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EXPLORING THE IMPACT OF STRESS ON HEALTHCARE STUDENT COMPETENCY: A COGNITIVE MODEL FOR SELF-REGULATING PERFORMANCE DURING HIGH-STAKES SCENARIOS

by

MICHAEL J TEACHEY

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SYNTHESIS*

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* The Synthesis can take a variety of forms, from a position paper to curriculum or professional development workshop to an original contribution in the creative arts or writing. The expectation is that students use their Synthesis to show how they have integrated knowledge, tools, experience, and support gained in the program so as to prepare themselves to be constructive, reflective agents of change in work, education, social movements, science, creative arts, or other endeavors.

ABSTRACT

Stress and anxiety are part of healthcare and are experienced not only by patients but also by clinicians. This work explores an issue prevalent in healthcare education, outlining the detrimental effects of stress-induced anxiety on student performance during practical assessments. Included in this paper are the research and investigative details that elaborate on the process taken towards resolving the issue. Research conducted in the fields of Education, Law, and Medicine is used to explore how these areas address stress with regard to performance. Through the various processes of research and engagement, this action research project uncovers the underlying issue of poor performance on competency testing related to anxiety and stress. Once discovered, a proactive approach is taken to address the issue by designing a Metacognitive Mental Management System (MMMS) for student use while in the assessment process. This cognitive recalibration system addresses the phases of preparation, performance, and reflection to provide students with explicit strategies during the engagement process with competency testing. This paper also includes details of the development of the MMMS system, its implementation within a health science program, performance results and student feedback, and future developments.

Keywords: education, healthcare, stress, anxiety, metacognition, performance

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Introduction

Stress is an inescapable part of our everyday lives. The experience of stress is a normal and healthy part of our response to our environment. To varying degrees, stress impacts task performance, cognitive processes, emotional equilibrium, and overall general health. When stress is managed correctly and does not become chronic, it can serve as a motivator that drives optimal performance. When it is poorly managed and prolonged, it can have deleterious effects on our emotional and physical health. Consider the following scenario.

Imagine that you are a healthcare professional working in an acute-care setting, and you find yourself in a life-or-death medical emergency with a patient. Your chest tightens, your breathing becomes rapid and shallow, you begin to sweat, your thinking becomes scattered and muddled. You have difficulty focusing and cannot seem to process what to do as you feel like all your previous training is forgotten. As you now find yourself in this incredibly stressful situation, you realize that you are on the verge of panic.

This situation may seem extreme, yet many clinicians and students in healthcare find themselves in similar circumstances regularly. Healthcare professionals frequently encounter negatively impactful job stressors that have detrimental effects on their physical and mental health. These effects lead to decreased work engagement and patient treatment outcomes. There is also evidence that repeated exposure to these job stressors result in anxiety, depression, burnout, increased risk of suicide, and substance abuse for the healthcare practitioner (Fiabane et al.).

Treatment situations can become unstable quickly within an acute care setting as patients' medical status fluctuates. In those moments of instability, clinicians must respond rapidly to the emergent situation. The need for an urgent, adaptive, and concentrated response places enormous anxiety on the clinician and responders. So much pressure can unnerve the medical technician and cause performance to be negatively affected. As such, clinicians must undergo rigorous training that is stress-producing to prepare them for these medical situations.

I am an educator in a Physical Therapist Assistant (PTA) program at Midlands Technical College in Columbia, South Carolina. I am responsible for cultivating future PTAs. I have served as a PTA educator for 12 years. During that time, I have worked in the field as a clinical instructor, at the college as an adjunct lab assistant, and ultimately, as a full-time faculty member. My students will eventually work as healthcare professionals in various patient care settings. These diverse environments include outpatient clinics, subacute rehabilitation centers, acute care hospitals, intensive care units, military hospitals, school systems, home health agencies, and pediatrics. The diverse locations in which PTAs are employed provide ample opportunity for medically acute situations to present themselves. This diversification of settings can potentially produce significant stress and job strain (Campo et al.). Therefore, our PTA students must be prepared to handle and perform optimally during high-stakes, high-pressure medical situations in a variety of settings.

As a result of students potentially being in these problematic medical conditions, PTA educators recognize the importance of placing students in challenging situations to build their resistance to anxiety. Each new cohort entering the PTA program every August faces challenges

that will push their boundaries and create opportunities for growth and empowerment. In recent years, within the PTA program, only a cursory measure of attention has been paid to the topic of student anxiety as it was viewed as something the students needed to manage independently. However, due to increased adverse outcomes on competency assessments attributed to high-anxiety levels, this area has garnered attention by some within the program. Interestingly, current national trends confirm this phenomenon as an increasing number of students report "more than average stress" in college and university settings. Reports of depression and anxiety are also on the rise within this population due to prolonged stress (Bouchrika, 2020).

Some faculty within the PTA program has recognized that high-anxiety levels are a continual burdensome impediment that the students must contend with. It has also become evident that there is a significant variance between the individual student's ability to manage their stress response and perform optimally to pass their medical simulation examinations. The faculty within the program have been divided on intervening to aid students with managing their individual stress levels.

I propose that students would benefit from the development of a mental management and cognitive recalibration method. A systematic approach could be used in moments of high-anxiety to refocus or realign the student's mental state and facilitate increased resilience to acute stressors. Developing strategies and techniques that would help the students in anxiety-producing situations to redirect their muddled thinking towards a more optimized mental disposition would be an essential aid. The students in the Physical Therapist Assistant program at the college in this project currently do not have such a tool.

This research project was constructed using a synthesized approach connecting Action Research methods of cycles of observation and evaluation, proposing and planning, implementation of epicycles of reflection and dialogue, looking ahead, and constituency-building with the Phases of Research and Engagement process utilized in CCT. The cycles and epicycles of the Action Research process emphasize reflection and dialogue through which constituency building is fostered toward a specific course of action. The Phases of Research and Engagement framework emphasize research and writing that are preparatory for engaging an audience (Taylor & Szteiter, 2012, p. 7). As a result of the unified research approach, this investigatory endeavor aims to deepen the understanding of the stress response in healthcare students and detail the development of the Metacognitive Mental Management System for healthcare students to utilize in optimizing stress responses analytically and reflectively.

Stressful Student Encounters

One example of a stressful situation that occurred with one of my students during a high-stakes examination could be described as intense. I was assessing a student during a competency (which is a mock treatment session on a specific physical therapy procedure). These are high-stakes situations because if the student fails the initial competency, they only have one more chance to get it right. If they fail the same competency a second time, they are dismissed from the program. Consequently, these are extremely stressful situations for the students.

This student normally does well if everything goes according to the "script." However, during this competency, the student was having difficulty with the technique they were performing. I asked them if they were stabilizing the part of the body that was being treated.

The student then began to get nervous and stated, “well, I wasn’t shown to do it that way in lab.” I then asked them to process in the moment and try to think of a way to secure the stabilization. Attempts were made for a few seconds to change hand positions and the angle of application of the technique. The student suddenly became extremely agitated, their face flushed as they said, “I don’t know how to do this, I wasn’t shown how to do this, I can’t….I can’t….I just don’t know what to do! Can you show me?”

I responded that I am not allowed to instruct how to perform a technique in the middle of an assessment. I explained that the expectation was that all students should be well-versed in the techniques and their various application variations. The student then slammed down the therapeutic tool being used and said, “Well I don’t know how to do it, you never showed me how to do this.” After hostilely asserting this, the student then sat down and began to cry.

The issue for me in that moment was that this student was unable to perform optimally due to their anxiety and response to stress. The blame was focused on the assessor by the student as they struggled with modifying the technique. The most alarming aspect of the situation was that the student essentially shut down. Such behavior is unacceptable in an acute medical situation; PTAs are expected to view all techniques as templates allowing them to respond expertly and adaptively while under pressure depending upon the specific patient emergency. This strategy had been explained during lab before, but in this moment, this student experienced an acute stressful event and was unable to perform. Fortunately, it was a non-clinical direct patient care situation.

I gave the student some time to calm down and then asked that they try to repeat the technique again and problem-solve their way through it, which they were able to successfully do 10 minutes later. So, it was not that the student did not know what to do or could not do it, it was just that they were overwhelmed in the moment. Again, the issue is that the 10-minute increment of time is a luxury that will not be available during an acute medical emergency. The student would not be able to take a break, calm their nerves, and come back and "try again."

In our debriefing session later, the student stated that they froze in the moment due to anxiety and stress; and that they were unable to process what to do. The anger response was a reaction to the stress in the moment. We had a long talk in which I tried to empower the student and build up a sense of confidence in their decision-making; but I wanted to be able to provide them with something more substantial to help if this were to happen again.

In my years as a PTA educator, I have noticed that this type of breakdown normally happens with students' multiple times each semester to varying degrees of severity. An additional example of a student's difficulty with anxiety was during a neuromuscular electrical stimulation competency. The patient scenario involved a muscle spasm in the rhomboid musculature in the mid-back medial to the scapula. The electrotherapy treatment to address this issue, called for a prescribed number of impulses to the rhomboid muscles by using electrical stimulation to elicit tetanizing contractions. This intervention is performed to cause enough contractions of the muscle to fatigue it and allow the muscle spasm to release. In order for this to occur, the number of muscle contractions elicited must be calculated in order to ensure proper parameter settings.

During the competency, one of the more academically accomplished students in the class was performing in the clinician's role. As the student began to set up the parameters on the electrical stimulation unit for the patient, I could sense that the student was very nervous. I saw this through the visibly shaking hands as buttons were punched on the machine to enter the required information necessary to facilitate the settings for the treatment. The student then began to describe the parameters that would be used during the treatment by stating that the machine would be set up to elicit a muscle contraction for an on/off cycle with a 1:1 ratio. This would be accomplished by entering parameters for the muscle to contract for five seconds, then to relax for five seconds in cycles for thirty minutes in duration to address the issue within the patient scenario.

I recall observing the student nervously continue to set up the electrical stimulation machine. I then asked, “OK good, you have set up the unit based on the parameters, now, how many muscle contractions will the patient experience each minute?” At this point, the student nervously turned around to face me and stated, “Uh….I’m not really good at math.” I repeated my question while internally noting that I am only inquiring about basic arithmetic to which the student replied, “Oh, um……six contractions?” The response was more of a question than a statement. The uncertainty of the reply was alarming to me as this was an elementary mathematical calculation. Sixty seconds divided by one contraction every ten seconds is six contractions. That should have been simple enough to deduce. I began to wonder why it caused this student so much difficulty. I then asked, “If you have six contractions a minute and your treatment time is thirty minutes, how many contractions will the patient experience?” The

student stated, “Um.…120….no, wait…uh...130?” I again considered that this scholastically adept student was struggling with a calculation that could be simplified to 6×3. I gently verbalized that the answer is 180 contractions. As the student’s face flushed, they said, “Oh yeah, right……180.”

As the student continued working to complete the competency, I paid close attention to their nonverbal mannerisms. The shaking hands, the fidgeting, the rapid and shallow breathing, were all physiological signs of the stress response. The student was able to complete the remaining sections of the competency without incident although there were numerous verbal stumbles during the patient education portion to include a few episodes of stuttering and a shaky voice.

During our post-competency feedback session debriefing, when I specifically asked about the difficulty with the calculation of muscle contractions, the student stated, “Oh, that was embarrassing. I was so nervous I could not even think straight. It’s simple math, third grade math, actually.” We finished reviewing the components of the competency performance detailing specifics of what could be improved and what was performed well. The student was then dismissed from the competency testing room, and I was left with the impression that stress-induced anxiety had yet again degraded what could have been a robust competency performance from an academically proficient student. What remained was an average, unremarkable competency performance that was completed with minimally passable ratings.

Another incident occurred while a student was performing a competency on transfers (the movement of a patient from one surface to another (example, bed to wheelchair). The student pulled a scenario card that detailed a patient as status-post three days from an abdominal aneurysm surgery and was to be transferred from the bed to a wheelchair for transport. During all transfers from one surface to another, students are required to use a "gait belt." A gait belt is a cloth or canvas belt that is placed around the patient's waist just superior to the iliac crest of the hip. It is secured snugly on the patient in order for the therapist to hold and control the patient's center of gravity during the transfer. This provides the therapist with a greater measure of control of the patient and increases safety during the transfer procedure.

As part of this specific competency scenario, one of the more challenging aspects is that the student cannot place the gait belt in the area they would normally place it (abdomen) due to the recent surgery. If the student were to place the gait belt around the abdomen and pull on the belt close to the surgery site, it could lead to a wound dehiscence (rupture) of the incision. Historically, due to the stress-induced anxiety most students experience during competencies, it is often difficult for students to critically think, and problem solve through this particular scenario appropriately. Students are routinely taught to take any technique shown and view it as a template to be modified in relation to each individual patient scenario. Therefore, in this competency, the appropriate response would be to place the gait belt higher above the breast tissue as a secure area to stabilize. Another option would have been to place a pillow along the abdomen and the gait belt could be placed over the pillow superior to the incision site.

