Vol 5, Issue 5 — July 2022

# Times Magazine

## Stephen J. Aguilar

**Stephen J. Aguilar received the Wilbert J. McKeachie Early Career Award for Motivation in Education Research from the Motivation in Education SIG. His research focuses on motivation and self-regulated learning in designing and implementing educational technologies and policy-relevant educational interventions.**

**Celebrating Self-Efficacious, Self-Regulated, Culturally Proactive, and Agentic SSRL Graduate Students and Junior Scholars**

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EDITORIAL

# Look in the Open Horse's Mouth to Find Answers about Self-Regulated Learning

Héfer Bembenutty

Scholars are called to look in the open horse's mouth to find rigorous answers to questions about self-regulated learning, In a parable, often attributed to Francis Bacon, erudite scholars discussed how many teeth are in a horse's mouth. After 13 days of a grievous dispute, a friar invited them to look in the open horse's mouse and find the answer to their questions. His practical, empirical, and simple solution offended their dignity since they were accustomed to engaging in deductive thinking, induction and inferences, syllogisms, logic, and dialectics. In self-regulated learning science, we need to find answers to our questions by looking in the open horse's mouth.

I was reminded of that allegory when recently reading one of the books I inherited from Wilbert J. (Bill) McKeachie (Buxton, Cofer, Gustad, MacLeod, McKeachie, & Wolfle, 1952). In the volume, they presented ways to improve undergraduate instruction in psychology to determine the objectives, content, courses, and challenges to build a better curriculum.

McKeachie and his colleagues knew that their discussion and recommendations "ought to be settled by experimental studies rather than by simply pooling our experience and judgment" (p. vi). They concluded the book with that apologue. Seventy years have passed since McKeachie and his colleagues made that observation, and they are still calling for theorists, educators, and researchers to look in the open horse's mouth.

Fortunately, in April 2022, we had an opportunity to look in the horse's mouth when the American Educational Research Association (AERA) held its annual meeting in San Diego. The meeting showcased groundbreaking and innovative research findings and state-of-the-art culturally proactive pedagogies in an array of areas.

This issue of the *Times Magazine* celebrates **Stephen J. Aguilar**'s research focusing on motivation and self-regulated learning in designing and implementing educational technologies and policy-relevant educational interventions. As one who strives to look in the horse's mouth, he received the Wilbert J. McKeachie Early Career Award for Motivation in Education Research granted by the AERA Motivation in Education Special Interest Group (SIG).

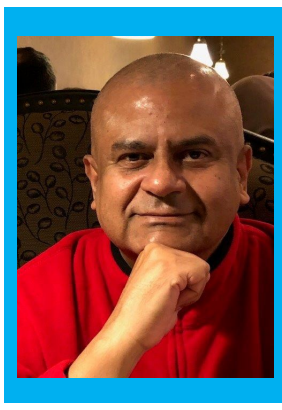
As part of AERA, our Studying and Self-Regulated Learning (SSRL) SIG awarded **Shan Li** the SSRL Outstanding Poster Award for his paper entitled "The Temporal Structures and Sequential Patterns of Self-Regulated Learning Behaviors in Clinical Reasoning."

The SSRL SIG celebrated the scholarly work of self-efficacious, self-regulated, and agentic SSRL graduate students. Graduate Student Research Award recipients were 1) **Jaeyun Han** ("Advice in a crisis: Undergraduate Students' Metamotivational Awareness During the COVID-19 Pandemic"); 2) **Leslie Michelle Bahena-Olivares** ("Investigating Time Estimation from a Self-Regulated Learning Perspective"); 3) **Ying Wang** ("Supporting College Students' Metacognitive Monitoring in a Biology Course Through Practice and Timely Monitoring Feedback"); and 4) **Samira Syal** ("Is Situational Interest a Metacognitive Risk? A Behind the Scenes Perspective").

This issue also heralds the triumph of three new doctorates as they reflect on how self-regulation of learning helped them to complete their dissertations: 1) **Amanda M. Ferrara** ("Understanding the Impact of Traumatic Experiences on Self-Regulated Learning"); 2) **Laura Dallman** ("Investigating Teacher Social-Emotional Capacities with Diverse Student Groups"); and 3) **Joseph C. Tise** ("Promoting SRL Within Authentic Learning Environments").

McKeachie and his colleagues, 70 years later, would find an echo that is still vibrant today. Their giant footsteps echo via the self-regulated learning scholars pursuing authentic science. Fortunately, we heard the echo of their voices to ensure that self-regulated learning remains a scientific endeavor solidified by practical theories.

Suppose we want to learn about multiple intelligences, self-esteem, grit, social and emotional learning, engagement, left and right brain dominance, differentiated instruction, multi-tasking, learning styles, mindfulness, growth mindset, and resiliency. Suppose also that we want to know whether more homework means more learning, schools alone can close the achievement gap, highlighting is an effective learning strategy or whether small classes produce significant learning improvements. Our task is to look in the open horse's mouth and find rigorous, accurate, and empirically-based answers to our questions.



**Héfer Bembenutty, PhD, is an associate professor of Educational Psychology at Queens College. His research focuses on academic delay of gratification and cyclical and self-regulated culturally proactive pedagogy.**

**Sarah Young, generously and efficiently, served as the copyeditor of this issue of the *Times Magazine*.**

**A RELEVANT PUBLICATION**

A parable attributed to Francis Bacon
"In the year of our Lord 1432, there arose a grievous quarrel among the brethren over the number of teeth in the mouth of a horse. For 13 days the disputation raged without ceasing. All the ancient books and chronicles were fetched out, and wonderful and ponderous erudition, such as was never before heard of in this region, was made manifest. At the beginning of the 14th day, a youthful friar of goodly bearing asked his learned superiors for permission to add a word, and straightway, to the wonderment of the disputants, whose deep wisdom he sore vexed, he beseeched them to unbend in a manner coarse and unheard-of, and to look in the open mouth of a horse and find answer to their questionings. At this, their dignity being grievously hurt, they waxed exceedingly wroth; and joining in a mighty uproar, they flew upon him and smote him hip and thigh, and cast him out forthwith. for, said they, Surely Satan hath tempted this bold neophyte to declare unholy and unheard-of ways of finding truth contrary to all the teaching of the fathers. After many days more of grievous strife the dove of peace sat on the assembly and they as one man, declaring the problem to be an everlasting mystery because of a grievous dearth of historical and theological evidence thereof, so ordered the same writ down."
Excerpted from Munn, (1951). *Introduction to psychology*. Boston: Houghton-Mifflin.

