Expanding nuanced sources of teacher self-efficacy

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Abstract: - This phenomenological study explored the essence of the lived experiences of preservice teachers (PSTs) during clinical student teaching experiences as they described what they perceived as influencing sources on their teacher self-efficacy (TSE). Data were analyzed using Transcendental Phenomenological Analysis with In Vivo coding and Bandura's Social Cognitive Theory (SCT) [3] [5] [30] [39]. Data included transcribed semi-structured interviews and results added to prior research suggesting other sources of efficacy information and nontraditional sources inform the development of PSTs' TSE [29] [37]. Implications, delimitations, limitations, and suggestions for future research are discussed. Understanding the influential sources and how they may be interpreted by PSTs places power into the hands of those forming programs within EPPs. These results imply self-efficacious teachers perceive the complexities of teaching as being less threatening than teachers with less-efficacious beliefs about their professional performance, can successfully adapt and cope amongst stressful demands, and are more likely to experience job satisfaction and less likely to succumb to teacher burnout [13] [42].

1 Introduction

Thoughtful strategies are needed to address the outpaced supply of teachers and coinciding educational disparities in the United States [17]. Considering beginning teachers are consistently less likely to remain in the teaching profession than seasoned teachers, a limited supply of experienced teachers alongside an upswing in teacher retirements and voluntary resignations has led to a vast number of unfilled teaching vacancies [14] [23]. With challenges from the Covid-19 pandemic on education, the problem of teacher shortages across the United States has increased [14]. Prior research demonstrates attrition rates are lower among novice teachers with formal support networks and mentoring suggesting novice teachers who have education preparation programs (EPPs) or support systems to foster positive efficacy beliefs are more likely to stay in the profession [11]. However, teacher attrition remains a concern, particularly in low-income, racially, and ethnically diverse [46]. Efficacious teachers are more resilient, can manage challenging situations better and experience higher levels of career choice commitment [28].

Teacher self-efficacy (TSE) is a self-judgment of one's capabilities to successfully reach desired outcomes for student engagement and learning and has been shown to influence teachers' confidence, innovation, commitment, effectiveness, and students' academic achievement [47]. To improve public education in the United States, reform within EPPs is a crucial step (Zeichner et al., 2015), particularly when considering the implications of TSE on teacher and student outcomes, especially for students from marginalized backgrounds [44]. With TSE's influence on teachers' behaviors toward the complexities of culturally responsive teaching and implementing effective instructional strategies, it is not surprising that TSE is seen as a construct of foremost importance in improving education [12] [43].

Increasing TSE is beneficial for all students, but the impact increased TSE can have on teachers' confidence when working with students who have different cultural beliefs or behaviors, often marginalized students, that differ from their own is noteworthy [44]. Therefore, TSE is a key area to explore as a mechanism facilitating the relationships between teachers and their decisions in classrooms.

TSE can have a protective effect when teachers are coping with adversity. For example, when teachers have optimistic beliefs in their own abilities to successfully navigate daily challenges, they can be more motivated to engage in constructive ways of coping [42]. Across two studies, results

showed efficacious teachers were less susceptible to job stress and less likely to experience teacher burnout [42]. Similarly, in a study of 244 elementary and middle school teachers, Skaalvik and Skaalvik found that teachers with higher TSE are less likely to have the characteristics of teacher burnout [45]. These results imply self-efficacious teachers perceive the complexities of teaching as being less threatening than teachers with less-efficacious beliefs about their professional performance, can successfully adapt and cope amongst stressful demands, and are more likely to experience job satisfaction and less likely to succumb to teacher burnout [13] [42]. With more efficacious teachers who are more effective, resilient, and committed to their profession; student outcomes could be improved while the burden of teacher attrition rates on public education could be reduced.

Although many researchers have examined TSE, few have focused on the sources informing TSE to better understand their influence on PSTs' TSE development [29]. Among the few examining PSTs' perceived sources of influence on TSE (e.g., [15]) many studies have been quantitatively designed with minimal perspective from participants and included prompts which were inconsistent with Bandura's theoretical framework [5] [9] [29]. To remain open to any potential source influencing PSTs' TSE, this study implemented a transcendental phenomenological approach while framing the sources with Bandura's framework [5] [9]. Focusing on the sources of information PSTs rely upon when forming TSE during clinical student teaching experiences, the study explored sources of TSE influence among PSTs who had just graduated from their EPP and prior to their first professional teaching employments.

2 Problem Formulation

Research exploring teacher characteristics and students from minority and low-income backgrounds' reading achievement propelled interest in teacher efficacy research [2]. In those seminal studies, TSE was linked with student achievement. Since, TSE has been linked to multiple facets of teacher excellence and is important to conceptualize and harness through research efforts.

The concept of self-efficacy was raised by Bandura when he clarified that individuals' beliefs in their own abilities can guide their future behaviors and motivations [9]. A reinforcing feedback cycle is also present with self-efficacy beliefs [6]. Within this cycle increased self-efficacy beliefs lead to increased performance that in turn informs and boosts subsequent self-efficacy beliefs and confidence [6]. Self-efficacy is also considered tied to one's perceived level of control of oneself and the environment and whether they believe a positive outcome is possible [4]. Bandura established four sources (mastery experiences, verbal persuasion, vicarious experiences, and affective states/physiological arousal) that influence individuals' perceptions of being capable of successfully completing specific tasks [9].

Mastery Experiences

Mastery experiences occur when an individual has performed a similar or associated task well. In self-efficacy development, mastery experiences are highly salient influences [9]. When individuals perceive a performance as having been successful, a mastery experience, their self-efficacy is elevated and contributes to ability attributions and future beliefs that their performance will be successful [41]. When individuals perceive a performance failure, or negative mastery experience, their self-efficacy is lowered. Future expectations are that future performances will also be poor. Given the malleability of self-efficacy is greater earlier in development early encounters with mastery experiences are beneficial [6].

Verbal Persuasion

Verbal persuasion occurs when individuals receive verbal information that bears on their performance or their ability to perform a specific task. The model, or individual delivering the persuasion, is more influential on self-efficacy if the learner perceives the persuader as credible, trustworthy, and as having relevant expertise [5]. Although verbal persuasion does not typically result in long-term self-efficacy changes, it can adequately motivate an individual to exert effort or try novel tasks [5]. Verbal persuasions can also have negative influences on self-efficacy if they inaccurately inflate an individual's abilities and are followed by failure experiences [6].