The student being assessed pulled this scenario card and began to set the patient up for the transfer, they then stated, “I know you had recent surgery on your abdomen, so I’m going to make sure I place the gait belt higher on you to avoid that surgery site.” This student then proceeded to continue to set up the area by bringing the wheelchair next to the bed and transferring the patient from the supine to the upright, sitting position. This is typically the point in which the gait belt would be applied to the patient. At that moment, I thought that since the student had verbalized that they would avoid the surgery site, there would be no issue with this competency.

However, the student moved the patient to the edge of the bed and began to place the gait belt directly around the waist over the abdominal surgery site. The student then stated,” OK, I’m going to pull this nice and tight around you so that I can have a good grip on you when we transfer.” The student then proceeded to transfer the patient from the bed to the wheelchair. If this had been an actual patient three days out from an abdominal aneurysm surgery, the wound could have ruptured. Once the transfer had been completed, I asked, “What is the primary medical diagnosis?” The student glanced down at the surgery site, threw their hands up around their head and yelled, “OH MY GOD!” They then stared at the floor, sat down on the bed, and began to cry.

In our debriefing session, this normally attentive student tearfully complained of not being able to sleep well the night before due to anxiety about the competency. They also revealed that they had been upset all morning while obsessing over the details that they wanted to perform on the competency assessment. The student lamented that they “just got ahead” of

themself by moving too quickly and did not pay enough attention to the patient's diagnosis. For me as the assessor, this failure was particularly difficult because they mentioned placing the gait belt above the incision site, but then two minutes later, failed to remember to do so. They described their thoughts during the competency as "frantic" while mentally struggling to remember everything that was required to pass the evaluation. Ultimately, at the end of the debriefing session, the student said that they felt "defeated" and never thought they would be in a position to possibly fail out of the program.

These examples are but a sampling of numerous similar experiences that I had with students during the last semester. Since these situations continue each semester, and they seem to be happening with a greater frequency, I decided that I needed to research stress and performance anxiety. As I considered how to best approach research on this topic, I felt that examination of scholarly resources alone would not be sufficient. I felt that I needed to speak with experts in diverse fields about how anxiety was practically managed in real time. I chose to conduct interviews with experts from the fields of Education, Law, and Medicine. I selected those fields as specialists in those areas should have plenty of opportunities to interact with students on a regular basis who experience stress-producing anxiety. I selected three interviewees from Midlands Technical College from the aforementioned fields to begin my research.

Action Research Cycles and Epicycles Through the Phases of Research and Engagement

Interdisciplinary Interview Inquiry

Candace Doyle

My first interviewee was Candace Doyle, Dean of the School of Healthcare at Midlands Technical College. She has 35+ years of clinical and educational instructional experience. I specifically discussed with her the topics of anxiety and performance in clinical practice, the stress in students' experiences, and how she had managed students' performance pressure in her clinical role.

The interview began with some general questions about her background, and she shared her experiences of being trained as a perfusionist. She discussed how her education 33 years ago was particularly challenging. She had to endure what would be considered harsh treatment by today's standards, difficult training methods, and reprimands that bordered on verbal abuse. She spoke of how the experience made her a stronger person and instilled the "backbone" to be assertive and to stand up for herself. Conversely, she also expressed that those harsh experiences impressed upon her that she would never instruct a student in the same manner that she had to endure.

She later described her time at John Hopkins hospital, which was a "teaching hospital." She discussed how different the approach was in handling students and how teaching was overseen in a less stressful and more nurturing way. After practicing for several years, she

eventually transitioned to become a clinical instructor. She outlined the steps that she would take when instructing students on clinical perfusion techniques. The steps were as follows:

- She would demonstrate the technique for the student as the student stood close by and observed. This occurred numerous times to acclimate the student to the environment.

- When the student felt ready, they would begin to perform the perfusion techniques with Candace sitting next to them verbally leading them through each step in a "calm, steady and soothing voice." This process would continue daily in order to begin to instill the skills and procedures that the student would need to master.

- If an emergency were to occur, the student would step aside, and Candace would take over to handle the emergency situation. The student would be close by to observe how Candace handled the emergency. Afterward, a debriefing session between Candace and the student occurred to discuss the situation, how she handled the event, what modifications she had to make in her technique based upon the patient, and her line of thinking in the moment.

- The student then resumed practice with Candace slowly withdrawing (fading) verbal instructions and feedback to help the student become more independent with the perfusion procedures.

- When the student felt comfortable, they would inform Candace that they were ready to be formally "assessed" during the rotation and tested on competency.

She mentioned that John Hopkins was a "teaching hospital," and that the culture was student friendly. She emphasized that all team members did their best to assist in the education of students.

I felt that Candace's approach seemed to make perfect sense and mirrored some of what we try to do in the PTA program. Unfortunately, our students do not have the ability to test when they feel they are "ready" as they have numerous competencies that need to be assessed sequentially. This means that the testing schedule has to be strictly adhered to.

Benji McCollum

My next interview was with Benji McCollum, the Director of the Emergency Medical Technician/Paramedic program at Midlands Technical College. Benji has 15 years' experience as an Emergency Medical Technician (EMT)/Paramedic and five years as an educator at the college. Benji discussed how "human factors" are often what causes mistakes in emergency situations. Human factors could be poor decision making, inferior skill development, overlooking essential steps in a procedure, or panic. These human factors lead to mistakes in emergency situations that can potentially have catastrophic consequences. Several strategies were discussed on how to mitigate the detrimental effects of stress in an emergency.

Benji stated that as part of the paramedic training, there are specific approaches that are used to prepare EMTs for high stress fieldwork. The following were the top three approaches:

1. **Stress inoculation**: providing stressful situations in "micro-doses." Which are a series of stressful situations that build in intensity over the course of time. This practice is implemented by first exposing the student to a low-pressure situation, then over time increasing the complexity of the situation and the stated consequences of the outcome. The expectation is that this will desensitize the student/clinician to the high-pressure stimulus. This strategy gradually builds cognitive/emotional resistance to construct a higher tolerance to anxiety.

2. **Checklists**: are used to assist EMTs/Paramedics with staying on task and following all necessary procedures to ensure decreased risk for human errors during an emergency situation (Gawande, 2010). Checklists are developed for emergency technicians on a variety of situations. They are kept on a lanyard attached to the technician for quick reference as they are printed on small note card size paper. Also, there are books that are kept in the ambulance with a variety of checklists along with, Standard Operating Procedures (SOPs), and other procedures that can be quickly referenced. The accessibility of checklists is important as the clinician will need to reference these documents rapidly in order to provide a timely response.

3. **Cognitive reframing**: one's attitude is extremely important for success. This strategy is used to view the situation from a different perspective than is currently being held at the

> time. From the perspective of an EMT arriving at an emergency medical situation, the mental shift would be from one of high stress to that of readiness. Benji described this attitude as "I'm ready, let's go!" This cognitive reframing of the situation allowed for better mental equilibrium and mitigated episodes of being overwhelmed by chaotic sensory stimulus. It also helps to foster mental resilience as a form of cognitive protection against issues of performance and recall.

The interview concluded with Benji discussing the details of some checklists that are utilized in the field by Paramedics/EMTs. At a conclusion of the interview, I felt that Benji had given me some important tools that I could use with the PTA students.

Dwayne Lee

I later interviewed Dwayne Lee who is the Criminal Justice Program Director at Midlands Technical College. He served in the field of law enforcement as a constable for 23 years. Dwayne discussed "Mind Armor" which is a program utilized in law-enforcement to address effects of PTSD with law-enforcement officers exposed to dangerous highly stressful situations. It also has preparatory measures of training to assist with providing the officer with a strategy of cognitive protection involving mental barriers in order to disengage from the stressful and dangerous situation. As noted in the Mind Armor literature (Machowitz, 2000):

- Recognize there is only one constant in every situation: You.

- Find improvement. Do anything to better yourself. This may include training, role-playing scenarios, or attitude adjustment.

- Separate yourself from the situation. You are not the situation; it exists independently from you. You are not responsible for external issues or others attitude. Work to control yourself, not the situation.

As we discussed this information, Dwayne emphasized the need for the officer to be able to detach themselves from the situation to the degree that they can stay emotionally neutral and focus instead on the situation as an observer. The goal is not to become so immersed in the situation that emotions drive stress to the point that the adrenal glands activate, and the situation becomes one of "fight, flight, or freeze." Dwayne noted that there is an "optimal level of stress" that improves situational awareness and motor function. When there is some measure of pressure to carry out an important task, there is also incentive to focus energy and attention on it. This is important especially if there are other more interesting tasks vying for that attention (Janse, 2019). Dwayne explained that an optimal measure of stress is required in order to heighten engagement and response to the situation. The challenge for the law-enforcement officer is to operate within that range and not to be overly influenced by the stressful situation to the point that stress impedes judgment and motor performance.

As I completed the interview with Dwayne, I considered how the information that he provided connected congruently with that of the preceding interviewees. Everything seemed to be related to mental management regardless of whether the stressor was internal or external in

nature. Collectively, I had amassed a significant amount of data on the various approaches of stress management from the perspectives of healthcare and law-enforcement specifically. I realized at the conclusion of the meeting that I need to spend time considering how this information could be utilized by instructors and students of the PTA program.

Initial Reflection on Interviews

As I considered the information that I had been given during the interviews on anxiety and performance, I hypothesized that what the students need is what I will call a Metacognitive Mental Management System. My thoughts were that they need a set of metacognitive strategies and a cognitive memory aid/tool to be utilized in moments of high-stress to refocus or re-calibrate to manage anxiety levels. Developing strategies and techniques that would help the students in those situations to direct their muddled thinking towards a more optimized clinical decision-making process would be an essential aid.

Based upon my research findings up to that point, numerous elements would need to be synthesized in order to design the Metacognitive Mental Management System. Components to include could be:

- **Mindful breath control:** "Breathe and Think" The implementation of relaxation/breathing techniques for use before the student or clinician finds themselves engaging in an emergency situation and continues throughout (Doyle, 2021).

- **Checklists:** The checklist should start by listing the necessary sequential steps that occur in practice. Then build a checklist specifically designed to facilitate these steps). Additionally, mental anchors could be used to assist with recall and focus on important information (Gawande, 2010; McCollum, 2021).

- **Stress inoculation/Stress micro-dosing:** The practice of introducing stress incrementally first in small amounts building to longer and more intense durations over the course of the competency assessments during the semester (McCollum, 2021).

- **Metacognition:** Mental rehearsal and recall of the stressful event to familiarize and desensitize the student to the situation. This method also allows the student to begin to question their decisions, behaviors, and optimal responses through the mental activity of rehearsal and recall (Schoenberg, 1992).

- **Perspective reframing:** Allows a mental shift in focus towards a "can-do" attitude by reassigning meaning to the stressful event (McCollum, 2021; Schoenberg, 1992).

- **Mental Armoring**: emphasizing emotional detachment and objective assessment (Lee, 2021; Machowitz, 2000).

As a result of my inquiry, I felt that developing strategies to help students in highly stressful situations would be paramount for improving patient care and student-clinician sustainability. As I have observed students performing competency assessments over the course

of the last decade of teaching, the certainty with which stress producing anxiety affects performance is incontestable. My postulation was that by providing students with a mental management method, their performance on examinations both didactic and clinical should improve.

However, there remained a lingering issue of disagreement amongst faculty of the program concerning a direct student intervention to assist with their “stress reduction.” Historically, earlier generations of students within the PTA program have undergone rigorous assessment testing in which the assessors could be construed as direct, abrupt, and moderately antagonistic toward the students as they performed their procedures. This was done to inflict greater amounts of pressure upon the student with hopes that the student would be able to tolerate this pressure and maintain their focus on the task at hand. The intention of this tactic was to mimic stressful clinical environments and the anxiety that they can produce. This approach was used to reinforce that an acute medical emergency requires intense focus, critical thinking, problem-solving, and intentional, purposeful task performance.

This evaluative tactic served to identify students who were challenged by such an intense testing environment. The students unable to tolerate these types of assessments soon withdrew from the program citing that they were "overwhelmed and could not handle the stress.” For those continuing in the program but still not able to adapt to the intense pressure placed upon them, they inevitably made critical mistakes during their competency assessments that resulted in their failure of the assessment. After that initial competency was failed, they were given a period of time which could be from one week, up to two months before they were allowed to take the

reassessment depending upon scheduling opportunities. This was with the knowledge that if they fail their second attempt they would be expelled from the program.

If one can imagine the intense sense of dread and apprehension that the students must have experienced as a result of this waiting period, then one can appreciate the anxiety-producing anticipation that the students must have endured while waiting to be reassessed. If stress-produced anxiety was the cause of the first competency failure, what would be the chances of the student passing the reassessment with all that additional pressure placed upon them? The implication is that their future career path, and all of the money, time, and sacrifice would be at stake and at risk for being lost without anything to show for it. The student's success would essentially be balanced on their ability to perform under intense pressure, which they have already demonstrated in a previous competency gave them difficulty.

Proponents of this approach favor placing students in high-pressure clinical simulations to assess their response to these highly stressful situations. Challenging clinical assessments are common for healthcare students. Healthcare education utilizes high-stakes realistic simulation to prepare students for medical situations (Takhdat, Lamtali, & El Adib, 2021). The argument made by some faculty is that students will be expected to work in a profession that will be filled with unexpected situations in which direct patient care may require them to rapidly adjust, critically think, and problem solve in intensely stressful situations. Situations that may be to the magnitude of determining life or death.