# Motivation, Self-Regulated Learning, Technologies, Policies, and Wilbert J. McKeachie Early Career Award for Motivation in Education Research from the Motivation in Education SIG

**Stephen J. Aguilar**

My research agenda has two overlapping areas of focus: educational technology and policy-relevant educational interventions. My educational technology work includes projects that evaluate the motivational and self-regulatory impacts of educational technologies; projects that leverage novel methods (i.e., data science techniques); and projects focused on documenting—and mitigating the impact of—the digital equity gap.

My work also focuses on *policy-relevant educational interventions based on educational psychology* and includes work that uses what we know about learning and motivation to correct misconceptions about educational policy. This work is essential to combat the proliferation of inaccurate information during increasing political polarization.

I strive to ensure that my research is rigorous and makes a demonstrable difference in the world. My first publication used educational data science techniques. For example, I blended traditional quantitative methods with natural language processing of thousands of responses to a crowd-sourced survey on the experience of sexual harassment in the academy. This work has been cited in the U.S. Supreme Court case *Prianka Bose v. Rhodes College and Roberto de la Salud Bea, et al.* (No. 20-216).

I have also written several policy reports that local and international media have picked up. For example, I was interviewed by *NBC4* ("Going the Distance: The Digital Equity Gap"), where I discussed the impacts of remote learning on student motivation and ways to mitigate its adverse impacts on low-income families. I gave a similar interview in Spanish to *Noticiero Univision* (the 6:00 pm Univision evening news). This work was based on a collaboration with the California Emerging Technology Fund, an organization focused on expanding broadband access across the state. It informed California Assembly Bill No. 1176, which provided much-needed subsidies for families needing broadband internet. To date, the resulting Affordable Connectivity Program has helped over 1 million families afford reliable high-speed internet.

I am always thinking about new ways to think about technologies while placing practicing educators, learners, and families at the center of the work. In a 2021 *AERA Open* article entitled "A Different Experience in a Different Moment? Teachers' Social Media Use Before and During the COVID-19 Pandemic," my co-authors and I extensively used longitudinal methods. We studied how teachers used social media to adapt their instruction to the constraints and affordances offered by those technologies in emergency remote teaching during the start of the Covid-19 pandemic.

We surveyed teachers twice a week using an SMS-based short survey technique, allowing teachers to provide information in a minimally intrusive manner given the other demands placed upon them by remote teaching and other contextual demands, such as managing at-home family life and perhaps their own children's remote learning. I feel confident that such methods will grow more popular in time.

## McKeachie Early Career Award

I am thrilled and honored to be the first recipient of the Wilbert J. McKeachie Early Career Award for Motivation in Education Research from the Motivation in Education SIG. I first met Bill while I was a student at the University of Michigan. It was unreal to be both a student in the Combined Program in Education and Psychology (CPEP) and to meet the person who founded the program. That sort of history shaped how I thought about my work—I continued a line of excellence and wanted to ensure that my career measured up.

In my experience, scholars like Bill come in two forms. They are either uniquely human and approachable, or they strive to be paragons of the field—brilliant but unapproachable. I was lucky that Bill was the former. He was funny, kind, and even taught me the card game he invented along with friends like Héfer Bembenutty and Kai Cortina.

Bill would ask me questions to get to know me and banter with the rest of the players. It was a unique experience that I will never forget. Getting to know faculty like Bill taught me that productive careers need not lead to isolation. The best careers are the ones shared with friends and with the world. As I continue my career, I will strive to do innovative work and work that makes an impact. In so doing, I hope to become a scholar that continues the unbroken line of excellence started by Bill while still being as approachable as he was.

## A RELEVANT PUBLICATION

"TeachersPayTeachers.com (TpT) is the largest online teacher resource exchange, boasting over 3 million materials and over 1 billion downloads of those materials and not enough is known about the kinds of materials teachers access through TpT. We used web-scraping, cluster analysis, and natural language processing to break down the pre-pandemic TpT marketplace of over 500,000 resources along dimensions of grade level, content focus, resource type, cost, authorship, and ratings. We also relate the features we observe to the number of ratings received, offering a glimpse into the factors that may predict teachers' use of these materials. We draw three main conclusions from this work: First, TpT predominantly serves elementary school grades; second, Common Core standards, while present, are not a focal point of most content; and third, close to 70% of material is characterized as being a "printable" or an "activity," which suggest direct pedagogical values. We discuss the implications of this work and suggest that TpT suffers from pitfalls associated with being a market-based platform that is not bound by the need to adhere to sound learning theory or best pedagogical practices."

Aguilar, S. J., Silver, D., & Polikoff, M. S. (2022). Analyzing 500,000 TeachersPayTeachers. com lesson descriptions shows focus on K-5 and lack of Common Core alignment. *Computers and Education Open*, *3*, 100081. https://doi.org/10.1016/j.caeo.2022.100081

**Stephen J. Aguilar** is an Assistant Professor of Education in the Educational Psychology concentration at the University of Southern California Rossier School of Education. His areas of expertise include motivation and self-regulated learning as they relate to designing and implementing educational technologies. He specializes in learning analytics, educational data science, the digital equity gap, and gameful approaches to teaching and learning.

I have been thinking of the impact of educational technologies on students' learning processes and performance, given that we are in a technology-driven world. The question of how learning, specifically self-regulated learning (SRL), occurs in technology-rich environments perplexes me and pushes me to explore the boundary of knowledge in learning sciences.

I am particularly interested in explorative and risk-taking research in SRL that could dramatically increase our knowledge of students' learning and decision-making processes. It is my honor to have the opportunity to share some of my work towards expanding the boundaries of self-regulated learning research.