Vicarious Experiences

Vicarious experiences are incidents where new learning is acquired or developed by watching others perform a task and its reinforcing consequences in absences of modeled responses being overtly performed by the viewer [3]. During

vicarious experience the viewer/learner is comparing their own competence to the level of competence observed [3]. Vicarious experiences may entail the learner observing a live model, the person (s) performing a specific task, but can also include verbal or symbolic models [3]. Verbal models describe and explain the behavior while symbolic models demonstrate behaviors via media. [9]. Vicarious experiences do not automatically influence self-efficacy without first being cognitively appraised [4] [9]. The learner forms cognitive appraisals of vicarious experiences based on their perceptions about the model (competence, similarities between themselves and the model), their own abilities, the task difficulty, the amount of effort given, assistance received, and perceived successes and failures [3].

Perceptions of the model and context, known as the mediating mental factors, mediate the influence of models [41]. Vicarious experiences can be more influential on self-efficacy if the learner perceives the model as effective or attends to the information provided by the model [3]. Effective models are those who the learner sees as like themselves [3]. Learners may also attend to information from models if they perceive the models to be competent, relevant, and powerful [3] [5]. Vicarious experiences can serve as cognitive models when models verbally express their rationale for problem-solving actions [38]. When models perform tasks well, becoming mastery models, they can positively contribute to individuals' self-efficacy; while poor performing models may lower individuals' self-efficacy [3] [40].

Affective State/Physiological Arousal

Affective state/physiological arousal encompasses the moods, emotional states, physical reactions (e.g., sweating, heart rate), and stress levels which can affect how individuals feel about their abilities to be successful in specific situations [6]. The appraisal of what these signals from the body indicate, or how they are perceived and interpreted by individuals, is most important in determining their positive or negative influence on individuals' self-efficacy [9]. Bandura and Adams explained that anxiety activates defensive behaviors among individuals [9]. In other words, a student trying a novel activity (a neutral stimulus) that experiences aversive arousal in the process of the novel activity (a sense of ambiguity/challenge) may sense anxiety. Anxiety could be interpreted negatively and result in decreased self-efficacy and future avoidance

behaviors for the new activity [9]. Prior research treatment to increase self-efficacy and decrease avoidance behaviors aimed toward reducing arousal [9]. Their findings showed that limiting arousal was sufficient to increase self-efficacy and reduce avoidance behaviors in their experiments, however the authors cautioned that affective state/physiological arousal is only one source of self-efficacy and not entirely dependable [9].

Although multiple sources influence self-efficacy, it is most malleable in early learning [6] [32]. Once established, self-efficacy beliefs remain somewhat stable. However, individuals can exert autonomy and influence their own beliefs for success [3]. Individuals are not completely subjugated to their environmental influence. Social Cognitive Theory (SCT) is rooted in the idea of Bandura's Triadic Codetermination Theory of Causation in which individuals impose effects on their environments (with various intrapersonal factors such as affect and behavioral patterns) and receive effects from their environments [5][8]. By illuminating the sources of information influencing self-efficacy formation, and working to improve contributing factors, it is possible to positively influence perceived self-efficacy [5].

Agentic Thinking

Bandura described agentic thinking as involving the self-organizing, reflective, self-regulating, and proactive mechanisms individuals utilize when interacting with their environments [7]. Specifically, individuals are agents of their own development making adaptations and imparting self-regulation to achieve their goals. Bandura further delineated the cognitive psychosocial mechanisms individuals utilize as agents, or when exercising agentic thinking, within their environments to three main functions including forethought, self-reactiveness, and self-reflectiveness [8]. Thus, individuals respond to their own expectations and subsequent performances with positive/negative appraisals and may assume realistic or optimistic viewpoints [8]. Positive self-efficacy beliefs have been seen as congruent with optimism [7]. Individuals may develop self-efficacy in specific domains, like TSE, by interpreting sources of influence on TSE.

Teacher Self-Efficacy (TSE)

Differentiating from Bandura's self-efficacy construct, Teacher Self-Efficacy (TSE) is the belief in one's abilities to conduct the necessary tasks to

perform the skills of teaching successfully [3]. Bandura defined TSE as a teacher's belief in their level of preparation and abilities to successfully impact students' performance [6]. Closely related with Bandura's TSE framework, Tschannen-Moran et al. combined the teacher's assessment of the teaching task, with the teacher's own beliefs in their competence to complete the teaching task successfully [6] [47].

Research on TSE

Qualitative studies revealing the lived experiences, perspectives and differentiated ways PSTs experience the development of TSE during student teaching within specific EPPs are scant. Consequently, few studies on PSTs' TSE have provided sufficiently transparent or valid data collection, reliable data analysis, participant details, or programmatic details for transferability in their reports [29] [48].

Sources of TSE

Little is known about the unique ways PSTs select sources of information (e.g., social messages, verbal persuasion, exposure to models), to inform their TSE. Results have prompted questions about nontraditional or other sources that may be influencing PSTs' TSE [29] [37]. Prior research results indicated verbal persuasion as influential on TSE development during clinical experiences yet results for sources only accounted for 18% of the variance in TSE levels among participants' reported scores [15]. While prior research reported on PSTs' TSE before and after subject-specific methods courses (e.g., [10]), few have attempted to isolate influencing sources on PSTs' TSE development [21].

Within this section of the literature, sources informing PSTs' TSE have often been framed by Bandura's sources for self-efficacy and findings strongly suggest that mastery experiences and verbal persuasion were found to be most influential as PSTs were forming TSE [3] [27]. In several studies (e.g., [35]) findings suggest an interplay of verbal persuasion having shaped PSTs' impressions of their mastery experiences. Vicarious experiences were also found to have an influence on PSTs' TSE development; however, the effectiveness of the model is an important mediator in the influence of vicarious experiences (e.g., Li & Zhang, 2000). Affective states/physiological arousal were found to be somewhat influential on PSTs' TSE development, yet as PSTs gain positive mastery experiences, and

learn to self-regulate their own arousals, they are less susceptible to negative interpretations of this influence [6] [31].

Some have investigated how PSTs integrate sources of information when forming their TSE during clinical experiences [35]. Others have explored TSE within the context of clinical experiences (e.g., [24]), yet few have targeted the underlying processes PSTs undergo when selecting sources to inform their TSE or provided enough detail on program design or sample population to be influential to the body of research on teacher preparation and policy decisions.

2.1 Purpose

Given that TSE beliefs are malleable earlier in development and may become stable beliefs that are difficult to change, it is critical to address TSE in its initial stages among PSTs prior to the beginning of their teaching careers [27] [48] [49].