I made the decision to speak with some experienced practitioners within my own field of physical therapy to gauge their opinion on the matter. At this point in my research, I felt that I needed to present my findings to experts within my own profession that would give me a practical perspective to consider when possibly designing a model for implementation. I chose two clinicians who I have worked with for a number of years and who have shared in my teaching responsibilities within the program. I spoke with a colleague with more than 25 years of clinical practice and management experience as well as a clinical instructor with 18 years of direct patient care experience and student education responsibilities.

Interview with Constituents

Dialogue with Rachel

Rachel Freeman is a graduate of the PTA program from 2004 who specializes in the areas of Pediatrics, and Neurological Rehabilitation. She has been employed with a prominent hospital system in the southeastern United States since graduation. She serves as an adjunct instructor for the PTA program and is involved in clinical preparation, and competency testing. Rachel is also a clinical instructor who accepts students for clinical rotations from various PTA programs in the local area throughout the year.

I interviewed Rachel one afternoon at her job during a scheduled break that she had between patients. I indicated to her that I am performing research on ways to mitigate stress-producing anxiety for students. I specifically inquired as to her opinion on the matter. I asked her if she thinks that we need to find ways to help students manage their acute stress levels in

order to perform better. She took a very different stance than I expected. She stated, "Well, do you want a physician working on you that has never been under any stress and pressure? What are you going to do when you are in a situation where the patient is asking you questions, and you don't know the answer, but you have to look competent? What are you going to do when you have to be accountable for outcomes for a patient? What are you going to do when you are in a situation that you have to be the expert and people are looking to you for the answers? Are you going to just fold under pressure?"

I took a moment to consider her response then asked her what exactly she expects from students who are just beginning to learn the fundamentals of this profession. She responded, "When I have a student come to my clinic and I instruct them, I expect them to pay attention, take their role seriously, and perform up to my level of expectation. That expectation is that I want the student to treat each patient as if they were treating their own family member. As I work in a neurological setting, I work with patients who have spinal cord injuries, Parkinson's disease, suffer from cerebrovascular accidents, and patients with degenerative brain disorders. A lot of my patients are medically fragile and need very focused attention. I need students who can be trusted to work with these patients and not break down if something goes wrong. This isn't just my expectation. It is also the hospital's expectation and the patient's family members expectation."

I asked her if she felt that we have a measure of responsibility in considering how much stress and pressure we place on students. She said, "Well yeah, of course we do. We are not here to break them; we are here to build them. But to do that, we have to let them see what they

have to deal with in this profession. Most people don't realize how acute many of our patients actually are. Most people think we just perform exercises or walk people down halls. The perception is that we just do exercises with people. We do a lot more than that. We take care of patients with severe disease, different types of disability, people who are medically fragile, and people who are having to adapt to a new way of living because of injury. Guess what? That's pretty stressful! We have to prepare students for that. If we don't, it's a disservice to them."

My interview with Rachel was cut short when the next patient scheduled on her caseload arrived early for treatment. As Rachel politely dismissed herself to go treat her next patient she said to me, "I think this is important work Michael, but students need to struggle, that's the only way they're going to get stronger." I left Rachel's clinic with a myriad of thoughts circulating in my mind. I sat in my car and an idea emerged to the forefront of my attention. In physical therapy, there is a concept called Wolff's Law. This concept was developed by anatomist and surgeon Julius Wolff when discussing weight loading on the skeleton. The concept is that if a healthy bone has increased weight placed on it, it will remodel itself over time to become stronger and resist the increased load (Lippert, 2017). This concept is often examined in physical therapy when discussing resistance, resilience, and progress with regard to patient care. I began to wonder if the students need that sort of increased cognitive load, stress, and pressure to become "stronger" as Rachel says? Is it really just Wolff's law that we are using to push our students to be better? I had much to consider.

My next interview would be a week later with a colleague that I have worked with for more than six years. At the point this interview was conducted, my colleague had little

knowledge of the premise of this project. She only knew that I was conducting research on stress and anxiety.

Dialogue with Sherry

Sherry Fadel is a longtime physical therapist who graduated from Duke University in the early 1990's. She had a clinical career of 25 years before becoming the Academic Clinical Coordinator of Education and full-time faculty member within the PTA program. I met with Sherry before her lecture one morning to discuss this project's purpose of finding ways to address stress-induced anxiety levels in students.

I specifically asked her what the role of stress is in the PTA program and what she thinks about looking for ways to make things less stressful for students, she stated, "Our students need to experience stress. They need to experience difficulty and they need to fail. Then they need to learn how to bounce back and overcome it. Students need to experience failure in a safe non-direct patient care environment. They need to be put under stress and learn how to deal with that stress. It's an important thing for them to handle at this stage."

Sherry went on to say, "Our program is unique because it is an "immersion program" which means that during the students' time here, they have to be completely dedicated in order to pass their courses. We have high academic standards, rigorous testing procedures, and minimal room for error. Because of this, students must limit their time working, if they even work at all. Many of them can't work while they are in the program. They have to make social sacrifices in order to dedicate the appropriate amount of time to study. They need to focus on classroom

information and develop the clinical procedures and techniques. Is it demanding? Absolutely, however, our program has produced outstanding clinicians in our local area. We have had two students within the last four years who have scored perfectly on the national board exam. That is unprecedented. It's hard to argue with our results even if you do not agree with our high expectations and rigorous methods. We have had a 100% national board exam pass rate for the last six years. Our students have a reputation in the local community as being disciplined, competent, and reliable performers. Why would we change how we do things?"

As I considered Sherry's words, I recognized that there needs to be some stress to build resilience. But mind-numbing, performance-reducing, physical reaction type of stress? I became defensive. I informed her that I am not seeking to eliminate student stress. Of course, we need to continue to put students in stressful situations to challenge them. We have to mimic real world scenarios that students may find themselves in. That is not the issue, I am not trying to make things easier and eliminate stress. I replied, "What I'm trying to do is give students tools to better navigate stress-induced anxiety. I have no issue with students failing and not being successful when it is an issue of lack of preparation, a lack of knowledge, or bad judgment. What I have an issue with is when I have students who fail competencies and afterwards state, "I don't know what happened, I know this material, I really do, I was just in the other room running through all these techniques and I knew them cold. But as soon as I walked in this room, I got super nervous and couldn't remember anything. My mind just went blank.""

Sherry stiffened in her chair and stated, “Well that is what I’m talking about. They need to learn how to handle that and the only way they’re going to is by being repeatedly exposed to it.”

I then told Sherry that I do not agree with the “sink or swim” approach. I informed her that I feel this approach is antiquated, elitist, and cruel. I went on to say, “Stress-induced anxiety paralyzes students and inhibits their ability to think. I want to give students tools that they can use when they walk into a stressful situation, a situation they have little to no control over, a situation that is inherently stressful by the circumstance, and still have them be able to perform because of the tools that I have provided them with. These should be tools that they can use to keep themselves calm and focused under pressure so that they can think and process what to do.”

Sherry interrupted, “If we give them too much, we deprive them of their ability to develop those strategies through the interaction with stress. Those are the methods they need to develop by going through the process. If we give them the tools upfront, it defeats the purpose of putting them under stress.” At this point in the conversation, my mind was racing, and my emotions began to supersede my logic. I countered her by stating, “We can't assume that all of our students possess these skills. Some students may have already developed these skills in their life through the practice of sports or a supportive, nurturing family. However, other students may not have developed these “life skills” and need to be taught how to cognitively reframe to put these stress producing situations into a perspective that they can process through. I don’t enjoy watching my students suffer.”

At this point in the conversation, things became very tense, and I could tell it was no longer productive. We could both sense that. As Sherry is a colleague and friend, there was more latitude that could be allowed and still be considered tolerable by both parties. However, we were closely approaching that limit. Fortunately for both of us, it was time for her to teach lecture that morning and for the conversation to end. I thanked her for her honesty and for providing me a strong counter argument then left to return to my office. As I sat in my office chair staring at my computer screen, I could not help but wonder in much the same way as I did when I spoke to Rachel if pursuing my line of thinking would truly be of benefit to the students.

As faculty of the program, I acknowledged the hegemony that was at work regarding competency assessments and student evaluations. I knew that it is a privileged assumption to think that our students already have the skills, experience, and insight to manage their own stress and anxiety. My goal was to address the inequity that I felt was present by assuming that all the students were equal in their training in mental management. I understood that many of our students do not come from privileged backgrounds. I also strongly felt that they are being underserved by expecting them to "figure it out" regarding management of their anxiety and stress during high-stakes competency testing.

Student Stress Survey Analysis

I decided that what I needed to do next was ask my students. They were the ones experiencing the anxiety and pressure, so why not ask them for their thoughts on the subject? I designed an anonymous electronic survey of six questions and sent them to the current class of 18 students to complete (see appendix A, pg. 61). The survey consisted of six questions that

asked the students specifically about their experience of stress, how they view stress, and what coping strategies they use. I asked them to fill it out as honestly and completely as they felt compelled to. I received quite a response.

14 of the 18 students replied. Unquestionably, the responses indicated that stress is a major issue for the students. The students noted that the majority of overwhelming stress typically centered around competency assessments. When considering the results of the survey, it was difficult to ignore the profound effect that anxiety has on the students. Based upon the student responses, there were even some instances of how the programmatic stress carried over into their personal lives and how some students use methods that could be deemed unhealthy to cope.

These answers caused this researcher to question the morality of putting students under such stressful conditions. Although this method of instruction could be considered "traditional" or "old school," could it also be seen as simply an antiquated method for the modern student? Would providing students with specific tools and strategies to cope and manage their levels of anxiety not be helpful? The benefits could include improved academic performance, greater student satisfaction during their time in the program, the building of resistance to the negative effects of stress, resilience to rebound after a stressful event, perspective-shifting to provide positive meaning of a stressful occurrence, and preparation prior to a stressful event. All of these factors should lead to improved overall performance as well. So why should we let the students struggle without at least providing them with some tools that they can use?

Reflections on Literature

The results of the stress survey coupled with the conflict I had with my professional colleague caused me to take pause and reflect on my assumptions concerning stress and anxiety. My preliminary assumption on students' experience of anxiety during assessments was that stress needed to be mitigated or even eliminated as much as possible. My foundational position was that stress is harmful to performance. I had asserted that stress has detrimental effects on the person experiencing it. This belief led me to research within the field of cognitive psychology and I located several sources that concurred that stress degrades performance (Steinhauser, Maier, & Hubner, 2007; Arora, et al., 2010; King, Singh, Bernard, Merianos, & Vidourek, 2012; Nair, et al., 2020).

I also had to consider the research that I had performed by interviewing various "expert " sources from the fields of Education, Law, and Medicine. Interestingly, my impressions from these interviews left me puzzled. Although all of my interviewees noted that they felt stress could be detrimental, none advocated for eliminating it (Doyle, 2021; Lee, 2021; McCollum, 2021; Fadel, 2022; Freeman, 2022). I had struggled with professional colleagues who surprisingly were diametrically opposed to my then edict of mitigating or eliminating stress. I initially disagreed with the idea that stress is beneficial. I was resistant to the notion that high-pressure methods should be facilitated during student examinations. I egocentrically felt that I had matured to see that learning method as archaic and somewhat cruel. I acknowledged that students would experience high-pressure situations in healthcare. However, I felt much the same way as Candace Doyle, when describing her difficulties being instructed 30 years ago. She had

described an authoritarian, disciplinarian approach to education that was more common at that time (Doyle, 2021). As a result of that interview, my perspective was further reinforced. I began to view the need to impose tremendous stress upon students as garish and excessive.

At that time, I had been focusing on decreasing stress so much that I found I was having a defensive response to the idea that suggested the opposite approach may be more beneficial. I then uncovered another source that stated that allowing students to apply various cognitive strategies to help build resilience when under pressure effectively improves performance (Delany et al., 2015). This article caused me to begin further questioning my assumptions on the concept of stress and anxiety. I reflected on how anxiety is fundamental and experienced by everyone to some degree. Contemplating the Delany article and the various interviews that I had performed led to yet another recalibration of my thinking. This contrasting perspective claimed that stress should not be eliminated, but instead be facilitated to build resistance to it.

Puzzlingly, my ongoing research uncovered more recommendations that stress needs to be managed closely and its effects should be minimized on the individual (Schoenberg, 1992; McIntosh & Horowitz, 2017). Generally, stress is viewed as a negative experience that degrades performance. As Leblanc notes (2009):

> Elevated stress levels can impede performance that require divided attention, working memory, retrieval of information from memory, and decision making. These effects appear to be determined by the individual's appraisal of the demands and resources of a situation, the relationship between the stressor and the task, and factors such as coping

> styles, locus of control, and social supports. Given the potential negative impact of stress on performance, and the individualistic way in which people respond, medical educators might want to consider avenues for training learners in stress management (p. 525).