### Theme 1 – An Integrative Model of SRL Engagement

Self-regulated learning (SRL) and student engagement are distinct research areas, but both aim to understand students' functioning and performance within academic settings. Wolters and Taylor (2012) argued that "the research on self-regulated learning and student engagement can, and should, be integrated to a greater extent" (p. 647).

A more integrated model of SRL and student engagement would benefit each area of research and enhance a holistic understanding of students' learning (Cleary & Zimmerman, 2012; Wolters & Taylor, 2012). In a recent publication titled "Cognitive engagement in self-regulated learning: An integrative model" (Li & Lajoie, 2021), we proposed an integrative model of SRL engagement, which is one of the first to clarify the functioning of cognitive engagement in different SRL phases and subprocesses.

The model suggests that high performers can strategically regulate their cognitive engagement in different SRL phases, indicating that shallow engagement is not always dysfunctional and detrimental to students' performance. Moreover, this model highlights the importance of tracking, modeling, and visualizing the dynamics of cognitive engagement throughout SRL, which open new directions for future research.

### Theme 2 – SRL as a Complex Dynamical System

The process of SRL is influenced by a wide range of factors, which include the characteristics of the learning context, an individual's demographic, cultural, or personality characteristics, and the individual's strategic regulation of their internal environments such as cognition, metacognition, motivation, and emotion (Pintrich, 2004).

The emergence of SRL behaviors or products is an aggregate result of interactions between those factors. Therefore, SRL is a complex dynamical system (CDS) comprising interdependent components whose roles and inter-component relations continuously emerge through internal and external feedback loops (Kaplan & Garner, 2020; Koopmans, 2020).

Examining SRL as a complex dynamical system could provide insights beyond simple cause-effect relations between SRL components and performance. However, to our knowledge, no effort has been made to study SRL from a CDS approach in science learning. We conceptualized SRL as a complex dynamical system (Li, Zheng, Huang, et al., 2022), which could inform the development of new SRL theories.

Moreover, we initiated the use of RQA (recurrence quantification analysis) to study the temporal structures of SRL behaviors (Li, Zheng, & Lajoie, 2022; Li, Zheng, Huang, et al., 2022), which provides researchers with methodological insights on the analysis of SRL dynamics. Furthermore, we examined SRL dynamics using a network approach (Li et al., 2020). A network analysis of the SRL phenomenon provides the field with unique methodological insights that can inform future studies and analytical practices.

### Theme 3 – Emotion Variability and SRL

Prior SRL research has focused extensively on how emotion tendencies (e.g., duration, frequency, intensity, and valence) affect students' performance. However, little is known about emotion variability (i.e., the fluctuations in emotion states) and how emotion variability affects performance (Li, Zheng, Lajoie, et al., 2021).

Emotion variability represents the dynamic nature of emotion above and beyond what researchers can gain from exploring the overall frequency of emotion. Therefore, collective effort is needed to answer important questions about emotion variability and its relationship with SRL phases and students' performance.

It is also necessary to understand how emotion and variability jointly affect students' performance in SRL (Li, Zheng, & Lajoie, 2021). While we have progressed in these directions (Li, Zheng, & Lajoie, 2021; Li, Zheng, Lajoie, et al., 2021), emotion variability is an underexplored area of research in which many challenges and opportunities await.

**References are available upon request from Shan Li**
**shan.li2@mail.mcgill.ca**

**SSRL SIG Outstanding Poster Award**

## Expanding the Boundaries of Self-regulated Learning Research

**Shan Li**

**Shan Li, PhD, is an Assistant Professor in the College of Health at Lehigh University and an affiliated faculty in the Department of Education and Human Services at Lehigh University. His research centers on self-regulated learning, learning analytics, artificial intelligence in education (AIED), STEM education, and health professions education.**

# SSRL SIG Graduate Student Research Award

## Undergraduate Students' Advice for Increasing Self-Efficacy During COVID-19

*Jaeyun Han*

**Jaeyun Han,** MA, is a doctoral candidate in the Department of Educational, School, and Counseling Psychology at the University of Kentucky. Her research interests lie in the relationships between students' personal capability beliefs, self-regulated learning, and achievement in various instructional modalities.

I am a doctoral candidate in the Educational Psychology program in the Department of Educational, School, and Counseling Psychology at the University of Kentucky. I received my bachelor's and master's degrees in Education at Ewha Womans University in South Korea. To extend my research interest in Albert Bandura's social cognitive theory in a new cultural context, I decided to attend the University of Kentucky's doctoral program in Fall 2018.

This past year, I submitted a proposal to AERA titled "Advice in a crisis: Undergraduate students' metamotivational awareness during the COVID-19 pandemic." I am honored to receive a Graduate Student Research Award (GSRA) from the Studying and Self-Regulated Learning SIG of AERA 2022 for this proposal on behalf of my research team.

My interest in self-regulated learning first stemmed from my personal educational experiences in South Korea.

Prior to middle school, I was not a good student; studying was difficult, and I usually doubted whether I could succeed in school. However, this changed when I saw a symbolic role model on television who helped me believe in the power of human agency and my capability to become a better student.

I became more motivated to study longer than before, apply more efficient learning strategies, and increase my school/state exam scores, making me more confident about my academic abilities. For this reason, self-regulated learning is an essential construct for my research because, as I learned from my own experiences, students often show a significant gap in their achievement due to a lack of beliefs about their academic capabilities and organized study skills.

As an educational psychologist, I am interested in what motivates students to learn and perform well and how educators can use these insights to help their students succeed. I am particularly interested in examining how students have coped with increased educational hardships associated with the COVID-19 pandemic. At the college level, the COVID-19 pandemic brought about an immediate shift in instructional delivery modalities from traditional, in-person classes to online and hybrid forms of instruction that forced students to navigate new academic and self-regulatory challenges. Investigations into these new challenges and how students respond to them can clarify how students understand what affects their motivation and performance.

With my research team, Ellen Usher, Mayson Spillman, Anastacia Cole, Trey Conatser, and Jill Abney, I presented a poster at the *Investigations into self-regulation of learning and related constructs* session on April 25 in San Diego.