This study provides insight into PSTs' TSE and their perceptions about how these beliefs were formed during their student teaching experiences. Given the need for research exploring influences on PSTs' TSE during student teaching and how sources of ability-related judgements, or underlying psychological functions, inform TSE, the current study aimed to answer the following research question:

RQ1: What are the lived experiences of PSTs as they draw upon sources of information to develop TSE during clinical student teaching experiences?

2.1.1 Method

A transcendental phenomenological study employing Bandura's Social Cognitive Theory [SCT] to contextualize, compare, and categorize sources of influence on TSE was conducted [3] [5]. Phenomenological methodology guided the examination of ways PSTs selected and interpreted sources of information while experiencing the development of TSE through different events during their student teaching experiences. With epoche, (the conscious setting aside of preconceived thoughts/attitudes), we were afforded fresh eyes and open minds to acquire new knowledge from PSTs' experiences [22].

Researcher Positionality

This research was not without our personal experiences, potential biases, subjectivities, and rapport with participants, particularly given that the first author was a former instructor to the participants and both authors are current teacher educators in

university settings. The researchers' epistemological position toward the study could be summarized as follows: (a) data reside within the perspectives of the individuals who participated in clinical student teaching experiences, either as individual PSTs in student teaching placements, or as EPP participants, and (b) for this reason, we engaged with participants through interviews and surveys to collect their data.

Context and Participants

The private liberal arts university where the PSTs attended their EPP is situated in the Midwestern United States. Eight PSTs (6 females and 2 males), between the ages of 20-25 years, who had recently graduated from the program, completed the study. Four PSTs were majoring in Elementary Education and four in Secondary/All-Grade Education.

The EPP Structure

The structure of the nationally accredited EPP for the study is a four-year bachelor's degree program in education leading to licensure for teaching grades K-6 (elementary), 8-12 (secondary), or K-12 (all grade—with a concentration). For details on the EPP's programs, acceptance requirements, and faculty/university supervisors see [36].

Coursework and Clinicals. Elementary education majors complete 60 credit hours of coursework for their degrees. Secondary/all-grade education majors complete 35 credit hours of pedagogy-related coursework (coursework that falls within the EPP) for their degrees. Additionally, they also complete content-specific credits within their area of content concentration (e.g., English/Language Arts, Chemistry, Human Performance, etc.). Both majors facilitate many of the same courses and experiences in the first three years with most exceptions occurring as Seniors.

Freshman year includes two introductory education courses which explore teaching, learning, and exceptional learners. Sophomore year includes educational psychology, world history, educational assessment, and mathematics. Junior year covers literacy development, math for elementary teachers II, English learners, and mild interventions. The fall semester of senior year includes methods courses (e.g., classroom management/conflict resolution, corrective reading, math for elementary teachers III, and integrated methods of elementary education). Secondary/all-grade majors take fewer hours of literacy-specific methods coursework.

Clinical experiences utilize a gradual release model. Initially, PSTs are given clinical opportunities to serve as an assistant with Response to Intervention [RTI] groups at a local elementary school several days per week. This clinical experience is tied to coursework during their sophomore year. The university faculty person facilitating the coursework routinely attends the site where PSTs participate in the RTI groups. PSTs gradually take responsibility within these groups and, with a mentor teacher or university instructor nearby, manage portions of small group instruction with K-6 students. Clinical experiences gradually increase in PST autonomy during the Junior year as PSTs spend time observing, assisting, and teaching in a specified K-6 classroom for approximately an hour each weekday.

The spring semester of the senior year is encompassed by two student teaching placements (e.g., K and 5th grade; or junior-high and high school), which occur sequentially across sixteen weeks. In some cases (e.g., Biology-Chemistry), secondary education content concentrations only pertain to high school students, therefore PSTs remain in one high school student teaching placement throughout the duration of the sixteen weeks. To receive licensure, PSTs must successfully complete their student teaching experiences (rated by mentor teachers, university supervisors, and the director of the teacher education program), Praxis licensure exams, edTPA, and maintain a minimum 2.5 GPA in their coursework.

Data Collection

Data collection occurred virtually the summer following PSTs' completion of the program. Prior to data collection, approval was obtained from the Office of Research Integrity (IRB#1764141-2).

Semi-structured Interviews

We conducted artifact-elicited interviews via Zoom using a semi-structured interview protocol [18] (for a copy of the protocol, see [36]). Interviews were recorded and lasted approximately 45-60 minutes for each PST. During the interview, artifact elicitation was utilized to evoked PSTs' feelings and memories of their student teaching experiences from specific points in time. Interview data were transcribed using Otter.ai.

Artifact Elicitation. Prior to the interview, participants were asked to select two artifacts from their edTPA portfolios created during their student teaching experiences. edTPA is a subject-specific, performance-based portfolio assessment used by EPPs to measure the skills and knowledge of PSTs [33]. Artifacts submitted for edTPA focus on instruction, planning, and assessment; as such, PSTs' artifacts were relevant to teaching tasks. Artifacts were used to evoke the essence of PSTs' lived experiences, in particular their feelings, memories, and rich information, and to provide a reference to integral points of time during their student teaching experiences [18]. Like photo elicitation, artifact elicitation provides a visual cue for participants to

organize their thoughts around as they share their experiences. Artifacts serve as a method of funneling participants' stories toward relevant points within their phenomena [1].

Data Analysis

To begin, we read the auto-generated interview transcriptions to assign speaker names and correctly align words with each speaker. Transcripts were emailed to participants for member checking [16]. Next, transcripts were analyzed. To ensure PSTs' voices were presented, In Vivo coding guided our analysis [26] [39]. Three rounds of analysis were used as follows.

In Vivo Coding

In Vivo coding, sometimes called natural or verbatim coding, is a method of qualitative analysis and a way of assigning labels to transcript data using the actual spoken words of participants to summarize the data [26]. It is useful in representing participants' voices and facilitating understanding of their lived experiences through their actual words [26]. Given that the participants of the study were reflecting on their experiences as students in an undergraduate program, In Vivo coding was helpful in exposing the social rules related to being students and their social positions of power [26]. During the first iteration of the coding process, we reviewed the transcribed data with a surface-level, content analysis to identify significant statements, or verbatim quotations, and assign initial In Vivo Codes [39].