This research reinforced my first impressions that stress is to be avoided. The conflicting research findings just confused me further. It was not until I discovered Kelly McGonigal's work on what she refers to as, "the new science of stress" in her book, *The Upside of Stress,* that my perspective sincerely began to change. Within the pages of that book, I found a method that I could fully embrace. She presented a unique idea of how to reconceptualize stress-induced anxiety. She focused on the importance of cognitively reframing how we interpret a stressful event. McGonigal explains:

> The new science also shows that changing your mind about stress can make you healthier and happier. How you think about stress affects everything from your cardiovascular health to your ability to find meaning in life. The best way to manage stress isn't to reduce or avoid it, but rather to rethink and even embrace it (McGonigal, 2015, p. 12).

This idea immediately began to resonate with me from my work in the CCT Metacognition course. It made sense to me that how one views an event can determine the emotional and physiological response to it. After taking time to consider this notion and with added research, new ideas began to form.

After reading McGonigal's book, I began to research specific areas of mindfulness and meditation, reflective practice, and the use of cognitive strategies for memory. What if I did not focus on eliminating stress? What if instead, I used metacognitive concepts to help students reimagine stress and pressure? I envisioned synthesizing ideas from traditional meditation (Puddicombe, 2016), shifting perspectives to viewing the body's natural stress response as a tool that provides physiological and mental gifts (McGonigal, 2015), using checklists and cognitive anchors to help focus in the moment (Gawande, 2010), and learning from the experience through a specialized method of reflection (Lee, 2021; Mann, Gordon, & MacLeod, 2009; Puddicombe, 2016). As I considered these various ideas, I began to wonder how I was going to fit them together in a system.

Contemplating the fusion of these diverse concepts caused me to consider my time in the Critical and Creative Thinking program. Throughout the course of the CCT program, I had been working with a variety of ideas, mental models, paradigms, and thought processes that were completely novel to me. The purpose of the repository of methods contained within the program is to empower the student with countless skills and strategies that are designed to facilitate meaningful change. The primary objective in CCT is to "provide its students with knowledge, tools, experience, and support so they can become constructive, reflective agents of change in education, work, social movements, science, and creative arts" (CCT, 2022). One of the ways this process is created is by putting ideas in tension with one another. "People understand things better when they have placed established facts, theories, and practices in tension with alternatives" (Taylor & Szteiter, 2012). As I consider the amalgamation of ideas to include

within the model, I also realized that I needed to include my professional colleague's point of view as well. If not, I would not be putting my own ideas in tension with alternatives.

In CCT, we examine ideas and contrast them with their alternatives so that we can develop an understanding of the issue from multiple perspectives. This process of reflective critical thinking facilitates discernment and analysis, but also contains the seeds of empathy. Viewing issues from other perspectives and learning how to create generative dialogue, is a path to mutually beneficial outcomes. This process leads to a deeper understanding of not only the perspectives being examined, but also of the people examining them. As Bill Isaacs notes:

> The essence of dialogue is an inquiry that surfaces ideas, perceptions, and understanding that people do not already have….You have a dialogue when you explore the uncertainties in questions that no one has answers to. In this way, you begin to think together, not simply report out old thoughts. In dialogue, people learn to use the energy of their differences to enhance their collective wisdom (Isaacs, 1999, p. 2).

We are charged with becoming "reflective agents of change" as students of the CCT program. This is also our responsibility as critical, creative, and reflective thinkers in general. I thought about this responsibility and what it means to me on a personal level. I have an obligation to engage with things that I feel need to be changed; and it is best to create that change in a generative way taking other perspectives into consideration while contrasting them with my thought processes.

However, with the resistance that I had encountered, my self-doubts began to emerge. I began to question whether I should undertake this project at all. What if I was unsuccessful? What if I just created more conflict in my relationships with my professional colleagues? What if the students did not like what I designed? I entertained these negative thoughts for some time, obsessively engaging with uncertainty. I was slowly sinking into the depths of indecision and apathy.

I decided to take a break for a few days and give myself some distance from the issue. I shifted focus to my reflective practitioner portfolio that is a requirement in the CCT program. That project has the student reflect on their time in the program and on their experiences interacting with the material in each class that they took. I felt it would be a healthy respite.

As I reflected on my work in the CCT program, I specifically remembered the Design for Living Complexities course and the satisfaction that I experienced from creating models and designs. My designs were an expression of my creativity, and yet there was also logic contained within the frameworks. For me, immersing myself in the coursework was transformative. The most prominent emotion that I felt while reflecting on that process was pure creative joy. Could I infuse that same joy into this design process? Do I have enough knowledge and ability to create a model that would genuinely help students? Could I truly make a difference?

During this reflection, a Latin proverb by Virgil emerged to the forefront of my awareness. “Audentis Fortuna iuvat.” - Fortune favors the Brave.

In that moment, the decision was made.

I set out to design my system.

Design Planning and Construction

Prime the Mind

Planning and development of my model was shaped around three essential phases. Each phase served as the core of the model and represented a period of time in which stress and anxiety should be addressed. As I considered the competency process that students must undertake, I recalled that pre-event anxiety had been reported to be a major issue by the students during stress surveying. I realized that they need the intervention to begin before the competency to establish the necessary headspace to recalibrate their mindset toward success.

As I began to address this issue by developing the first phase, I envisioned it as a "Preparation Phase" that I proposed would effectively serve to "Prime the Mind" of the student for success. This initial phase would aim to establish a mindset that would lead to reconceptualizing a stressful situation. Within this phase, the emphasis would be on looking at a stressful event, not as a threat, but as an engaging challenge to be overcome. This would call for a cognitive recalibration to view stress as a tool to be used in the acquisition of success.

Within this first preparatory phase of the model, the purpose would be for the students to shift their mental disposition by using a cognitive reframe to reconfigure their mindset from one of fear, to one of resilience. I adapted two exercises within this section to help facilitate this objective. There is the Resilient Mindset Shift and the Stress to Success exercises. During the first exercise, the students are prompted to begin cognitively reimagining stress by looking at stress as an indicator that something they care about is at stake. The purpose of this first exercise is for the student to acknowledge that they do not care deeply about something that is meaningless to them. This acknowledgment allows the student to recognize that the activity they are involved in, is something worth engaging with. As a result of viewing the activity as meaningful, their body will activate specific physiological responses that increase heart rate, respiration rate, and a higher measure of sensory acuity. These physiological "gifts" can be used to help the student by supplying needed energy, awareness, and meaning to the situation.

McGonigal notes in her work, the body's response to stress depends on how the stressor is perceived. Physiological effects on the cardiovascular system and psychological impact on emotion are different between the responses to stress (threat versus challenge). The threat response primes the person for self-defense more than optimal performance. A threat response causes the cardiovascular system to constrict blood flow in preparation for blood loss during an engagement. It also initiates the inflammatory response and mobilizes immune cells to prepare for recovery from injury. This response also causes emotions such as fear, anger, self-doubt, and shame to potentially become issues as engagement with the threat could lead to overwhelmed cognitive processes. Conversely, the body responds to stress more akin to physical exercise in a challenge-response. The body relaxes blood vessels and maximizes blood flow to optimize

oxygen and energy supply for performance. During the challenge-response, emotions are typical of feeling excited, energized, enthusiastic, and confident. This response creates engagement with the event to acquire a goal (McGonigal, 2015). This considerable difference between viewing a situation as a perceived threat versus viewing it as a challenge impressed upon me the importance of making this distinction explicit for the students.

The recommendation to shift the perception of stress from that of a threat to a challenge led to the creation of a prompt within this section. This prompt suggests that students notice any stress they may be experiencing in a high-pressure situation and then welcome it. They are encouraged to welcome the "gifts" that brings them energy, increased awareness, and meaning. Then the student is to consider how they can best utilize these gifts to meet whatever challenge they are facing to succeed (Figure 1). This necessary step in the process helps them to re-envision their experience of stress. It empowers the student with the ability to embrace and transform their stress. To reconceptualize it not as a response to a threat, but as an activation system to help them engage with a challenge. The students then respond to the challenge by utilizing these "gifts" from the body, which will help to drive optimal performance.

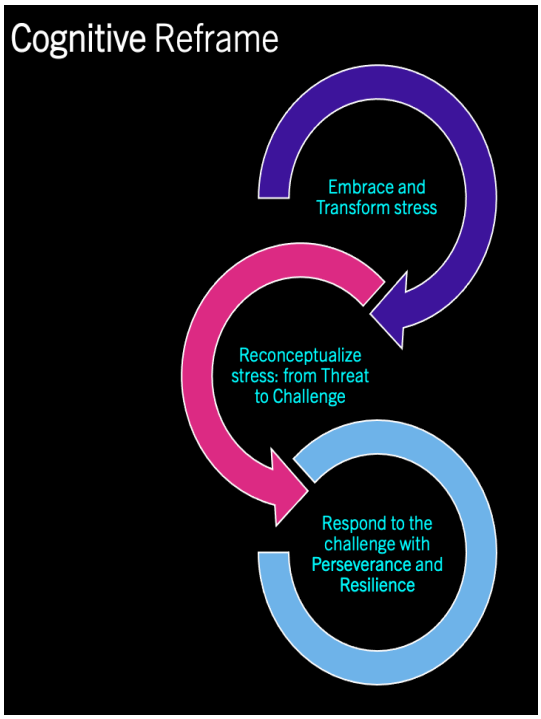

Figure 1: Cognitive Reframe Threat to Challenge

Once the resilient mindset shift exercise has been performed, the student is to move into the Stress to Success exercise which focuses on having the student recall an experience in which they overcame adversity through their own perseverance and determination. Several reflective questions are provided within this section that cue the student to think about what resources and strengths they used to help them meet the challenging experience. The students are then prompted to acknowledge what they discovered about their own fortitude and determination during the experience. This reflective process helps to empower the student by acknowledging their ability to overcome adversity.

Students are then prompted to "link their strengths" to the current situation they are engaged in. They are instructed to use their perseverance and strength that they have acknowledged in the previous step of the exercise and apply it to the new challenge. A cue

within the exercise reminds the students that since they have already overcome adversity before, they can certainly do it again with the current situation. They are then instructed to examine their self-talk and align it with their stated purpose of empowerment and preparation for the reframed "exciting challenge" at hand. After performing these exercises, their mental disposition should have shifted by transforming any sensation of stress into fuel to energize them towards performing optimally.

Focus with Purpose

The next phase of the model was constructed as the Performance Phase also to be called the "Focus with Purpose" phase. In this phase the student will focus specifically on using cognitive anchors that will help guide them towards optimal clinical decision-making. In this section, students will be working from cognitive anchors that act as decision-making prompts to guide their thinking when deciphering clinical scenarios and medical situations. I decided to use the acronym DPT, which students of physical therapy are already familiar with as it stands for Doctor of Physical Therapy. I reimagined the familiar DPT acronym to stand for Diagnosis, Protection, and Template. Cognitive anchors in the form of checklists have been used with great success within various fields to include medicine, aviation, law enforcement, and business. As Gawande states:

> Checklists seem able to defend anyone, even the experienced, against failure in many more tasks than we realized. They provide a kind of cognitive net. They catch mental flaws inherent in all of us--flaws of memory and attention and thoroughness. And because they do, they raise wide, unexpected possibilities (2010, p. 40).

I designed this section to contain specific techniques and strategies that would help to keep the student in the present moment and focused upon the problem at hand. I had seen students become distracted and lose focus numerous times before that resulted in poor performances. So, I understood the importance of providing students with cognitive anchors to be used as a checklist. I felt this would focus students better and prevent them from thinking about previous mistakes or worrying about future tasks during the competency or clinical situation. My intention was to create a method for students to focus with purpose and remain immersed completely in the moment.

The DPT anchor was formed with the three keywords, Diagnosis, Protection, Template. Three governing questions were connected to the three keywords.

- **Diagnosis** = What is the primary diagnosis?
- **Protection** = What do I need to protect on the patient?
- **Template** = What treatment template do I need to use?

These three governing questions direct the student to identify pertinent information during any patient scenario. During a clinical competency examination when the student is provided with a clinical scenario, they would use the DPT anchor as follows:

The student would examine a clinical scenario and begin by asking, what is the diagnosis? Based on that, what part of the body specifically needs extra protection? And then,

what treatment template (one or more) would be best to use in the treatment session? By taking a few seconds after considering a patient scenario to use these anchors to facilitate their thought process, the students should better be able to generate appropriate responses for the scenario. If they become confused and unsure of what to do at any point in time, they can return to the cognitive anchors and use them as a guide (Figure 2). What is the diagnosis? What should I protect? What is the best treatment template to use? These three questions performed in sequential order should help the students to navigate scenario dissections and prioritize their next steps during competency assessments.