This study aimed to examine students' metamotivational understanding of the sources of self-efficacy for succeeding in college courses. This study was part of a more extensive investigation of undergraduate teaching and learning during Fall 2020 at a public, land-grant university in the southeastern United States. As a main open-ended question for this poster, students were asked to advise future students on what would make them feel more confident that they could succeed in the same course. The framing of this question represents a unique approach in that it asked students to contextualize their responses with a hypothetical audience of peers in mind.

Furthermore, given that this advice was offered within the context of a global pandemic, it also represents students' perceptions of how to build confidence in moments of disaster or disruption when the act of learning becomes unfamiliar. Inductive coding revealed four themes related to strategies for mastering the course content, self-regulation (e.g., time management, emotion regulation), social aspects of learning (e.g., help-seeking, social persuasion), and qualities of the instructional environment and learning tasks. We are preparing for a journal publication to share the findings with researchers, educators, administrators, and students. In the future, I hope to design interventions to support students' beliefs in their capabilities and self-regulation in different instructional modalities by using students' real voices about their effective learning strategies.

## SSRL SIG Graduate Student Research Award

# Time Estimation from a Self-Regulated Learning Perspective

Michelle Bahena-Olivares

The paper that my supervisor, Dr. Sungjun Won, and I presented at the 2022 AERA annual meeting in San Diego is titled "Investigating Time Estimation from a Self-Regulated Learning Perspective." We know that time estimation is one aspect of effective time management and that most people underestimate the time a task will take.

The prevalence of misestimation of large projects has led prior research to identify individual- and task-related factors influencing time estimation accuracy, such as experience and task difficulty. However, students' perception of course-relevant tasks and their autonomy to direct independent study sessions have rarely been considered. Our study aimed to address this gap by investigating the time estimation accuracy of students' self-constructed goals during independent study sessions relevant to their respective disciplines.

Our findings suggest that:

- most students are inaccurate at estimating the time needed to complete self-set goals for single study sessions, and
- students' perceived difficulty and competence beliefs can predict estimation accuracy at different time-points over the semester.

### How did you first become interested in self-regulated learning?

Through teaching and research assistant positions, I became interested in self-regulated learning in the first year of my master's program in educational psychology at the University of Victoria (UVIC).

Dr. Hadwin and Dr. Sungjun Won offered the Teaching Assistant position for a learning-to-learn course guided by the SRL framework. The course is ED-D: 101 Learning Strategies for University Success, and its main objective is to guide students to develop knowledge and skills to regulate multiple areas of their learning.

As a teaching assistant, I reviewed students' weekly progress and provided individualized feedback. These weekly reviews allowed me to witness students' progress and the utility of SRL to help them navigate their academic challenges during university. The following semester I joined a group of research assistants in Dr. Hadwin's Technology Integration and Evaluation (TIE) Research Lab to participate in many projects involving SRL. Both roles allowed me to integrate theory and practice, making it a meaningful experience that created questions to keep assisting students from an SRL perspective.

### Who were your mentors?

I consider Dr. Allyson Hadwin and Dr. Sungjun Won my mentors at the University of Victoria. I was fortunate to have their continuous support throughout my master's degree. Dr. Won helped me refine my writing skills, which was a challenge considering I am new to scholarly writing and English is my second language. He holds high standards accompanied by helpful feedback that pushed my efforts forward.

Dr. Hadwin continues to be a pillar in my learning. There is always something to learn from her, and she gives her trust when assigning high responsibilities to her team. I am deeply grateful to both.

### What are your plans or ideas for future research?

In addition to working as a research assistant, I am a part of a team of Learning Strategists at UVic. I meet with students regularly to identify learning strategies to approach their academic work efficiently.

The initial concerns of a great majority of students are time management and motivation. As our study sessions developed, I realized that some of the issues students identify as difficulties with time management and motivation are related to their task understanding. Task understanding is an internal representation (perception) of an externally assigned task (Hadwin & Winne, 2012). I want to investigate the relationship between these processes when I apply to study for my PhD.

### Investigating time estimation from a self-regulated learning perspective

**Abstract**

"We investigated university students' time estimation accuracy from a self-regulated learning perspective. Specifically, we examined students' goal quality and self-efficacy beliefs as predictors of time estimation accuracy at two time points over a semester. Our results showed that more than 50% of students underestimated or overestimated their time to complete goals. Results of multinomial logistic regression analyses demonstrated that goal quality and self-efficacy served as significant predictors of students' time estimation accuracy. Students were more likely to make underestimations rather than be accurate if their goal included a standard and perceived higher goal difficulty. In addition, students were more likely to be accurate than overestimating time if they perceived higher goal difficulty and reported higher self-efficacy."

**Michelle Bahena-Olivares is an MA candidate in Educational Psychology at the University of Victoria. Her research and applied interests include academic challenges and strategies in post-secondary education.**

# SSRL SIG Graduate Student Research Award

## Supporting College Students' Metacognitive Monitoring in a Biology Course Through Practice and Timely Monitoring Feedback

**Ying Wang**

I am honored to receive the 2022 AERA SSRL SIG Graduate Student Research Award. This award reflects a significant accomplishment in my graduate education. I am fortunate to have an incredible co-author, mentor, dissertation chair, and forever role model at Penn State, Dr. Rayne Sperling, who continuously inspires and supports my academic pursuit.

My dissertation committee members, Drs. Alexandra List, Matthew McCrudden, and Simon Hooper also supported this work. Without their valuable insights into this study, I would not have accomplished this. I also want to thank Dr. Jennelle Malcos for working with me to implement this monitoring intervention in her course. Below, I briefly describe the study. The complete work is under preparation for submission to an academic journal.