Preliminary Meaning Units. During the second iteration, we identified patterns among the In Vivo codes to assign preliminary meaning units and preliminary sources present among the transcribed responses. To do this, we first looked for the frequency of occurrence and similarities among In Vivo codes. From these observations, we constructed preliminary meaning units. Meaning units, or data that represents a feature/trait of the phenomenon (e.g., TSE development during the student teaching experience), serve as initial themes [19]. These preliminary meaning units may be in short phrases, for example "super supportive," "threw me into it," or "PST felt anxiety."

Final Meaning Units. In the third iteration of analysis, we addressed themes that emerged from the data [34]. First, preliminary meaning units were condensed as final meaning units. Next, we conducted a final read-through of each transcript looking for connections and themes. This allowed a closer analysis of PSTs' interviews to describe, interpret, and explain the ways that meaning was made from each of these interactions. Collapsing the codes into emerging themes was useful in conveying a rich, thick description of participants' lived experiences [20]. (A source code book and In-Vivo coding tables generated from our analysis are available in [36]).

3 Problem Solution

Examination of participant data revealed a wide variety of sources as potentially influential to PSTs' development of TSE during clinical student teaching experiences. Here, we present these sources as subcategories of Bandura's framework (i.e., verbal persuasion, mastery experiences, physiological and affective states, vicarious experiences) [3] [5]. Several sources did not fit neatly into the framework. For these sources, a new category with subcategories was identified, other job stress. Within each subcategory, we describe both the source of influence and PSTs' appraisals of the source as positively or negatively influencing their TSE. These perceptions, or positive/negative appraisals, are consistent with SCT, as they represent the differentiated ways individuals interpret information within their environments [7]. In doing so, we aim to provide teacher educators a more nuanced schema for recognizing the specific sources of information that PSTs may draw on in their development of TSE during capstone clinical experiences and more accurately portray the shades of meaning behind their experiencing of these sources.

Verbal Persuasion

Sources of verbal persuasion included communication from and to mentor teachers, students, university supervisors, and other teachers.

Mentor Teachers

Mentor teachers were viewed as high-profile, powerful, and capable models who positively influenced PSTs' TSE through verbal persuasion by creating welcoming environments and recapping, or negatively influenced TSE with negative remarks to PSTs directly, talking about PSTs with other teachers, or voicing negative views about teaching or students. Autumn commented, "My first day I didn't because I was so scared and nervous. …, [mentor] said, 'you didn't eat in your little office all by yourself, did you?' So, then I went to [teachers' lounge] every day after that and ate with the other teachers." As Autumn described, mentor teachers provided positive verbal persuasion when welcoming PSTs by encouraging them to join the teaching community.

Anne explained how recapping positively influenced her, "[Mentor] Would go through [the lesson] with me before the lesson and afterward ...,

he always asked if there was anything I needed." By supporting Anne through the development of her lessons and then reviewing the lesson after she taught it (i.e., recapping), Anne's mentor teacher opened the possibilities of having meaningful discussions with her about improving her teaching when needed.

Mentors' words provided negative TSE influences as well. Autumn recalled, "The [mentor] teacher told me that this was … the absolute worst class… he was sorry he had to give it to me. I came into that class with … super low expectations. I was really worried they were just going to be really troublesome and I wasn't going to be able to help them at all." As described, negative comments from the mentor regarding future students induced Autumn's worry. In kind, Anne shared, "I heard her [mentor] outside talking to the other teachers about me." Anne added, "She [mentor] straight up told me one time that I was just kind of unprepared." Instances like this may have negatively influenced PSTs', with similar scenarios, TSE.

PSTs communicating to Mentor Teachers

PSTs described instances of probing mentor teachers for assistance during challenging points of their clinical experiences. Some PSTs viewed these help-seeking behaviors as positive and felt supported by mentor teachers. Kate described how mentor teachers provided a positive influence on her ability beliefs,

"I knew that I could always reach out and they [mentor teachers] would answer… so I felt really supported…, answering all of my questions, always being available to meet and talk about lesson plans, or if I was struggling …, my general questions, especially when it came to fully taking over. They always made themselves available for it, offered to meet with me."

As Kate's comment shows, mentor teachers provided positive verbal persuasion and contributed to efficacious beliefs. Other PSTs displayed self-doubt or fear around asking questions, viewing such help-seeking behaviors as potentially exposing deficiencies or weaknesses. These PSTs hesitated to communicate, questioned themselves before communicating with mentor teachers, and faced concerns of criticism as showcased when Autumn reflected, "They [mentors] just kind of let me figure it out by myself and try to go through the trenches, like I had to learn something instead of just asking for help all the time." Likewise Nina shared, "I am always afraid to ask questions because I'm always afraid they're going to be stupid questions. …, a big

part for me was asking questions..., allowing myself to get..., all the criticism that other people had." These comments demonstrate how PSTs' personal hesitation in communicating with their mentors was driven by fear of judgment or being seen as incompetent.

Students

Students were viewed as a positive source of verbal persuasion. PSTs specifically described verbal feedback from students they taught during clinical experiences as positively influencing their TSE. For example, Mark shared,

One time we were doing a lab and something cool happened and one of the girls, she was a junior, she ... told me … "Yeah, that's dope." And I was like, "Yeah, it is." And she goes, "Wait, you know what that means?" And I was like, "I'm 22. I'm not that old."

PSTs who shared stories like Mark's, expressed the importance of students' comments in reinforcing their beliefs about their own TSE.

University Supervisors

PSTs shared that university supervisors provided verbal persuasion by giving immediate feedback or being deficient in providing feedback and by requiring or not requiring lesson plans. In these ways, PSTs shared that university supervisors positively or negatively influenced their TSE during clinical experiences. Autumn shared a positive influence,

I learned a lot from just her [university supervisor] little comments on my lesson plans ...any input she gave me while she was there, because she'd give me like the actual immediate feedback of what I could do better … the next class when I did that lesson and stuff.

PSTs viewed immediate and detailed verbal feedback interactions with their university supervisors as helpful and positive influences on their TSE during clinical experiences. Still other PSTs expressed concerns and desires for feedback and guidance from university supervisors. Leah expressed, "I wanted feedback. I was more frustrated in the fact that I wasn't getting feedback at times then if I was …, I needed it so that I could be better." Leah's comment indicates her awareness of needing to improve yet feeling like she was lacking the information and help to do so.

Other Teachers

Other teachers who were working in clinical placement setting along with PSTs were also characterized as providing verbal persuasion

influencing PSTs' TSE. In some cases, PSTs described instances of other teachers' comments uplifting their TSE. Adam recalled,

He [a teacher next door] had several [student teachers] and he was a lot more helpful on kind of telling me what kind of stuff I can and can't do …, what I should be talking about, sharing his lessons with me so I could see kind of a better idea.