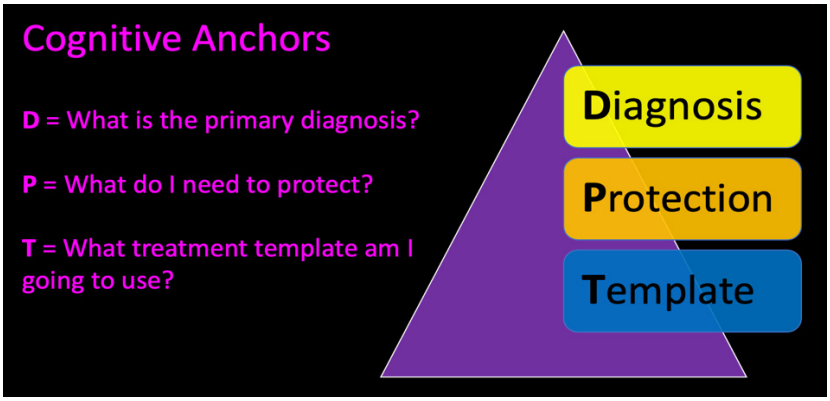

Figure 2: DPT Cognitive Anchors

Additionally, an expanded level of critical thinking and divergent ideation was built into this section to provide examples of an analytic thought process for the students to model. Each cognitive anchor can be expanded beyond the initial question into deliberation regarding the specific component being focused on. For example, once the student discerns the primary diagnosis, they can then ask, what does the diagnosis tell me about the patient's general condition? How should the diagnosis inform the treatment options? Based on the diagnosis,

what is the prognosis of the patient and the rehab potential? These are but a few generative questions that could emerge from consideration of the primary diagnosis.

The same expansive process is applied to the protection component as well. For this anchor, the student is prompted to consider whether there is a specific body part that needs extra protection based on the PT diagnosis? How will providing this additional protection affect the overall treatment approach? And how should the treatment area and patient position be set up to provide maximum protection?

Expanded questions for the template section include: Based upon the PT diagnosis and safety precautions, what treatment approach is best utilized to treat the patient during the session? What treatment template one or more should be used? What specific modifications should be made to the treatment template based upon the diagnosis, current medical status, and patient safety? What particular tools, techniques, procedures, modalities, and exercises should be used as part of this treatment template? By using these expanded questions in each anchor, the student can examine the clinical thinking process and begin to integrate the analytical way of dissecting the scenario and model.

The Performance Phase of the system can be simplified to keywords that are used to inspire the aforementioned thought processes (Figure 3). The Performance Phase formula:

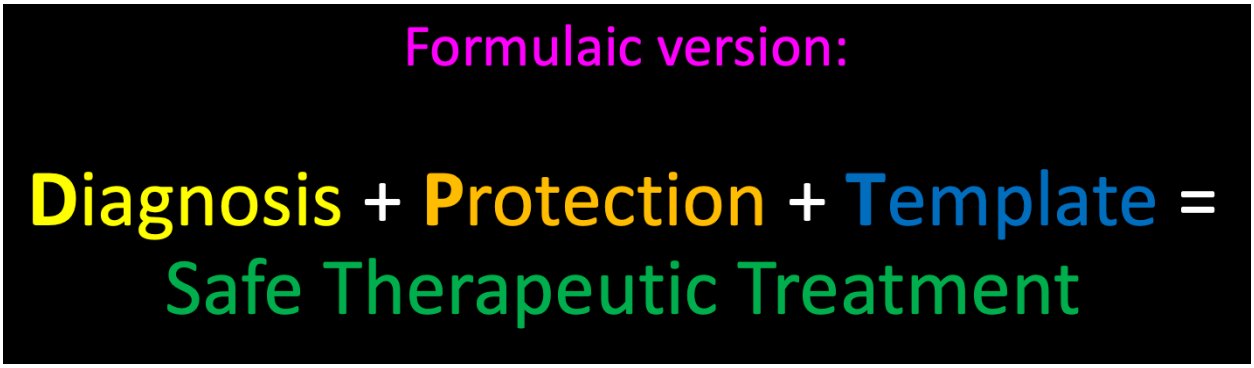

Figure 3: Performance Phase Formulaic Version

The real strength of this section is that it can be as sophisticated or as simple as the student would like for it to be. They are also instructed to modify any component within it to suit their individual needs at the time.

Reflect to Learn

The final phase of the model is the Reflective Phase referenced as the "Reflect to Learn" phase. The purpose of this section is to direct the students to metacognitively focus during reflection. Within this section, I drew upon principles from mental armoring (Lee, 2021) and meditation (Puddicombe, 2016) by prompting the student to reflect on the event as a third person observer to extract objective actions to improve. If the student were to focus on their mistake from the perspective of regret, remorse, or negative self-talk, then the reflection would not be optimal. Reflecting from the perspective of a detached observer, however, is useful in gaining an objective perspective with decreased emotional attachment to the situation (Lee, 2021; Puddicombe, 2016).

The students are instructed in this section to reflect on the event from the unique perspective of a third person observer by imagining that everything that happened during the event is being viewed as if it is a video recording. They are instructed to observe the video recording of the event as if they are a detached observer analyzing the situation objectively. They are then instructed to take out a piece of paper and perform a Plus/Delta feedback analysis. In CCT, Plus/Delta feedback is used to identify an item of appreciation in the form of a plus (+), then formulate a delta (Δ) which is a suggestion for something to be changed (Taylor & Szteiter, 2012).

There is strict instruction within this section not to focus negatively, but to objectively focus on positive things that can be done to improve the overall performance. The student is instructed to form a checklist in bullet point format of the (+/Δ). The purpose is for this data to be easily discernible as a checklist of positive items to be repeated, and suggestions for improvements listed explicitly. This is a checklist of things that should be done in the next performance to improve the overall experience and outcome of the competency assessment or clinical situation.

The students are also given reflective questions within this section to stimulate ideation. The reflective questions are:

- What are some specific things that could be changed and improved?
- What are things that should be done that would correct perceived mistakes and weaknesses in the performance?

- How can the clinician enhance the overall experience toward therapeutic optimization?

Completing this process will provide objective data on things that were performed well and on what needs to be done in order to improve the performance next time. This objective analysis can be used as a checklist when moving into the subsequent "Prime the Mind" cycle of preparation for the next competency, assessment, or event.

Reflections on the Design

I named this design the Metacognitive Mental Management System (MMMS). Its primary focus is to facilitate awareness of the students' mental processes and highlight the importance of directing their thought processes in ways that serve their higher purpose. The MMMS system is designed to empower students by helping to manage their mental dispositions and cognitive frameworks. It is a systematic guide that equips students with tools that are to be used before, during, and after a high-stress, high-pressure situation.

The MMMS design is cyclical in nature and each phase works to reinforce the next. The students start to prepare their mind by cognitively reframing stress. They practice activities that help them expel their self-doubts and realize their strengths and ability to overcome adversity. They then take this realization and move into the performance phase, where they use cognitive anchors to maintain their focus and guide them in their decision-making. After the event has concluded, they objectively reflect from the position of a detached observer and gain valuable

information that they then formulate into a checklist. They bring that checklist forward and fold it into the next preparation phase as they get ready for their next competency cycle (Figure 4). Each time they use the design, they become cognitively stronger, their mental skills are sharpened, and they better understand the design and how it can be used in multiple applications (see appendix B, pg. 66).

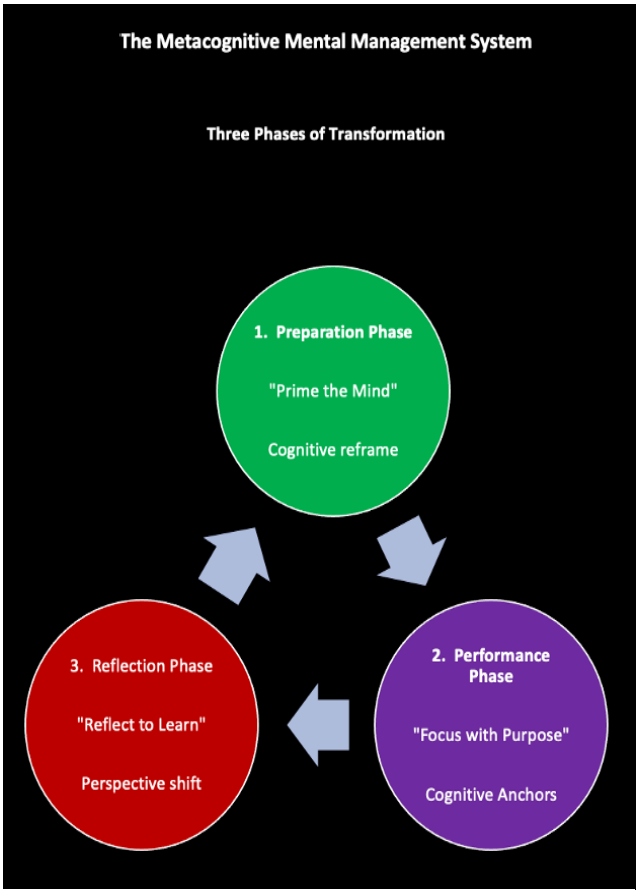

Figure 4: Three Phases of Transformation

Once the design was completed, I arduously examined each phase and began to use many of the strategies myself. I used the "Prime the Mind" exercises to mentally prepare myself for presentations with administrators at the college. I used the DPT anchor to assist with deciphering sophisticated patient scenarios when designing test questions for students. I utilized

the reflective detached observer and plus/delta feedback system when reflecting on my teaching performances within my courses.

Without exception, I found all of the activities and exercises to be immediately useful. I was able to perform better with less sensation of stress when in the presence of academic superiors. The patient scenarios that I examined were more easily analyzed when utilizing the DPT anchor to break down the components. The exercises within the reflective phase were also useful to me in examining how I can become more adept at engagement with my class. I formed a checklist and immediately went to work on improving aspects that I identified would help me create what Stephen Brookfield would call a "democratic classroom" (Brookfield, 2017).

As I had experimented with all of the activities within each of the three phases of transformation, I found them to indeed be transformative and I felt ready to introduce them to my students. I checked the schedule to see when the most opportune time would be to introduce the model for the students to use. I wanted them to use the MMMS design during a round of competency testing as they identified that competencies caused them the highest experience of stress within the program.

Implementation

I decided to introduce the model to my students prior to the next round of competency testing. I booked a Metacognitive Mental Management System orientation class a week prior to the next scheduled competency cycle to give the students time to familiarized themself with the model. During the educational in-service, the MMMS design was detailed comprehensively

using a PowerPoint presentation, a quick-start reference guide, and a 22-minute instructional video. These resources were also made available to the students' post-presentation for future reference via a web link (see appendix C, pg. 67).

During the question-and-answer session held following the presentation, the students expressed excitement towards putting the MMMS design to use to gauge its effectiveness. With two competency testing cycles looming in the future, they would have ample opportunity to do so. The students immediately began to use the MMMS design in laboratory activities the very next day. I heard them referring to the "DPT" approach when working through scenarios during group collaboration activities. I was highly encouraged by this, and I also heard students mention "prime the mind" as I was passing by several lab groups unnoticed. I recall thinking, "They are taking this seriously. They are going to use the system. I am going to find out if this design actually works for them."

Evaluation of Student Feedback and Results

The following week competency testing occurred on a Wednesday and Thursday for two separate courses (Therapeutic Procedures and Electrotherapy). Adjunct faculty and primary course instructors administered the competency examinations as usual. At the completion of both competency cycles, all evaluators met to discuss the competency performances that occurred. I was pleased that no failures were assessed during the competency evaluations on either day. In fact, competency performances overall were assessed to have been much improved than in previous weeks with regard to levels of perceived anxiety amongst the participants. One of the assessors even noted that many of the students who previously struggled

with anxiety, seemed "unusually composed" during this round of competency testing. I was highly encouraged that the evaluators were able to discern a marked difference in students' performance during this round of assessments. "Decreased perceived anxiety," "better focus on the task," "less episodes of indecisiveness," were all comments that the evaluators made on student performances.

While these reports were encouraging, I recognized at this point that I needed to get feedback from the students. I needed to get their perspective on the MMMS design and what their experience was like while using it. I had the assessor's version of the competency performances, but I still required the students' feedback to give me a complete picture of the experience. I created an anonymous student feedback form specifically for the MMMS design with 11 questions and sent it to the students the day after the competency cycle for that week ended. Over the course of the next week 14 out of 18 students replied. I was pleased with the 77.8% response rate as that was how many students had initially responded to the stress feedback form earlier in the semester. I interpreted this data to mean that everyone who took time to identify stress as an issue, also took advantage of utilizing the MMMS design as a possible intervention.

Overwhelmingly, students praised the MMMS design and commended its usefulness in practical application (see appendix D, pg. 68). 100% of the students who participated in the feedback survey stated that they would use the MMMS design again in the future and that it was helpful. To state that I was pleased with the initial results of implementation would be an

understatement. The feedback that I received was tremendously supportive and impressed upon me the need to continue to promote the MMMS design's usage.

Further Developments

With the initial successful pilot of the MMMS design, continued promotion of its usage will be encouraged. The basic structure and activities within the design (see appendix E, pg.75), will be further developed into a module to be included in the PTH 101 Professional Preparation for the PTA course that I teach every August to the new cohort of students that enter the program. The benefit of having the design at the start of the program for beginning students is that they will be able to use this system during the first semester of competency testing. The first semester is when most students who have difficulty with anxiety struggle and historically fail out of the program. The expectation is that with this system in place, it will help students whose anxiety levels would otherwise cause them to be academically unsuccessful.

Further, as the PTA program is but one program within a larger school of healthcare, further engagement with a greater audience could be facilitated. Through some modifications of the MMMS design, a more generalized version could be offered to a diverse health science audience. I have identified several other health science programs that could benefit from a modified version of the MMMS design. I plan to speak with these program directors to discuss possible piloting of a modified version of the system within their curriculums.