**Supporting College Students' Metacognitive Monitoring in a Biology Course Through Practice and Timely Monitoring Feedback**

DISCUSSION & SCHOLARLY SIGNIFICANCE

"Overall, findings suggested potential support for weekly monitoring practice and timely monitoring feedback embedded into course content for students' metacognitive monitoring accuracy and biology learning. Consistent with previous studies (e.g., Nietfeld et al., 2006), test difficulty and students' performance levels were also critical factors that affected students' bias and absolute accuracy in metacognitive monitoring. Importantly, this intervention study contributed to the monitoring literature by adopting real-time monitoring feedback embedded within an authentic undergraduate biology course. It is critical to establish effective monitoring interventions within authentic educational contexts. The current study suggested viable avenues for course instructors to support college students' metacognitive monitoring in practice."

Ying Wang, PhD, is a postdoctoral fellow in the College of Engineering at the Georgia Institute of Technology. Her current research examines how self-regulated learning can be applied in postsecondary engineering classrooms to promote learners' learning and motivation.

### Research Objectives

This work is part of my dissertation study. The dissertation aimed to examine the effect of monitoring practice and timely monitoring feedback on students' metacognitive monitoring and learning outcomes in an undergraduate introductory biology course. The presented portion addressed the following four research questions:

1. How do students' monitoring accuracy, knowledge performance, metacognitive awareness, and self-efficacy for strategic learning change over time across conditions?
2. Are there differences between students' bias and absolute accuracy on easy versus difficult items across conditions?
3. Is there a significant interaction between conditions and students' prior course achievement concerning bias and absolute accuracy after the intervention?
4. Do students' reported frequency of metacognitive strategy use and self-efficacy for deep- and surface-strategic learning predict their monitoring accuracy and performance?

### Theoretical Framework

Butler and Winne (1995) suggested that feedback is a critical information source that supports learners' self-regulated learning (SRL). In particular, Butler and Winne (1995) suggested that internal and external feedback must be effectively communicated to result in accurate monitoring and desired learning outcomes. Accordingly, the present intervention asked students to judge their performance regularly to invoke their internal feedback and provided timely monitoring feedback externally to foster the communication between internal and external feedback.

### Method

Participants were 162 college students. Overall, the study's execution took five weeks, including a pretest, three intervention sessions, and a posttest. The study followed an experimental design where students were randomly assigned to a control condition, a monitoring practice condition (MP), or a monitoring practice and timely monitoring feedback condition (MP + MF).

Students in the control condition received weekly knowledge practice. Students in the MP condition received weekly knowledge practice and confidence rating practice. Specifically, students were asked to rate their confidence in their answers after each question. This confidence rating activity was intended to invoke students' internal feedback on their performance. In comparison, in the MP + MF condition, students received timely feedback that showed whether they were overconfident, underconfident, or accurate in monitoring their answers.

### Findings

For Research Question 1, results showed that students' overconfidence in the MP+MF condition significantly reduced after the intervention. However, there were no significant changes in the control and MP conditions. This suggests that the combination of monitoring practice and timely feedback effectively improved students' metacognitive monitoring in biology learning.

Regarding Research Question 2, results showed that students in the control condition were more accurate on the easy items when compared to those in the MP and the MP + MF conditions. Interestingly, students in the control condition were less accurate on the difficult items when compared to those in the MP + MF condition. This suggests the intervention was particularly effective for students monitoring difficult items.

Further, to answer Research Question 3, students were divided into four groups based on their performance on an exam before the intervention. Results showed that the lowest-performing student group was more overconfident and less accurate in monitoring than the highest-performing group across three conditions. This suggests that the low-performing students need additional support for their monitoring and learning.

Finally, for Research Question 4, the regression analyses demonstrated that students who reported higher self-efficacy for surface-strategic learning tended to be overconfident in judging their performance on the post-knowledge test. An additional regression model showed that students' self-efficacy for deep-strategic learning uniquely and significantly predicted students' performance on the knowledge posttest. Notably, this intervention study contributed to the monitoring literature by adopting real-time monitoring feedback embedded within an undergraduate biology course and suggested viable avenues to support students' metacognitive monitoring.

### Postdoctoral Research: Self-Regulated Learning in Engineering Education

My postdoctoral position at Georgia Tech provides me with the research opportunities and resources to continue and expand my research on SRL within the context of engineering education. I have initiated research projects that focus on examining and facilitating engineering students' SRL. I am collecting data for two SRL studies and hope to present my postdoctoral research at AERA 2023.

**References are available upon request from Ying Wang**

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# SSRL SIG Graduate Student Research Award

## Is Situational Interest a Metacognitive Risk? A Behind the Scenes Perspective

**Samira Syal**

While pursuing my Master's degree in Educational Sciences at the University of Jyvaskyla (Finland), I happened to take an Educational Psychology class taught by a visiting professor from the USA, Dr. John L. Nietfeld. This class taught me to reframe my research interests, examining the role of motivation in the reading environment within the framework of self-regulated learning (SRL). During this class, Dr. Nietfeld presented his latest line of research, which involved creating a digital game-based learning environment using an SRL framework to promote comprehension of scientific texts for fifth graders. I saw this as a promising endeavor, and I proceeded to apply to begin my doctoral studies under the mentorship of Dr. Nietfeld at North Carolina State University.

During my doctoral program, I became particularly interested in how various SRL components interact in a reading environment. In one of my doctoral seminar classes for Dr. Nietfeld, we found a fascinating paper by Corwin Senko and his team (2022) that triggered situational interest (SI) and could lead to overconfident metacognitive monitoring judgments. In their two-part study, SI was triggered using various textual components and diverse types of texts and was found to have a negative relationship with monitoring accuracy.

Upon further reflection, we questioned whether SI posed a risk to elementary students' monitoring accuracy when they read various types of texts, specifically expository and narrative. We also considered whether the distributed practice impacted the potentially negative relationship between interest and monitoring accuracy.

Drawing from a larger project entitled "Improving Reading Comprehension using Metacomprehension Strategies" (IRCMS) that emphasized metacomprehension strategies for fifth-grade students, we sought to build on Senko et al.'s (2022) findings by examining the relationship between SI and multiple indices of monitoring accuracy among elementary students. We aimed to use multiple indices of monitoring accuracy, supported by recommendations from metacognitive monitoring literature (e.g., Gutierrez, Schraw, Kuch, & Richmond, 2016; Händel, Harder, & Dresel, 2020; Schraw, 2009; Wang & Sperling, 2020). Multiple indicators of monitoring accuracy provide a richer understanding of metacognitive monitoring.