The teacher next door provided Adam with the support he was missing during his clinical experience. Still, other teachers in PSTs' clinical placement settings made verbal remarks that were interpreted as negative. PSTs recalled interactions they perceived as judgmental or questioning their schedules, choices, and abilities to successfully conduct the tasks of teaching. Moreover, PSTs described how other teachers negatively vented to them about the teaching profession or about students in general. Adam shared, "They told me, 'You're doing a good job … none of us can figure out how to reach some of these kids, because they just don't care.' And that was really frustrating." Similarly, Mark shared how he was confronted by the politics of his school environment when he heard other teachers complain about salary.

Mastery Experiences

Sources of mastery experiences included style of release, configuration of classes, mentor teacher involvement in classroom management, student responses to PSTs' directives, students' academic outcomes, and student engagement.

Style of Release

Mentor teachers gradually released PSTs to assume full control of their classrooms while providing scaffolded support or they abruptly left PSTs alone for long stretches of time. These varying styles of release were noted by PSTs as sources influencing their TSE. For some PSTs, being left alone with students and no mentor teacher in the room was viewed positively. Leah commented, "I liked not feeling like I was being watched all the time…, she allowed me just to be there on my own…, trusted me to be alone in the classroom by myself."

However, other PSTs interpreted this freedom as a source of frustration given negative student behaviors or uncertainty in teaching decisions which confirmed their lowered TSE. Anne stated, "She just kind of like threw me into it." Adam similarly shared, "I didn't feel secure as I kind of wanted to…, we had a ton of students with different problems." Adam posited his mentor teacher was simply treating him how he had been treated during student teaching,

He had said that his student teacher was very much the same way as this, "Alright, here's a classroom go nuts. There are some lesson plans somewhere up on the Google file or whatever. Look at that. Make up your own stuff.' Kind of fall, he figured this is sort of how it worked." Autumn also disclosed, "It would have been more helpful to have some immediate feedback …, especially with classroom management, that's hard." As described, leaving PSTs alone too soon to invent things from scratch left some PSTs feeling unsupported. Yet, mentor teachers may have experienced this style of release when they were student teachers and therefore believe it is appropriate. In other placements, PSTs described discomfort from being forced to break policy as substitute teachers. Kate shared, "They just started kind of leaving me…, that always made me feel uncomfortable because I knew it wasn't part of the [EPP's] policy. I didn't really know what I was doing. …, So it did make me feel uncomfortable." In these situations, PSTs described being left alone with questions remaining and feeling unsure or uncomfortable with their circumstances.

Configuration of Classes

PSTs shared how the configuration of certain classes in their clinical placements contributed to negative mastery experiences. The combination of certain students in one class at the same time presented difficulties for the PSTs that negatively influenced their TSE. For example, Adam noted,

At the middle school I had days I just dreaded … I don't know why but they seem to put all the kids who have problems together in like the same classes … They would just butt heads the entire time … it was just as exhausting.

Different groupings of students may have contributed to the PSTs feelings of efficacy.

Mentor Teacher Involvement in Classroom Management

When mentor teachers intervened during PSTs' teachings, the need for mentors' actions influenced TSE. Most PSTs ascribed positive influence on TSE when their mentor teachers were less involved with classroom management or teaching students than before, and they perceived themselves to be less capable of teaching or managing their students' conduct when mentors needed to step-in. Quote from Beverly,

"Stopping the playdough and doing the writing piece, students started getting up because they wanted to keep playing …, they also didn't enjoy writing. …, my confidence definitely lowered a little

bit …, I became uncertain of what I was supposed to be doing…, my cooperating teacher definitely did step-in and helped me get through the end of the lesson."

Beverly's comment highlights how PSTs paid attention to moments when their mentor teachers felt the need to become involved to ensure their success. Alternately Anne noticed, "My teacher didn't like bargain as much in that [honors English] class." Anne signals that PSTs recognized less need for mentor involvement. With reduced mentor interventions happening, PSTs perceived successful experiences for themselves in the classroom.

Student Responses to PSTs' Directives

PSTs noticed how students responded to their directives when teaching lessons. Kate shared, "I would look for physical cues …, how the students were sitting…, were they looking at the board? Or were they talking to somebody else when I was teaching?" PSTs shared stories of students complying with their directives and seemed to perceive positive experiences from those moments. Anne noticed, "They [Students] worked really hard in their groups and they did what they were told." Some PSTs positively described building relationships, communication, and relaxing rules with students during these teaching moments. Kate reflected, "They [the students] always kind of knew what was expected because we only had 30 minutes at a time…, we could laugh and kind of goof off at the beginning but then we really had to get down to work. So I had a great relationship with those students which was great." Student noncompliance or ill respect toward PSTs confirmed PSTs' negative beliefs and may have lowered TSE. Anne explained fluctuating TSE toward classroom management,

Day by day, it was like, one day, I felt like I had a good control of things. And everyone was listening to me, and they respected me. And then the next day, it would be totally different … I just had to tell this kid to be quiet like five times … I would raise my voice at these kids and like nothing.

Students defying PSTs' directives, or talking back to them, fostered lowered TSE among the PSTs. PSTs described frustration and fluctuation or lowered TSE, particularly toward classroom management, when students were not compliant.

Students' Academic Outcomes

PSTs explained how the academic outcomes of their students served as an influence on TSE. Leah shared,

Not soon after I left [the mentor teacher] texted me and said that 100% of them [the students] made growth in at least one area. So, it was situations like that when I really realized that they actually did learn something …, my lesson plans did work …, the assessment pieces, that really helped me to build my own confidence, reassurance that they actually are learning something.

Leah's comment shows how PSTs were able to interpret student growth as indicative of their own success in teaching. In turn, these positive student academic outcomes influenced TSE development in positive ways. PSTs also noted culpability for unfavorable student outcomes. Kate shared, "I would use results from formative assessment …, to check their understanding …, They're not learning, they're not going to remember what to do if they're bored…, I had to think of a different way to teach that." Student outcomes, whether intentionally assessed or indirectly discovered, influenced PSTs' TSE.