There is also an interest in formalizing a teaching method to instruct other faculty members on how to facilitate the MMMS design and engage students with its activities.

Additionally, the Metacognitive Mental Management System could be introduced to the profession of physical therapy's national organization for possible publication within their scholarly journal.

Conclusion

My research on the subject of stress-induced anxiety and its effects on performance has led me from general assumptions, to conflict, to insight, and ultimately to inspiration. The creation of the Metacognitive Mental Management System is an important advancement in addressing student issues with anxiety. The ongoing implementation of the MMMS design will facilitate a change within the culture of the PTA program to acknowledge issues of student anxiety and provide a detailed methodology for its management.

This project began with a desire to help students in my program improve their performance on assessments. Many students in the program struggled, some failed. Each time that occurred, I was left wondering if perhaps with more specialized cognitive tools, they may have been able to pass their examinations and progress into a profession that advocates caring for others. My directive has been to create an intervention that would support their learning and respectfully engage them in a process-driven framework designed to empower and guide their decisions in challenging assessment scenarios and medical situations. Through the Metacognitive Mental Management System's design and implementation, substantial progress has been made by providing students with a methodology that directly addresses the issues of positive mindset during preparation, focus during performance, and learning during reflection. The MMMS design was explicitly constructed to remedy a previously ignored issue in student

education within the PTA program. The activities and strategies contained within the design serve to provide students with guidelines for mental management.

Reflectively, this project's research process produced a roller coaster of progress and challenges. From faculty disagreements, interpersonal conflict, conflicting research data and uncertainty regarding the reception of an intervention, many obstacles had to be navigated. Nevertheless, drawing upon the same perseverance and determination that is the hallmark of the MMMS design itself, a satisfying resolution was reached.

Reception of the model by faculty and students has been positive. Faculty approves of the model as it does not seek to eliminate stress or pressure and allows assessors to observe students in high-stakes, high-pressure situations. Students approve of the model as it gives them cognitive tools to help them prepare, focus, and reflect with a greater sense of control than they previously experienced. My personal goal of creating a system that is beneficial in improving the student experience and creating strong clinicians has also been met.

In the undertaking of this project, I have been inspired by principles from the Critical and Creative Thinking program. As this is a synthesis project, I have adapted assorted concepts which served to shape the various processes of engagement utilized in this endeavor. The most valuable thing that I have gained from this project is that through this synthesis process, I have actualized my potential in the CCT program. I have integrated concepts, moved from theory to practice, uncovered unknown cognitive strengths, and have maximized my skill sets. I am a critical and creative thinker, and I have become a "reflective agent of change." This realization,

now fully manifested within me, provides the impetus and drive to continue to make positive, impactful changes in the world.

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APPENDIX A: STRESS FEEDBACK FORM

Feedback from an initial anonymous student survey on the effects of stress in the PTA program.

1. Do you experience significant stress in the program?
(9 responses)

- Yes
- Yes
- In general yes. It is not constant stress however.
- Yes!
- I'd say moderate stress
- Not as much as I did in the beginning, but yes there are times where I still feel overwhelmed.
- Yes. I experience stress related the accumulation of tasks (multiple lecture tests, comps, skills checks, projects, homework) that build up. Some weeks are tougher than others.
- Yes, but I try my best to not let it take control. Rather, I use it as motivation.
- There were days in which I experienced significant stress.

2. What causes you the most stress in the program?
14 responses

- Failing one class could mean not being able to follow my dream. With other programs like in undergrad you just retake the class and keep going. In this program you fail one class you're out the entire program with no guarantee of getting back in, and if you do you have to start the whole thing back over.
- Feeling like I am not prepared even even I know I have put in the effort to be prepared
- Comps are pretty much the main source. Exams use to stress me out but I've became more and more comfortable with the way I prepare leading up to them.
- Comps
- Performance anxiety during comps; the workload; managing personal responsibilities and school responsibilities
- Competencies
- Competencies and tests. Striving for a good grade and then ultimately I barely skim by or fail
- Lab Competencies by far
- Learning to juggle the work load and find balance with my life outside of school
- The number one cause of stress for me is the competencies. Even though I come in prepared and know the material, the stress and nerves always play a role in my performance. Last semester with MMT and Goniometry, I got used to the stress and over time, I became more and more comfortable. I believe this semester will be there same, but there will be an adjustment period, since the comps are much more complex. I believe what makes the comps so stressful is not only due to the complexity of the content and the unknowns with the scenarios, but the fact I know I'm being tested and critiqued and

in the back of my mind knowing a small mistake can lead to an automatic fail. If I could block that out, I feel like I could perform much better.
- Competency exams.
- Having multiple assignments/assessments/comps due on the same day/due consecutively
- Trying to make sure I have internalized everything I need to know before a competency
- The most stress I experienced was managing the tests dates, as they where so close together and comprehending the new material.

3. How do you manage your overall stress levels?
14 responses

- Exercise, cry, pray, and consume things that help me relax (alcohol & anxiety medicine)
- I moderately manage my stress. Either by taking my mind off of stressful things, listening to music or watch a movie, or keeping my home/bedroom organized works best for me too.
- Having an organized environment makes me feel like I have my life together even when it might not be.
- Running or doing anything exercise related helps to calm my nerves. My stress levels also tend to heavily lean on how much I prepare for something in particular.
- Pretty well except in school
- Exercise, talk with friends, prioritize, pray
- Working out, aerial arts, baths, basically taking moments for myself outside of school. Deep breathing and telling myself "everything is fine, I am meant to be here, I was chosen to be here"
- Pray, try to be prepared for anything that could happen, remember that it's school, not a dangerous situation. I think about how some people want to be in my shoes in the program. It kinda makes me thankful for the stress.
- Having better time management skills and still giving myself time for things I enjoy outside of school.
- I resort to my habits that I've developed since highschool when dealing with stress. I take time to workout (resistance training, running, outdoor sports) and spend time with friends and family when I can. During/before high-stress situations in school (lab competencies) I try to practice slow breathing techniques to calm my nerves before walking into the lab. I also try to think positively to wash out any doubts or negative thoughts.
- Taking adequate breaks with time outside. Reminding myself to just breathe through it. Repeating the phrase "if someone else can do it then so I can."
- Venting to friends, having a few drinks on the weekends, trying to manage my time better

- Give myself 15-20 minutes when I'm stressed out to do something with my hands. Something artistic to shut my brain off for a few minutes.
- I stay extremely organized, prepared in advance all of my meals and set out my clothing. I set dates and time schedules for the tasks I need to complete. I have a set sleep time and wake time. In addition to the tasks, I set aside time to step away from my studies.

4. What specific strategies/techniques do you use during a stressful event? In the moment?

14 responses

- Taking a walk, deep breathing, disassociating (going on autopilot)
- I'm not sure of exact strategies but I usually think to myself that this stressful moment won't last forever and I can get through it. I try to take extra moments to calm myself down instead of immediately act under stress. When I immediately act, I tend to not help the situation.
- Usually I'm at my most stressed/anxious the day leading up to the event. When the time comes to comp for example my stress levels lower when I get into the room. In the moment though I tend to feel better when I go slower and check boxes off in my head as I go. Breathing also helps me with stress. Taking a deep breath is good for me.
- Try to picture my self succeeding
- Breathing techniques, maybe saying quick prayers
- Moments before test or competencies I meditate and do breathing exercises. The other day me and my partner sat together and played a guided meditation for Test Anxiety. It can be a lot to be in a class room before comps with everyone talking about how worried they are, to hear uncertainties. I often find myself talking myself and friends up. Positive mantras and affirmations. "We are here for a reason, we were chosen specifically to be here, we know the content, we are smart and knowledgeable, Failing one test or comp is not the end of the world and there are more opportunities to come, etc"
- Pause, take a couple deep breaths and think though what I'm doing
- Try to remember your preparation. Try not to rush. Take my time and remember what I've learned.
- Reminding myself that I have prepared myself using all the tools given to me In order to succeed. I also am aware that my anxiety in the situation is only my brain finding a way to psyche me out.
- I try to slow down and control my breathing, but it's easier said than done. I haven't found a technique that has completely worked for me yet.
- Event: taking breaks if I can to reset my brain
- Moment: focusing on my feet - grounding techniques
- During a stressful event, I remind myself that I am fully capable of handling the situation, that I am in this program for a reason and at the end of the day, I'm not a 100% perfect human being, and all that I am required to do is my best.

- Deep breaths, trying to shake off the nervous energy, listening to a few of my favorite songs that remind me of a place, person, or experience I had that brings me joy.
- During stressful events I organize tasks, request help from family and friends. In addition, I complete the most important first. I will keep focused and not let small details hinder me from dealing with the task at hand.

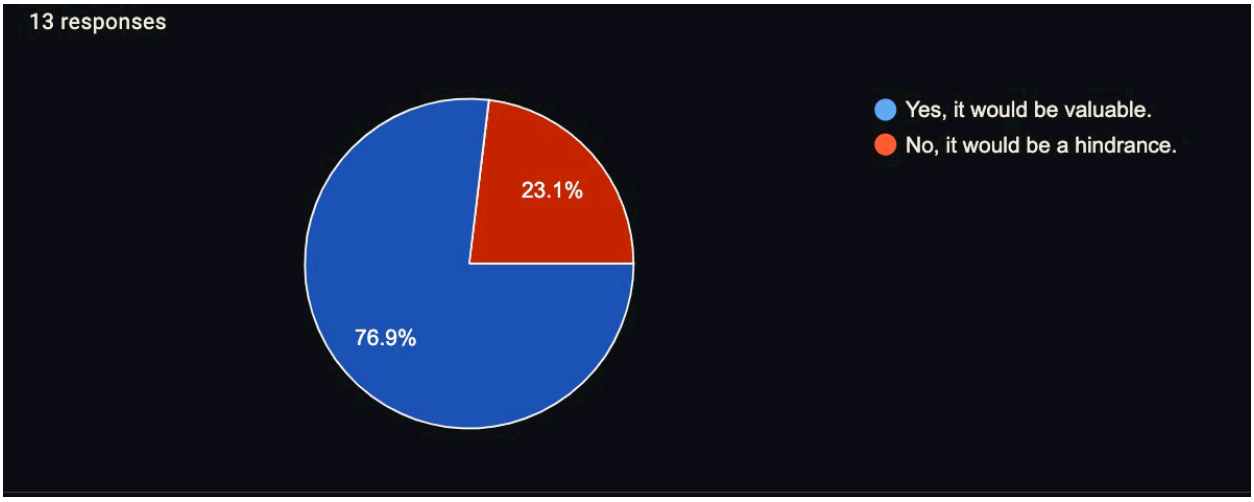
5. Do you view the experience of stress as helpful or harmful?
13 responses