Our study titled "Is Situational Interest a Metacognitive Risk?" was selected for the Graduate Student Research Award from the Studying and Self-Regulated Learning SIG presented at the AERA 2022 Annual Meeting. It focused on examining the situational interest/monitoring accuracy relationship using two measures of monitoring accuracy (i.e., bias and calibration accuracy) when fifth-graders read narrative and expository texts with numerous opportunities for distributed practice.

Our findings provided a nuanced perspective on the relationship between SI and monitoring accuracy, where SI was associated with accuracies in calibration, and inaccuracies tended to be biased toward overconfidence. When considering contextual factors, namely the type of text being read, we found that SI was associated with more inaccuracies in calibration on expository texts than on narrative texts and that regardless of the level of SI, reported expository texts were associated with more overconfidence than narrative texts.

Our finding is likely due to expository texts being more challenging to comprehend as they contain complex text structures, a high density of unfamiliar technical words, and tend to be written to succinctly deliver as much information as possible (Alexander, 2019).

When making judgments about their learning, children tend to rely on easily learned, easily remembered (ELER) heuristics (Koriat, Ackerman, Lockl, & Schneider, 2009a; Koriat, Ackerman, Lockl, & Schneider, 2009b), where easily encoded information is more likely to be remembered. Narrative texts may be subject to this ELER heuristic more so than expository texts.

We also found that the interest-overconfidence (i.e., high SI associated with increased overconfidence) effect was present more with narrative texts than with expository texts. Concerning distributed practice, we found that distributed practice significantly moderated the relationship between SI and both indices of monitoring accuracy. The distributed practice was found to moderate the interest/overconfidence effect where high SI was associated with improved monitoring accuracy (both calibration and bias estimates) when students participated in more distributed practice sessions with feedback.

Our finding has important implications for the interest/self-related information processing framework put forth by Renninger and Hidi (2022), where the triggered interest can fuel the information-search process, thereby improving metacognitive accuracy. As students engage in more distributed practice sessions, SI can be capitalized to fuel the information search process, promoting judgments of learning based on their information-based or data-driven cues.

**References are available upon request from Samira Syal, srajesh@ncsu.edu**

**Samira Syal** is a recent graduate of the PhD program in Teacher Education and Learning Sciences (Educational Psychology) at North Carolina State University. The bulk of her research centers on understanding the complex network of SRL processes and how they impact learning. Specifically, her work centers on the interaction between motivational and metacognitive components of SRL impacting comprehension of informational texts.

# Amanda M. Ferrara

**“One reason students with experiences of trauma do not perform as well as their peers on reading comprehension tasks is due to decreased self-regulated learning capacities as a result of trauma overwhelming their top-down processes.”**

# Understanding the Impact of Traumatic Experiences on Self-Regulated Learning

Amanda M. Ferrara

My graduate work has centered around investigating the effects of adverse or traumatic experiences, such as child maltreatment (i.e., physical, sexual, or emotional abuse and physical or emotional neglect), exposure to interpersonal violence in the home, and community and school violence, on college students' self-regulated learning and reading comprehension. Students with histories of adversities and experiences of traumatic symptoms demonstrate poor reading abilities compared to their peers, and this is true of elementary, secondary, and post-secondary students (Coohey et al., 2011; Crozier & Barth, 2005; Ferrara & Panlilio, 2020; Widom et al., 2012). However, there is a dearth of literature examining the learning processes that drive poor reading comprehension for students with a history of early adversity.

Prior literature suggests that adverse or traumatic experiences have been shown to influence the development of behavioral, emotional, and cognitive self-regulation; which in turn influences elementary through college students' academic achievement (Daly et al., 2017; Ferrara & Panlilio, 2020; Hagan et al., 2014; Luke & Banerjee, 2013; Schatz et al., 2008; Welsh et al., 2017). Thus, my work has focused on understanding the potential mediating effects of self-regulated learning constructs on the relationship between college students' experiences of trauma and their reading comprehension.

Specifically, my dissertation project sought to understand how college students who have experienced lifetime adversity, childhood maltreatment, or trauma symptoms differ from their peers in their use of metacognitive monitoring during a reading comprehension task.

Undergraduate students in my study ($N$ = 765) read five texts, then:

- provided a judgment of comprehension for each text (i.e., their judgment of how well they understood the text before seeing the posttest),
- answered five posttest questions about each text, and
- rated their confidence in their answer after each posttest question.

They also self-reported their experiences of trauma (i.e., experiences of lifetime adversity, childhood maltreatment, and trauma symptoms). I then used their judgments of comprehension and their confidence in each question to calculate relative metacomprehension accuracy (i.e., students' accuracy in judging how their understanding varies from one text to the next) and relative monitoring accuracy on the posttest (i.e., students' accuracy in judging how their understanding varies from one posttest question to the next).

Controlling for prior knowledge and students' self-reported effort made during the study, I entered these two relative accuracy indicators as mediators between students' experiences of trauma and their reading comprehension in a path model (see Figure 1).

Relative metacomprehension accuracy and post-test relative monitoring accuracy failed to mediate the relationship between experiences of lifetime adversity and reading comprehension, as well as the relationship between childhood maltreatment and reading comprehension. However, the relationship between posttraumatic stress symptoms and reading comprehension was mediated by posttest relative monitoring accuracy such that students who reported more posttraumatic stress symptoms demonstrated worse relative monitoring accuracy, and worse monitoring accuracy predicted worse reading comprehension.

This project reflects prior work that has found that symptoms of trauma were predictive of learning processes while events of trauma alone were not (e.g., Ferrara & Panlilio, 2020; Mullins & Panlilio, 2021). In other words, these findings suggest that traumatic events alone may not be enough to affect students' learning.

Some students may have had enough protective factors (e.g., supportive adult relationships) to avoid negative experiences and effects of traumatic events (Center on the Developing Child, n.d.). In contrast, other students may have had counseling or other support to process their traumatic experiences. Instead, the present study suggests that the continued experience of symptoms can interfere with reading comprehension processes.