Student Engagement

Several PSTs mentioned the level of engagement they noticed from students while they were teaching and seemed to determine their success or failure in those moments accordingly. PSTs described positive engagement as students "opening up," students being "really excited," and "paying attention." Students becoming more confident with the subject matter or comfortable with PSTs, enjoying or liking PSTs' planned activities, and interacting with PSTs through discussions or conversations were perceived as positive influences on TSE. Beverly shared, "We got playdough …, that kinda was a confidence boost during the lesson because I could see that they [students] were enjoying it and it was going well. …, the kids were really excited…, having fun with it." Adam similarly commented, "If I can get engagement …, I feel like I'm doing my job right." Moments of positive student engagement created positive mastery experiences for PSTs facilitating their beliefs in their abilities to successfully conduct the tasks of teaching.

PSTs described negative engagement as students displaying maladaptive and deviant social behaviors or conveying a reluctance to participate. Negative engagement was perceived by the PSTs as their own ineffective use of pedagogy and created negative mastery experiences for them. Autumn explained, "I had junior high girls and they were just terrifying … They were very mean to each other …, how the heck am I going to get through to them?" Autumn's comment exemplified how PSTs may have internalized maladaptive student behaviors as

indicators that they would be unable to successfully engage students and teach them. Lacking appropriate student engagement or witnessing maladaptive student behaviors, weighed heavily on PSTs as they attempted to have mastery experiences with teaching.

Physiological and Affective States

PSTs referred to students' reactions while they were teaching, the complexities of teaching, varying alignment of expectations, perceptions of mentor teachers, assumptions of age, perceptions of other teachers, and attitudes toward evaluations as sources of affective state/physiological arousal which influenced their TSE.

Student Reactions to PSTs

When PSTs were given charge of classrooms, students responded with compliance and enjoyment in some cases, while in other situations, students displayed maladaptive behaviors. PSTs described how students' reactions to their teachings influenced their affective states. PSTs shared stories of enjoyment, fun, and confidence when students were compliant. PSTs referred to these students as "good" students or those with whom they shared a positive rapport. Autumn recalled, "And I feel like we [PST and students] really ...created that meaningful relationship when we were able to actually have fun." PSTs also experienced teaching moments with maladaptive student behaviors. Adam admitted, "I just dreaded the middle school. I don't think they're necessarily bad kids or anything. They … don't even really realize that they're causing disruptions." PSTs described how these behaviors contributed to their negative affective states or physiological arousal, and how these signals were negatively appraised toward TSE.

Complexity of Teaching and Tasks

During clinical experiences, PSTs attempted to enact the practices of teaching and, through interviews, described their instances of affective states or physiological arousal based on their perceived efforts. The interpretation of PSTs' emotional or physiological arousals was negative or positive depending on their appraisals of the events or pre-existing beliefs. For example, Autumn explained,

My thoughts, my feelings of like my self-efficacy going in it and like going through it, because like, even though some of the classes were like really troublesome, I still believed they could be better ... I believed in all my students…!

Positive beliefs about the nature of students may have helped Autumn retain optimism through

complex situations. Beverly noted time was helpful, "During special ed my lesson will be a lot more hands-on because I have the time to do it…, I'm definitely more confident in that because I have the time." These comments exemplify how PSTs ascribed positive meaning to their emotions or arousals when they maintained positive prior beliefs or perceived time or materials to be in their favor, and they allowed those indicators to positively influence their TSE.

Other PSTs described negative affect or emotions, and in some cases, heightened physiological arousal involving the overwhelming complexities of enacting the practices of teaching. Their descriptions included being unfamiliar with their clinical placement settings, facing resentment, exhaustion, and not having enough time to complete tasks. These stories involved PSTs' appraisals of negative emotions or physiological arousals during their clinical experiences, thereby negatively influencing their perceived TSE. For instance, Adam felt rushed and exhausted,

I came in my first placement, had very little experience working with students …, my experience was very rushed … I would prefer more time to get to know students …, so I had to make a new unit including lessons plans, worksheets, everything in about a week … it was very rushed … trying to pump it out as quickly as I could. From those days [at the middle school placement], I was passed out on my futon, like as tired …, I could just feel no one in there cares … and that was incredibly frustrating.

The feelings of fatigue and being rushed were perceived negatively and contributed to feelings of frustration for PSTs. PSTs also described fears of losing control over classroom management or feeling nervous about trying new teaching strategies or entering new placements and feeling their enthusiasm diminish. PSTs may have ascribed negative affect/arousal as indications of their own abilities to successfully conduct certain tasks of teaching.

Alignment of Expectations

PSTs described their expectations when entering their clinical experiences and how those expectations were consistent with or different from others' expectations. In some cases, a mismatch of expectations between PSTs' beliefs of what student behaviors would be like and the reality of student behaviors in clinical settings served as a source of negative affective states or physiological arousals among PSTs. Some described this mismatch of beliefs as being naïve or hitting rock bottom. Adam

described, "I found I felt more kind of like not necessarily like a daycare worker, but almost in a lot of ways. …, I didn't really feel like I was teaching …, behavioral watching." Whereas other PSTs discovered confidence once they aligned their expectations with student behaviors and vice versa. Interviews revealed that PSTs approached student behaviors with new regard, held high expectations, and their approaches resulted in positive student behavior. These moments had positive influences on the PSTs' TSE, particularly in classroom management.

PSTs also believed the student teaching experience should allow for more learning. Anne reported pleading with her mentor, "That's why I'm here ... you're supposed to help me …, that's what the purpose of this student teaching is ... I'm not supposed to be totally prepared." Still other PSTs described surprise in being unprepared to conduct certain tasks or skills of teaching. Kate admitted, "Especially going into special education there's a lot I don't feel like I was totally prepared for…, the entire system…, just not covered enough at [EPP]." The misalignment of PSTs' expectations with the realities of their clinical experiences or beliefs of the people within those experiences resulted in negative appraisals of their affective states or physiological arousals. These negative appraisals likely played a role in their developing TSE.

Mentor Teachers

Mentor teachers' actions inspired emotions and physiological arousal among PSTs which some PSTs described as feeling intimidated by the presence of their mentor teachers in the classrooms while they were teaching. Anne explained, "She [1st placement mentor] intimidated me ... so it [mentor teacher in the back of the classroom] kind of made me uncomfortable." This arousal fed Anne's negative perception about her abilities to be successful in teaching. She expressed a different perception when interacting with the mentor teacher in her second student teaching placement, "[2nd placement mentor] made sure to sign off on all the things I was doing ... made me just feel better in general." The differences in how Anne, and PSTs with similar stories, perceived their own reactions to the mentor teachers' actions were unique to each relationship. Still other PSTs conveyed positive affect or physiological arousal when mentor teachers trusted them to be alone and teach students, enjoying their mentor teachers' approval, or instances of mentor teachers creating welcoming environments for PSTs. Mark shared,

"My [mentor] teacher, he gave me full control. And that was amazing. And then after two, three days, he would sit in our little stockroom in the middle of our rooms. So, he'd just sit back there and like be by himself. And …, after the first two days…, he goes, 'You have what it takes. So, I'm going to leave you be,' and he just left the door open in case something actually went wrong. …, it was a great experience. I loved it."