- Both

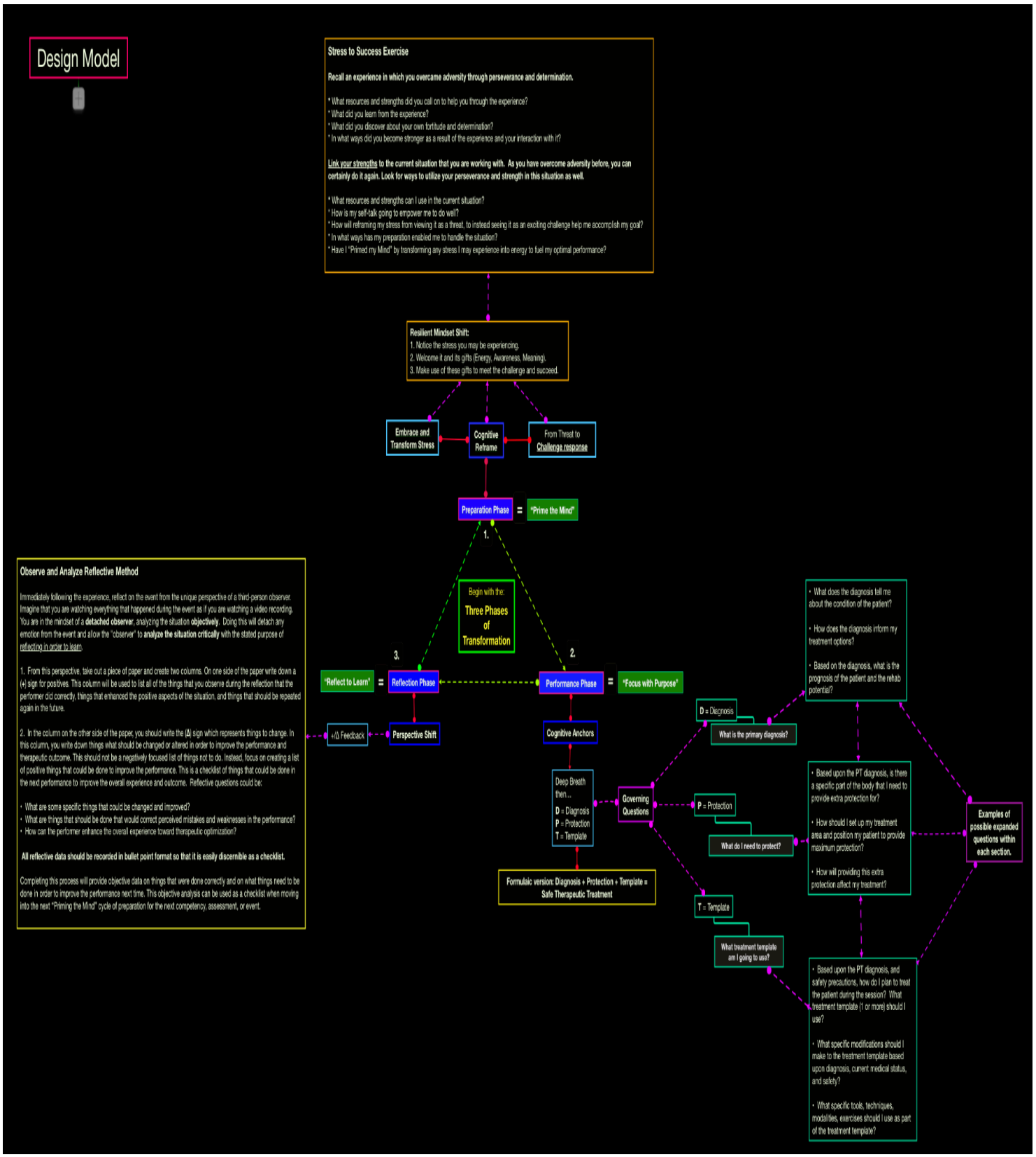
- I think a certain level of stress actually motivates me. However too much stress can definitely overwhelm me.
- I view stress as harmful in the present, helpful in the future. I know working under stress betters me for future endeavors and I know the application of stress has helped me improve my abilities throughout the program so far, but experiencing it real-time is not pleasant. It's hard to see the forest through the trees in the moment.
- Harmful
- It can be both. Sometimes it can push you to success but the stress I experience during comps is debilitating so definitely harmful
- Some experiences of stress are good because it is a learning opportunity and after a certain amount of time you become use (or numb) to it. There are times in the program where it can be overwhelming. The other week we had about 5 tests within a 7 day time frame, on top of homework, competencies and projects. I feel at times that we aren't allowed to make any mistakes, that there are certain expectations and if not met it could lead to the down fall of our career. This isn't a feeling all the time but there are times where it can get to that point. So for the question it can be helpful and harmful.
- Harmful
- Helpful in the long run. If you are never stressed or pushed hard, you can't expect to grow and learn. It is a huge part of growth as a person and PTA student.
- Depends. Sometimes stress keeps me in line and sometimes it can be debilitating if I let it get that point.
- I believe and view experiences of stress as helpful. Life is full of stressful situations regardless of what profession you pursue. Dealing with stress is something that we all have to deal with on a day-to-day basis. In the moment, it can be a lot to take in. I've let stress from comps, tests, school in general affect me for hours/days and have seen the toll it can take on my mental and physical state. I'm trying my best to not let it affect me so much and to move on. It's healthier to let go and find ways to release that stress.
- Both. I think stress without reason is harmful, but stress that is manufactured because I care about what I'm doing is helpful in the long run
- Helpful to a degree. It brings extreme focus and a sense of confidence. But can become harmful when it becomes overwhelming.

- I view stress as a sliding scale, depending on other events or responsibilities in a person life, stress can be a helpful tool to help a person progress in there goals and complete tasks. But for each person the experience of stress is similar to pain and is different for each individual and changes as they mature or advance in life skills. For me stress gives me a sense of urgency and keeps me from procrastinating or passing the stress over to someone else. However, stress for long periods of time without an outlet can start to cause physical harm causing people to become sick or practice lifestyle habits that are not beneficial to their overall health and life.

6. Would having a system of specific strategies/techniques to be utilized during an acute stressful event be valuable to you? Or would it be a hindrance? Would it just be another series of things that you would need to remember? (yes or no question)


13 responses
Yes, it would be valuable.
No, it would be a hindrance.
23.1%
76.9%

APPENDIX B: DESIGN MODEL



APPENDIX C: MMMS RESOURCES

These resources are to be used by students in the PTA program for the ongoing implementation of the Metacognitive Mental Management System. The materials are provided after an MMMS design orientation class that details the design's phases and applications of its activities and exercises for use specifically during competency testing. The students are also instructed that the system's designer will address any questions that they may have about the design. Students are provided contact information and invited to provide feedback or pose any inquiry they have concerning the design's usage or structural components.

Web link to the student resources for the MMMS design:

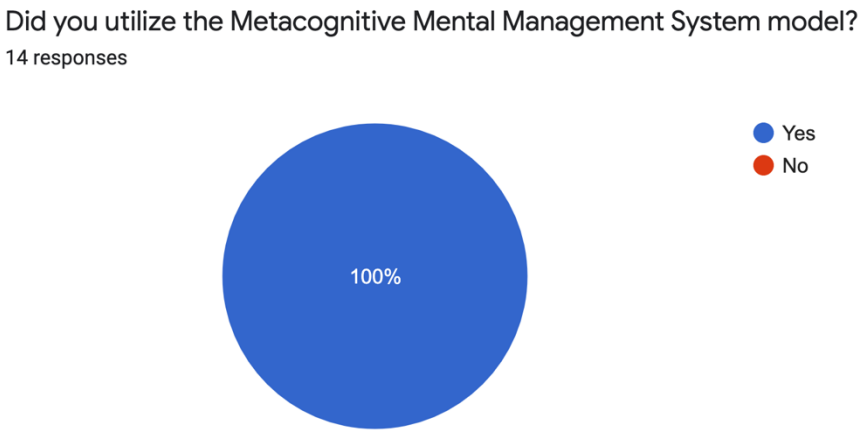
https://drive.google.com/drive/folders/19uD2AqTGiJ6kP9n-t7PZC9XahmyIY1lM?usp=sharing

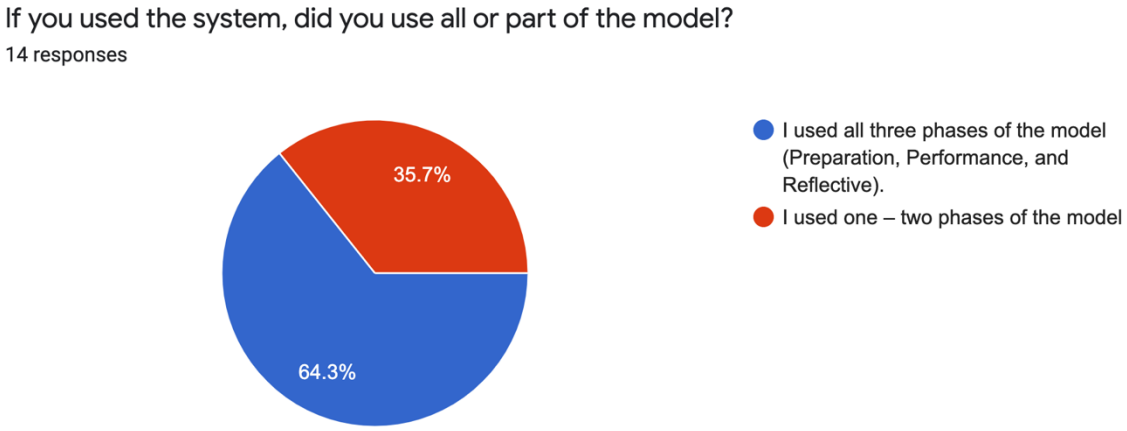
- Includes 22-minute video instruction on the MMMS model
- PDF of the PowerPoint detailing the MMMS model
- MMMS design schematic
- Student quickstart handout on the MMMS model

APPENDIX D: POST-IMPLEMENTATION SURVEY

Survey given after the implementation of the MMMS model

***Results from the anonymous student survey on the usefulness of the Metacognitive Mental Management System during competency testing.**





What phase of the model was most beneficial to you and why?
14 responses

- Preparation and DPT
- Prepping the mind. Helped to alleviate some anxiety. Positive self talk does wonders psychologically.
- Preparation. Positive mindset preparation is key to a successful performance.

- Prime the mind so preparation. Preparation seems to be the most critical for me because it sets the tone for the remainder of the phases.
- The performance phase is what probably helped me the most out of the three phases. I've always had an issue getting too caught up in the moment and never took time to give myself the chance to analyze the scenario and use my critical thinking skills. After using the "DPT" method, I found I was able to slow down and work through the process and what needed to get done.
- I found each of the three phases to be beneficial. I utilized the Reflection Phase after a COMP last week in order to give myself the required time to absorb the extensive feedback given from the instructor post-competency. I spent 1-2 hours reflecting on how I performed during the COMP in relation to my preparation and mindset prior to starting the COMP. This time allocated towards extensive reflection assisted me a great deal with making appropriate adjustments in moving forward with more focus, clarity, determination, and motivation to improve my performance consciously, consistently, and continuously.
- This week, I benefitted from last week's reflection efforts and was proud of my growth, which served me well each of the two COMPs. For this week's COMPs, I utilized both the Preparation Phase and the Performance Phase for each COMP. My energy was very positive, yet much more controlled, and I was genuinely excited to perform at a high level. I did conscientiously take a deep breath in one of the COMPs to simplify the clutter in my mind so that I could begin from the foundation of the DPT cognitive anchors. The rest of that particular COMP went fairly smoothly, minus a couple of mental "hiccups" from which I was able to recover and regain focus and clarity.
- Performance-because I have always prepared and reflection is a natural process for me. My weakness was in my performance because anxiety kept me from delivering what I know I'm capable of. Reframing my thinking did seem to help.
- Prime the mind because the mind is a dangerous thing. When you can calm it down enough you instincts and knowledge can flow easier.
- The reflection phase. Using this phase brought awareness to areas that I am lacking. The awareness helped me to actively engage and manage any changes I should consider for the next performance.
- Performance. Thinking through the DPT as I considered my scenario on the comp makes it much easier to plan my treatment.
- Preparation and Performance
- The most beneficial phase of the model was the preparation phase - reminding myself that I did in fact know what I needed to know and reminding myself that I was prepared and ready to crush the comps
- DPT -helped to stay focused on the immediate task at hand
- Preparation because I used to think negatively, so using the preparation to prep my mind to be more positive.

Is the model accessible and easy to use? Is it student focused and user-friendly?
14 responses

- Yes
- Absolutely.
- The model is definitely student focused and user-friendly. It may look complex at first, but once you break it down into the main three phases, it's actually really easy to follow and incorporate into daily life (especially for high stress things like comps)
- The model is certainly accessible and easy to use. I found it to be student-focused and user-friendly, as well. I am glad that I spent the time to utilize the model (all three phases), and I plan to continue to do so with each progressive step moving forward.
- I think it is easy to use - most of us are stronger in one area than others. I think it makes us focus on the areas that we need to improve upon.
- Yes, yes
- Easy and both student/user friendly
- It is accessible and everything is laid out simply and easy to understand
- Yes, very user-friendly
- It looks a bit overwhelming but it is actually easy to use
- yes, it is easy to understand and follow how each phase corresponds with each other.

Are there any phases in the model that you think are unnecessary or too difficult to use?
14 responses

- No
- Nah
- No not at all
- Not at all. I think it's formatted well.
- I don't think any phase is unnecessary. I think each phase plays a vital role. The only thing that I struggled with was taking a few minutes to reflect back on my comp afterwards because at that point, I just wanted a break to forget about the high stress situation.
- I think each phase in the model is important, necessary, and simple to use.
- This was a tough week, so I focused on the performance part of the model because I wanted to do well on the two competencies. "Prime the Mind" is a great concept and useful for tests and comp preparation. However, most students in this rigorous program are already to doing this. The alternative isn't an option if we want to be successful in the program.
- Maybe the solution part. Once your mind is calm and you know the problem finding the solution is not always simple. It's more than one way to skin a cat and sometimes there are many solutions and loving one is somewhat difficult.
- Each phase provides an opportunity to improve on performance
- I think they are all helpful
- Nope

- Not really, I don't spend a huge amount of time reflecting - I did really well on the comps/tests last week so I didn't spend so much time reflecting afterwards because I had prepared myself for success and then achieved that success

What is your general impression on the activities within the model regarding how they relate to the stated purpose of helping with test and performance anxiety?
13 responses

- I think the preparation is the most helpful
- It personally helps me a lot more with performance anxiety than test anxiety. Especially prepping the mind and the DPT method.
- They provide structure and clarity to break down a difficult situation mentally. They allow room for assessing rather than breaking myself down due to nerves.
- I think the model was very well put together and I'm sure you took a long time creating it and using it yourself before sharing it with us as a class. I think it helps with anxiety, but like many things, it may take a few tries to get it to really work. Anxiety will always be there but the more experience in those situations (as well as the more experience using this model) will definitely help in the long run.
- I like the concept of harnessing the fight-or-flight response for the purpose of eliciting excitement with a positive mindset, reinforced by thorough preparation.
- It helps to organize the path to success. You have to be prepared to be successful. You have to have confidence in your abilities and your knowledge to perform well. You have to reflect in order to build upon your strengths and learn from your mistakes.
- They definitely do help.
- The preparation will allow for the student to gain the knowledge needed for the task. The performance phase gives the student opportunities to display and practice the skills. Finally in the reflection phase the student has the opportunity to reflect back on tasks/skills and determine what they might implement to perform better.
- None of them seem irrelevant. They are all geared toward helping you process through your treatment session and to help eliminate stress and turn it to confidence.
- Initially overwhelmed but after reading through it was easy to apply
- I thought they did a good job of preparing the user for success
- It is very helpful in learning to harness anxiety

- It is very straight forward and I like the breakdown of each phase to help cope with anxiety and give a better outlook on how to stay positive and focus at the task ahead.