Relative accuracy is theorized to impact students' decisions on what to prioritize studying when they have a set amount of time (Wiley et al., 2016). If students with trauma symptoms are less accurate in their assessment of their understanding of one text or topic in relation to another, they may be less likely to allocate their study time to their most needed texts or topics.

This project, as well as my master's thesis project (Ferrara & Panlilio, 2020), lend support to the theory that one reason students with experiences of trauma do not perform as well as their peers on reading comprehension tasks is due to decreased self-regulated learning capacities as a result of trauma overwhelming their top-down processes (Panlilio & Corr, 2020).

Currently, I am wrapping up a few projects at Penn State, which benefit the well-being and learning of children and families who have experienced trauma or abuse. Post-graduation, I hope to work in applied research broadly benefiting families experiencing trauma, such as child maltreatment.

**Amanda M. Ferrara**, MS, is an educational psychology doctoral candidate at The Pennsylvania State University, expected to graduate in August 2022. Her research examines the effect of prior traumatic events on students' self-regulated learning processes and the effects of interventions on reducing family violence in military families. She is an esteemed copyeditor of the *Times Magazine.*

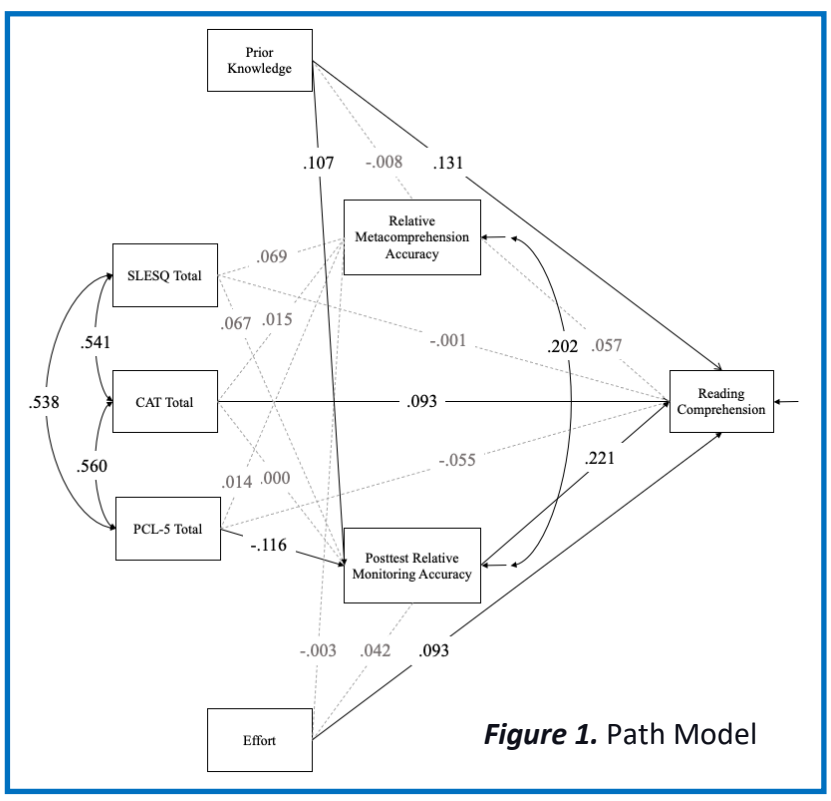


***Figure 1.*** Path Model

**References are available upon request from Amanda Marie Ferrara, amf5545@psu.edu**

# Investigating Teacher Social-Emotional Capacities with Diverse Student Groups

Laura Dallman

My dissertation investigated teacher social-emotional variables that may be influential in establishing supportive social-emotional dynamics with students from diverse cultural backgrounds.

Emotional and cultural intelligences are malleable and can be developed.

Cultural knowledge had an independent effect on diversity self-efficacy and an inverse relationship to emotional intelligence. Metacognitive cultural intelligence, another cultural intelligence subcomponent, also positively affected teacher emotional intelligence and was directly affected by self-emotional awareness, an emotional intelligence subcomponent.

**Laura Dallman received her PhD from George Mason University in Spring 2022. She served as a graduate lecturer in both the College of Education and Human Development and the College of Health and Human Services and was a graduate course assistant in the University's Transformative Teaching Master's program. Laura was an elementary school teacher in Fairfax County Public Schools and at international schools overseas. She holds an MDiv from Yale University and a BA from Augustana College, IL.**

# Investigating Teachers' Social-Emotional Capacities with Diverse Student Groups

Laura Dallman

Combining a constructionist understanding of emotion (Siegel, 2015) with social cognitive theory (Bandura, 1986) and self-determination theory (Ryan & Deci, 2000), my dissertation investigated teacher social-emotional variables that may be influential in establishing supportive social-emotional dynamics with students from diverse cultural backgrounds (*N* = 205).

I proposed two sets of structural equation models to explore the relationships between and among elementary teachers' cultural intelligence, emotional intelligence, diversity self-efficacy, interaction self-efficacy, outcome variables, diverse class climates, and teacher-student relationships.

My purpose was—and is—to identify potentially influential teacher capacities for the sake of developing them in our education workforce. The ultimate goal, of course, is that all students—regardless of cultural background—can enjoy the benefits of constructive teacher relationships.

The social-emotional dynamic between teachers and students is fundamental to teaching and learning (Kyriakides et al., 2013). It plays a foundational role in student achievement and healthy development (Creemers & Kyriakides, 2006; Hamre et al., 2013; Hattie, 2009; Rutledge et al., 2015). Unfortunately, teachers are often unable to form these dynamics with students from cultures other than their own (Bruch et al., 2017; McGrath & Van Bergen, 2015), thus potentially denying these students the benefits that can accrue from positive relationships (Egalite & Kisida, 2018). This is especially concerning because the American student population is becoming more diverse (Maxwell & Shah, 2012; Orrenius & Zavodny, 2012), yet teachers remain primarily white, middle-class women (Aud et al., 2012). This growing cultural mismatch between teachers and their students may put more students at risk of not developing optimally supportive teacher relationships.