How PSTs appraised their affective or physiological states sparked from interactions with mentor teachers likely influenced PSTs' TSE.

Assumptions of Age

PSTs interpreted their own age in relation to others in their clinical placements as positive or negative factors depending on their circumstances. These assumptions provided a filter for PSTs when appraising their own affective states or physiological arousals to situations during clinical placements. For example, PSTs described being close in age with their mentor teachers with positive affect and in turn interpreted mentor communication as supportive. Anne explained, "My cooperating teacher [2nd placement] was a little bit younger. He was really nice, super supportive."

The assumptions PSTs held regarding age were also relative to how they compared themselves with other people in their clinical placements. For instance, PSTs shared how their age helped them relate to their students. Mark explained, "I feel like it's [teaching] easier just because I'm closer to their age. I still remember what it was like when I was in high school." When PSTs appraised their affective states with positive perceptions from situations involving their age in comparison with students, they described supportive interactions and being able to accomplish their goals in those situations more easily. Other PSTs described their age in relation to their students' ages as a barrier to gaining students' respect. Leah commented,

When I went into the high school, I was really worried about them not respecting me because I am only a few years older than they are, it was really intimidating too. It's one thing to manage fourth graders, it's another thing to manage somebody twice my size…, so it was just intimidating.

Feeling worried or intimidated due to the age of students was expressed by several PSTs. PSTs may have held assumptions about older students that lowered their TSE toward managing older students in

classroom situations. Comments from PSTs also revealed viewing their own ages as deficits for gaining student compliance or respect and compared to their mentor teacher's older age. Anne explained, "They [students] probably saw her [1st placement mentor] as kind of like a mom ... they didn't see that with me. I'm sure that helped ... them ... respect her more." When PSTs appraised their affective states with negative perceptions from situations involving their age in comparison with others, they described frustrations, intimidating feelings, and difficulty being able to accomplish their goals.

Other Teachers

PSTs interacted and perceived information from the other teachers in their buildings and their environments. Here, PSTs described a lack of welcoming environment in the form of other teachers' comments or by not having the necessary equipment or authority to conduct the tasks of teaching. Adam explained,

Because I didn't know who to call, I don't have a lot of authority … I actually had to go over and ask other teachers for keys, which is still very demeaning and just like childish …, it took a really long time to figure out what things I could do or say because I just didn't really have any help on it. I didn't have a working badge like for doors, which was really irritating.

These negative affective states, such as feeling irritated or demeaned, were interpreted as negative and belittled PSTs' sense of ability. The unwelcoming environments that promoted these negative feelings likely negatively influenced their TSE in those experiences.

PSTs' Attitudes Toward Evaluation

PSTs described how they experienced positive and negative appraisals of affect or physiological arousal when being evaluated during their clinical experiences. PSTs shared how they viewed evaluation as a tool for helping them to succeed rather than a way to make them feel inferior. Kate described,

I felt like I was fairly evaluated. …, I always agreed with … how I was evaluated and what the results of that was… I would use that to try and see where I could improve … I always felt pretty confident in my abilities, and I do feel like my evaluations showed that. So, it never really impacted me in a negative way. Only really helped me become better. So, I never got nervous… I always felt pretty confident.

Perceiving these signals to indicate positive messages, the PSTs interpreted the evaluations with optimism toward their abilities to be successful in teaching. PSTs also described negative appraisals for their affect or physiological arousal paired with the evaluation processes. Beverly explained, "The first couple of times it [being evaluated] was scary having [the university supervisor] come in because I was afraid that I wasn't doing well enough." When PSTs ascribed self-doubt or fear to evaluations of their teaching moments, they were likely reinforcing lowered TSE.

Vicarious Experiences

PSTs described vicarious experiences involving mentor teachers, other teachers, students, and other PSTs as models which may have influenced their TSE levels.

Mentor Teachers

PSTs described how mentor teachers served as mastery or coping models who determined access to lesson plans, resources, and classroom management techniques. Anne shared,

This teacher [2nd placement] was awesome. He gave me all of his materials at the beginning, and he was like, 'feel free to change them, or I can help you work on different things.' It [changes PST made to materials with help] made me feel like I had helped, but like I had control of what was happening.

Other PSTs appraised social comparisons with mentors or determined mentors to struggle with success in some regard. Rather than viewing the mentor teacher as an effective model, the PSTs described lacking or unsuccessful teaching attempts by their mentor teachers which may have negatively influenced the PSTs' TSE. Anne commented, "But she [1st placement mentor teacher] didn't scaffold/teach me really well. …She wanted me to teach her lesson plans."

PSTs also conveyed an awareness of model similarities with themselves. For instance, Anne stated, "He [2nd placement mentor] was sort of introverted and anxious like I am ... so it was really cool to hear how he had gone wrong through things and his experience and how he dealt with them." Seeing herself as like the mentor and observing how he had overcome mistakes, made the mentor an effective coping model for Anne. Moreover, PSTs observed how students interacted with mentor teachers through casual conversations. Anne shared, "I could see how the students interacted with him, because … he had pretty casual conversations with them too." When PSTs observed others being able to

interact with the mentor teachers, they felt more confident in their own abilities to successfully do so as well.

Other Teachers

PSTs encountered other teachers who they deemed as effective models of teaching-related behaviors. They conveyed positive vicarious experiences with these teachers while reflecting on their clinical experiences. For example, PSTs drew upon teaching-related behaviors modeled by other teachers during clinical experience with positive outcomes. Mark reflected,

There was literally one day we were like three notebook pages worth of the notes and the next day she [former chemistry professor] walked in [and said], "I did it backwards, tear out every page. We're redoing it. Okay?' So, I mean, everyone makes mistakes … it's something I remember. But it's not something that I let … drag me down.

Like Mark, PSTs shared stories of prior teachers who served as effective coping models. Seeing other teachers, not just mentor teachers, making mistakes and recovering from them provided PSTs resilience to carry on through challenges.

