, motivation, and learning with learning management tools. Technology can allow for more flexible interventions while also gathering more fine-grain process data. With these interests in mind, I am particularly excited to collaborate with researchers within and across departments studying educational technologies and structural inequalities. To support my program of research, I will pursue funding from federal agencies (e.g., NSF, IES) and private foundations (e.g., Spencer, WT Grant).

Learning analytics with large-scale data. To examine my research agenda, I have applied various learning analytic approaches to different types of large datasets. My quantitative skills include designing, collecting, and analyzing data from questionnaires, verbal protocols, and institutional educational data repositories. I have used the Measures of Effective Teaching Longitudinal Database to transcribe and code over 29,000 lines of data from 44 middle school math classrooms (Zepeda et al., 2019). Currently, working with a dual-enrollment program, I have managed and analyzed cohorts of data with over 20,000 high school students. I am in the midst of mining this data to see how students change their cognitive to evaluate how students regulate their learning strategies (Butler et al., in prep). With one cohort of this data, I broadened the literature of motivational regulation by examining whether students from different backgrounds (gender, college generation, traditional ethnic/racial college representation) used these strategies differently and whether the way they changed their strategies over the school year predicted their grades through the use of the reliable change index and mixed-effects models (Zepeda et al., under review). These large databases of ecologically valid learning environments will help my future work in designing ways to respond to students' needs by providing an understanding of what happens within different contexts.

Teaching. My teaching and research practices have served a complimentary role in my career as they continually inform and improve each other. Core to my research is understanding how students learn and how to facilitate their learning through instructional techniques, which I have applied to my own teaching and adapted to a variety of class sizes and content areas such as Research Methods Lab (24 undergrads), Post-Baccalaureate Seminar (4-5 post-baccalaureates), Central Topics in Learning Science Research (4 undergrads), and Cognitive Psychology (200 undergrads). My goal is for my students to be better self-

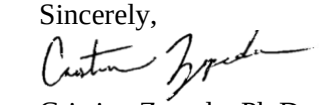
regulated learners as they gain flexible and robust knowledge that they can use in my courses and other contexts. I also ensure that my classroom is a safe space where students feel comfortable to say that they do not know something, ask questions, generate examples from their unique experiences, and focus on mastering the material versus only focusing on their performance. To achieve these goals, I structure my teaching through the use of cognitive scaffolds, collaboration, motivation, and reflection. For example, in one of my courses, I grouped students based on their broader psychology interests (e.g., sports psychology, child psychology). Within a group, I gave each student one paragraph from a journal article's introduction. Then, they individually read their part, explained the meaning of their paragraph to their group, and determined the order of the argument. Once the argument was established, students critiqued the introduction to improve the argument and shared these critiques with the class. Throughout this collaborative activity, I checked in with the groups and then helped bridge the group's conclusions to the broader class discussion. By tapping into their interests and using collaboration, this activity helped them understand how to create a strong argument while establishing connections with their peers. Committed to improving my teaching practices, I received an achievement in pedagogy credential from the University of Pittsburgh's Center for Teaching and Learning. **Going forward**, I am especially interested in teaching foundational courses the learning sciences and cognition as well as advanced topics in cognition, learning, motivation and self-regulated learning.

Advising undergraduate and graduate student research. I thrive most when I have the opportunity to supervise and mentor students. I have mentored 5 graduate students and 49 undergraduate students, and post-baccalaureate fellows; 28 are now pursuing a graduate career. In the past, I have mentored undergraduates and graduates in the lab through the manuscript submission process as co-authors (Boden et al., 2020; Martin et al., 2021; Zepeda et al., 2019; Zepeda et al., 2020). I also have experience training students to use different statistical (e.g., ANCOVAs, mixed-effects modeling) and methodological approaches (e.g., creating rubrics, coding verbal data, structuring data). My goal for all my mentees is for them to gain the knowledge and skills needed to achieve their goals and to enjoy the process. I encourage them if they are having difficulty with a task while also prompting them to reflect on ways they can improve. I engage them in the research process by encouraging them to ask questions and contribute their ideas during our meetings, which has resulted in thoughtful discussions and authorship roles. Above all, I try to demonstrate the importance and craft of creating a supportive community and the mutually beneficial relationships that can emerge from such a community. For my efforts in mentoring, I received my graduate department's excellence in mentoring award.

Contributions to diversity, equity, and inclusion. Much of what drives my research, teaching, and service endeavors is my goal of making education more equitable and inclusive. In my research, I ask questions about the contextual factors and examine how self-regulatory processes are taught and operate among different groups of students to inform future and more equitable teacher and student interventions. In my teaching endeavors, I pull sources from different voices and intentionally connect instructional material with student interests. In my service endeavors, I have been an active member of DEI committees at both Universities and for 5 years worked as the Assistant Director for a post-baccalaureate program to broaden participation in psychological science. In the future, I plan to continue pursuing similar initiatives to broaden participation and create more inclusive environments.

As requested, I have enclosed my curriculum vitae, my contributions to diversity statement, and one publication. When requested, Dr. Andrew Butler (andrew.butler@wustl.edu), Dr. Timothy Nokes-Malach (nokes@pitt.edu), and Dr. Matthew Bernacki (mlb@unc.edu) to send their letters of reference when requested. I look forward to having more opportunities to discuss how my research agenda and commitment to teaching and mentoring could contribute to the existing strengths and values of University of Buffalo, SUNY.

Sincerely,



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