Relevant model results indicated that teachers' self-perceived emotional intelligence and cultural knowledge (a cultural intelligence subcomponent) were influential in forming positive teacher-student relationships with diverse student groups.

Elementary teachers with greater emotional intelligence believed they had more positive teacher-student relationships with diverse student groups, and greater cultural knowledge was associated with less conflict in teacher-student relationships.

Cultural knowledge had an independent effect on diversity self-efficacy and an inverse relationship to emotional intelligence. Metacognitive cultural intelligence, another cultural intelligence subcomponent, also positively affected teacher emotional intelligence and was directly affected by self-emotional awareness, an emotional intelligence subcomponent.

## Self-Regulation Implications

Emotional regulation is an emotional intelligence subcomponent. Salovey and Mayer (1990) define emotional intelligence as "involving the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189). They divide it into four hierarchically related branches: using emotions depends on regulating emotions and understanding emotions that must first be perceived.

Although none of the models indicated any independent effects or associations of emotional self-regulation with diverse teacher-student dynamics, it may have been influential in concert with the other emotional intelligence subcomponents. Emotional intelligence, including emotional regulation, directly and positively affected teacher-student relationships with diverse student groups. Likewise, cultural knowledge negatively affected emotional intelligence and cultural metacognition covaried with emotional intelligence.

Several factors limit conclusions. The use of self-report measures combined with only one data source (i.e., teachers) limited inferences to the perceptions of teachers who may have responded in ways they deemed socially desirable (Nederhof, 1985). Snowball sampling may have resulted in a non-randomized sampling (Etikan et al., 2016; Sadler et al., 2010), and the use of an incentive combined with Facebook recruitment may have caused participants to pose as teachers when they were not.

My future research will explore the possibility that cultural intelligence, specifically cultural knowledge, acts as a suppressor enhancing the effects of teacher emotional intelligence (Maassen & Bakker, 2001).

I will also further explore the relationships among teacher emotional and cultural intelligence subcomponents. If the latent variables are removed, we might more clearly see the effect of each subcomponent on social-emotional dynamics between teachers and diverse student groups.

Enhancing teacher capacity to work with diverse student groups remains the goal. Emotional and cultural intelligences can be developed (Crowne, 2008; Sala, 2002; Sit et al., 2017). As such, more fully understanding their influence on dynamics can inform teacher professional development and facilitate the development of growth-enhancing teacher - student relationships.

**References are available upon request from Laura Dallman ldallman@gmu.edu**


**“To more holistically assess the effects of strategy instruction, practitioners and researchers should account for the quality of students’ strategy use and their reported frequency.”**

# Promoting SRL within Authentic Learning Environments

Joseph C. Tise

**Joseph Tise**, PhD, is a Postdoctoral Research Associate in the Teaching, Learning, and Culture department at Texas A&M University. He researches how SRL can be studied and promoted within authentic learning environments.

My self-regulated learning (SRL) journey began as an undergraduate research assistant. I was fascinated that one could study the learning process, so I asked one of my former professors if I could help with his research project. My experience on that project led me to pursue a PhD in Educational Psychology from Penn State, with Dr. Rayne Sperling as my advisor. Almost one year ago, I defended my dissertation and graduated from Penn State, thus concluding my status as a student, but my journey of research and discovery persists.

My dissertation (and indeed most of my research) was designed with an eye toward one primary goal: to be directly applicable and beneficial to students' SRL within authentic classroom environments. My dissertation, titled *Adoption of elaborative interrogation by lower-performing biology students,* centered around designing and evaluating an intervention to teach students in a lower-level college biology course to use elaborative interrogation (Pressley et al., 1988).

Elaborative interrogation (EI) is a cognitive learning strategy that entails asking and/or answering "how" and "why" questions when presented with a fact. Such questions connect to-be-learned information to prior knowledge and experiences, thus promoting deeper learning. I leveraged an explanatory-sequential mixed-methods design (Creswell & Plano Clark, 2018) to evaluate the effectiveness of this strategic intervention. In line with this mixed-methods approach, I pursued two broad research aims. I wanted to know:

- Would students report higher use of EI after the intervention than before? and
- What factors influenced students' use of EI?

Although data were collected on all consenting participants, my dissertation focused specifically on the lower-performing students of the class (33rd percentile and below Exam 1 scores). Quantitative analyses indicated no change in lower-performing students' use of EI.

To help elaborate on these findings, I conducted several focus-group interviews two weeks after the intervention concluded. Broadly, students referenced motivational and contextual factors when deciding whether to use EI or not. Motivational factors included perceived utility value of the strategy for helping (or not) their learning and metacognitive monitoring.

Contextual cues to use EI included students' needs or desires to understand further a complex topic presented, encountering an application or transfer tasks such as a lab assignment and verbal persuasion from the instructor. Cues to not using EI mainly stemmed from their perceived need for the strategy in a given scenario, the time available for strategy use, and the difficulty or novelty of the learning content.

Some general conclusions can be drawn from these data and may apply directly to classroom instruction and/or future SRL strategy interventions.

First, the quantitative data indicated that most lower-performing students reported using EI prior to intervention, which may have limited the possibility for increased use of the strategy. However, this study did not account for the quality of their EI use—which may have changed in the wake of strategy instruction. To more holistically assess the effects of strategy instruction, practitioners and researchers should account for the quality of students' strategy use and their reported frequency.

Second, the qualitative data provided some of the first empirical evidence of factors influencing a student's decision to engage or not engage in an instructed strategy. Prevalent in these qualitative data was the influence of specific contextual cues such as content difficulty, time available for studying, and the influence of the instructor. These factors ought to be considered in future strategy instruction endeavors by both practitioners and interventionists.

My dissertation is a significant stepping stone in my emerging research program. In the near future, I plan to develop further this line of intervention research and conduct supporting studies that can inform the SRL intervention and learning strategies. Regardless of the particular methodological approaches and designs I use in future studies, one theme will connect all my research: the applicability of findings to promote self-regulated learning within authentic learning environments.

**References are available upon request from Joseph C. Tise, tise.joseph@gmail.com**