Did you modify any part of the model and if so, what modifications did you make?
14 responses

- No
- Nothing really just kinda narrowed it down to the main points
- I did not
- No.

- I can't think of anything I would necessarily change about this model.
- I see the model as a template which should be initially understood and utilized in its given form. After the initial use of the model, I found myself making slight modifications to fit my personal learning style, my perceived strengths/weaknesses (pre- and post-performance), and the specific feedback given from each instructor post-competency regarding my assessed performance. My modifications were limited, but I divided the model into four phases rather than three:
- Preparing, planning, and practicing —> Painting a portrait of positivity —> Performing procedurally and professionally —> Processing for proper perspective
- My modification would be focusing on one particular part of the model. I put more thought into DPT portion. It's basically all that I thought about beforehand. What is the Diagnosis? How do I Protect my patient? What is my Template and how do I modify it? I also focused on my self talk before the competencies. I told myself on Thursday that I was going to ace this comp and make the highest grade in the class. It worked!
- I am proactive about the solutions. See the problem, I go through and pick a few SIMPLE solutions then I calm my mind down to land on one.
- I kept it as simple as possible and completed as prescribed
- I didn't modify it
- No
- I think the only part I really modified was not utilizing the reflection part so much. Had I done poorly last week, I might have utilized it more intensely. But I feel that I was already set up for success with the first two components!
- no modifications

Are there any components that you would like to see added to or subtracted from the model? If so, please describe.
11 responses

- No
- N/a
- Not at this time. I've used it for the comps this week and it seems to be helping just the way it is.
- I think it should stay exactly the way it is for now. I think the three phases are just enough, but if there were to be more added, it could be a little too much/too overwhelming.
- I like the components of the model as they are currently laid out. I don't know what I would add or subtract from the model, but I did enjoy having the opportunity to practice with it and the flexibility afforded for me to make modifications based on my personal preferences.
- Possibly a check list and/or a ranking system that might point out aspects that are lacking. Another might be to add common areas that students struggle. Last a templet with prompt questions allowing the student to fill.
- I can't think of any.
- None that I can think of

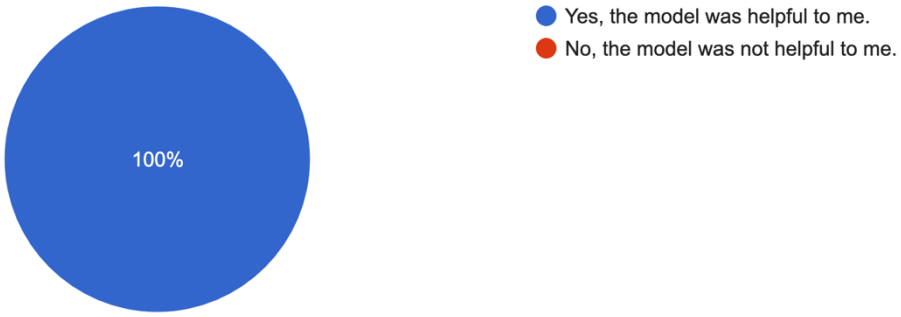
- None come to mind.

Do you think you will continue to use the Metacognitive Mental Management System to prepare for assessments and clinical situations? If so, why? If not, why not?
14 responses

- Yes bc it helped me conceptualize a little bit better
- I will use it to prep for clinical situations as it puts me in a good headspace and helps to dissect the situation and simplify it
- I will continue with preparation including using a positive approach.
- Absolutely. As I stated previously it allowed room for clarity and assessing a difficult situation rather than psyching myself out.
- I definitely will. The preparation helped me embrace the stress and importance of the task at hand. The performance phase helped me to be in the moment and to slow down and think. The reflective phase helped me to look back and see what I can do better going forward.
- I plan to continue to the MMMS with each progressive step moving forward--preparing for assessments as well as clinical situations. I plan to do so, because I have found the system to be effective and easy to understand.
- Yes. Because the components are very useful. If you do all three steps, then you will be successful. Reframing stress can be very freeing. It has a psychological impact that can reverse self-sabotaging habits.
- Yes, it helps helps to focus in on the problem right in front of you instead of the full picture of everything
- I will continue to use this method, however, it will depend on time constraints based on other tasked within my daily life.
- Yes. It helps reduce stress and eliminate worry of what to do under pressure. It helps create a plan.
- Yes! I've been looking for a method of simple things to focus on for my performance anxiety and this gave me a blueprint to trace my thoughts through
- Yes, it helped me feel more confident and focused going into stressful situations
- Yes it is a template that can continued to be applied to day to day life situations
- Yes, I had already started this process towards the end of last semester but I was missing some components and MMMS really help me understand the phases I needed to do in order to manage my anxiety and stress.

In total, was the system helpful to you for better managing your mental disposition regarding testing and performance anxiety?

14 responses



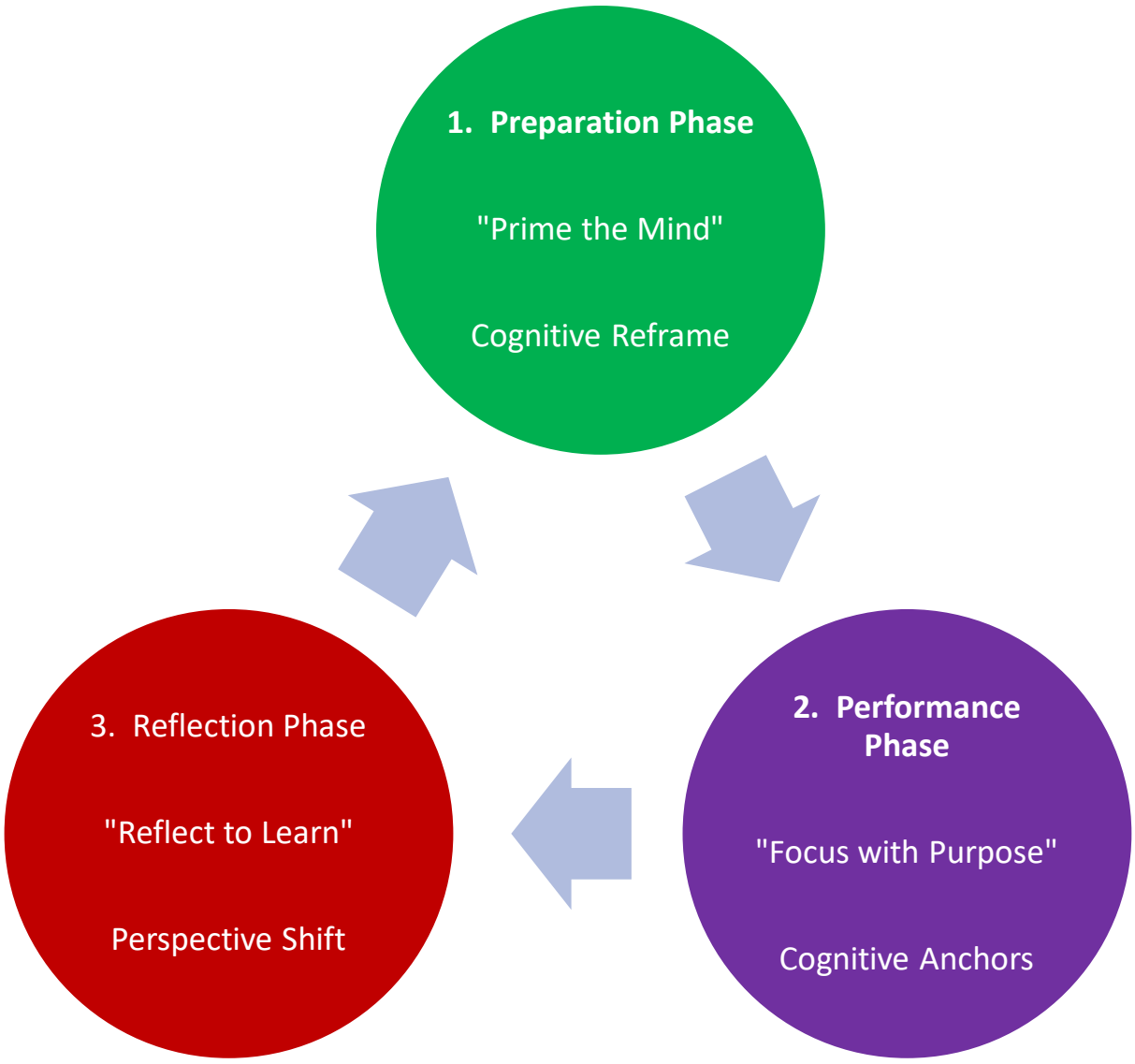
Do you have any other questions, comments, thoughts, suggestions, etc that you would like to share?

9 responses

- No
- It was helpful
- Not at this time.
- Thank you for sharing this with us and for giving us the opportunity to utilize it!
- no
- N/a
- N/A
- no comments, question, suggestions, etc.

APPENDIX E: THE METACOGNITIVE MENTAL MANAGEMENT SYSTEM

Three Phases of Transformation



Preparation Phase = "Prime the Mind"

Cognitive Reframe

Embrace and transform stress from threat to challenge response.

Resilient Mindset Shift:
1. Notice the stress you may be experiencing.
2. Welcome it and its gifts (Energy, Awareness, Meaning).
3. Make use of these gifts to meet the challenge and succeed.

Stress to Success Exercise

Recall an experience in which you overcame adversity through perseverance and determination.

* What resources and strengths did you call on to help you through the experience?
* What did you learn from the experience?
* What did you discover about your own fortitude and determination?
* In what ways did you become stronger as a result of the experience and your interaction with it?

Link your strengths to the current situation that you are working with. As you have overcome adversity before, you can certainly do it again. Look for ways to utilize your perseverance and strength in this situation as well.

* What resources and strengths can I use in the current situation?
* How is my self-talk going to empower me to do well?
* How will reframing my stress from viewing it as a threat, to instead seeing it as an exciting challenge help me accomplish my goal?
* In what ways has my preparation enabled me to handle the situation?
* Have I "Primed my Mind" by transforming any stress I may experience into energy to fuel my optimal performance?

Performance Phase = "Focus with Purpose"

Cognitive Anchors

Use mental anchors to focus and guide decision-making

Deep Breath
then…

D = Diagnosis
P = Protection
T = Template

D = Diagnosis What is the primary diagnosis?

- What does the diagnosis tell me about the condition of the patient?
- How does the diagnosis inform my treatment options?
- Based on the diagnosis, what is the prognosis of the patient and the rehab potential?

P = Protection What do I need to protect?

- Based upon the PT diagnosis, is there a specific part of the body that I need to provide extra protection for?
- How should I set up my treatment area and position my patient to provide maximum protection?
- How will providing this extra protection affect my treatment?

T = Template What treatment template am I going to use?

- Based upon the PT diagnosis, and safety precautions, how do I plan to treat the patient during the session? What treatment template (1 or more) should I use?
- What specific modifications should I make to the treatment template based upon diagnosis, current medical status, and safety?
- What specific tools, techniques, modalities, exercises should I use as part of the treatment template?

Formulaic version: Diagnosis + Protection + Template = Safe Therapeutic Treatment

Reflection Phase = "Reflect to Learn"

Perspective shift

+/Δ feedback

Observe and Analyze Reflective Method

Immediately following the experience, reflect on the event from the unique perspective of a third-person observer. Imagine that you are watching everything that happened during the event as if you are watching a video recording. You are in the mindset of a **detached observer**, analyzing the situation **objectively**. Doing this will detach any emotion from the event and allow the "observer" to **analyze the situation critically** with the stated purpose of reflecting in order to learn.

1. From this perspective, take out a piece of paper and create two columns. On one side of the paper write down a (+) sign for positives. This column will be used to list all of the things that you observe during the reflection that the performer did correctly, things that enhanced the positive aspects of the situation, and things that should be repeated again in the future.

2. In the column on the other side of the paper, you should write the (Δ) sign which represents things to change. In this column, you write down things what should be changed or altered in order to improve the performance and therapeutic outcome. This should not be a negatively focused list of things not to do. Instead, focus on creating a list of positive things that could be done to improve the performance. This is a checklist of things that could be done in the next performance to improve the overall experience and outcome. Reflective questions could be:

- What are some specific things that could be changed and improved?
- What are things that should be done that would correct perceived mistakes and weaknesses in the performance?
- How can the clinician enhance the overall experience toward therapeutic optimization?

All reflective data should be recorded in bullet point format so that it is easily discernible as a checklist.

Completing this process will provide objective data on things that were done correctly and on what things need to be done in order to improve the performance next time. This objective analysis can be used as a checklist when moving into the next "Priming the Mind" cycle of preparation for the next competency assessment, or event.