PSTs also discussed time spent with other teachers in the teachers' lounge of their clinical placements and learning about schools and their functions in general from these observations. PSTs conveyed positive perceptions from these moments. Autumn explained, "I was just in there listening to like, how the school works, how it functions, what..., everyone's role is. And I really liked doing that just because I feel like I learned a lot how a school works."

PSTs also described negative influences stemming from teachers' lounges. For instance, they described hearing teachers talk about fellow teachers from other buildings with negative sentiments. Adam sarcastically commented, "And they [teachers at the two different schools] hate each other. …, they all know each other, the same district, and they all hate each other. So, I had fun with that." Adam's comment shows how PSTs were influenced by observing other teachers share their own negative perceptions. The observed behavior may have negatively influenced PSTs' feelings of efficacy about being happy with a teaching career in the future.

Students

PSTs shared stories including moments they observed students easily approaching their university supervisors. Autumn said,

[Students] were not hesitant to approach her [university supervisor] with questions or concerns ... some of my … students that really weren't athletic …, it created really good … conversations with them. So, then they … felt more comfortable being there.

In Autumn's comment, she shared how students who were not as comfortable in physical education were able to be comforted by the university supervisor. Autumn, and other PSTs who observed students interacting with their university supervisors, shared how they felt more able to approach their university supervisors once they observed students interacting with them.

Other PSTs

PSTs compared themselves to other PSTs' performance, perceived levels of confidence, or perceived knowledge. Through these comparisons, PSTs described their negative perceptions of the situations. Leah explained, "There was times where my classmates were doing things differently than I was and something was really working for them …, I was hard on myself. "

Leah's comment exemplifies how PSTs may have talked among themselves about how things were going in their student teaching placements or overheard what one another was doing in their clinical placement courses. During these times, PSTs made comparisons of their performances with their PST peers. Negative perceptions from these comparisons may have influenced TSE.

Other Job Stress

Other job stress are factors causing additional or competing stress on PSTs and occur during clinical experiences. Other job stress, first described as a contributing factor to teacher burnout by Schwarzer & Hallum, may limit PSTs' abilities to be personally resourceful during challenging situations [42]. PSTs described edTPA, the Covid-19 Pandemic, and unequal treatment among EPP programs as sources influencing TSE. These sources are clearly separate from Bandura's sources of self-efficacy, yet comments shared by PSTs indicate these sources as influences on PSTs' evaluations of their TSE [3].

edTPA

Multiple PSTs mentioned the experience of an ongoing high-stakes assessment, the Educative Teacher Performance Assessment (edTPA), occurring during their clinical experiences. Adam described,

It [edTPA] takes a certain human aspect out of your lessons …, it's kind of like trying to paint a

painting but like someone is describing the scene to you rather than you look at a picture and paint it.

According to Adam and other PSTs who commented, edTPA may have influenced TSE. Beverly stressed,

I specifically think of like edTPA …, just kind of this giant mountain that was on my shoulders the entire time. …, trying to figure out this big process…, impacted what I was doing and made me question what I knew and didn't know…, negatively impacted my self-efficacy…, I definitely think that that impacted how I felt about what I was doing.

As other job stress, edTPA influenced PSTs TSE who perceived the process as stressful, confusing, or as perpetuating self-doubt in their abilities to create effective learning experiences.

Covid-19

PSTs commented on the Covid-19 Pandemic as a source of outside stress, or other job stress, during their experiences. Adam shared,

I was very unfortunately limited to a lot of presentations, whether because of Covid violations or school policies. …, I was very, I felt very limited. I guess you could say I was kinda disappointed in some ways, but not terribly.

Adam expressed his disappointment and feelings of limits due to the school's policies to control conditions regarding the Covid-19 pandemic. Mark also described mixed perceptions about his experiences due to the pandemic,

It was weird with COVID. They made it weird, but I mean, it was, it was doable. And we did, we did the best that we could with it. And [clinical placement school] was supportive of it. I mean, the only thing that was somewhat weird is that one day that kid's going to be gone for two weeks. And well, it could be seven days could be 10 days, could be two weeks.

The uncertainty and mixed perceptions stemming from experiences PSTs had because of student teaching during the Covid-19 pandemic may have influenced their development of TSE.

Unequal Treatment Across Programs

Secondary education PSTs perceived unequal treatment within their EPP as an influence on TSE. Adam compared,

Favoritism towards some of the primary students [elementary education majors] ... that's the thing I noticed before student teaching that junior year, was there's like this weird divide between the two groups and how they're treated …, it did make a lot of secondary people feel kind of salty and very kind of you know, thrown out.

PSTs perceiving they belong to a program that was less favored than another program may have induced additional stress, thereby limiting their abilities to access personal resourcefulness, and negatively contributed to TSE development.

Discussion

Like Bandura's conception of agentic thinking, PSTs uniquely interacted with their environments and selected, appraised, and responded to TSE sources accordingly [8]. PSTs demonstrated agentic thinking through their preconceptions and actions within their clinical student teaching environments guided by their appraisals of TSE sources. In turn, sources, through PSTs' reflection, self-regulation, and proactive strategies reciprocally influenced PSTs' TSE. PSTs also demonstrated agentic thinking by planning their teaching lessons in advance and getting to know their mentor teachers (proactive or forethought), reflecting on their performances and discussions with mentors/university supervisors (self-reflecting), managing their responses to failures, student behaviors, or their own cognitive dissonance (self-regulating), and thinking ahead about the complexities of teaching and their future careers (self-organizing or self-reactiveness) [7] [8]. PSTs described how their actions during student teaching sometimes resulted in positive or negative feelings. This is consistent with Bandura's agentic thinking which describes individuals responding with positive or negative evaluations or self-reactions based on how their performance measures up against their expectations [8]. They displayed self-reflective practices and self-awareness by making corrective adjustments to their teaching approaches, classroom management strategies, or communication techniques with students or mentors. They proceeded to make changes to their future actions based on negative results and avoided actions that brought upon self-censure. When students' behaviors were perceived as positive (e.g., complying with PSTs' directives), the PSTs continued or increased their own actions which produced these behaviors. In these ways, PSTs governed their self-development and adapted to the needs of their individual environments and their own functioning and circumstances rather than being mere victims of influences on their TSE. Given this agentic view of learning, the sources of influence drawn from the lived experiences of PSTs developing TSE can be considered creations of the PSTs and their environments in a three-way

interaction of triadic codetermination theory of causation.

TSE source origins, or nuanced sources, including PSTs' positive or negative appraisals, were gleaned. Origins were identified as subcategories (e.g., mentor teachers, other teachers, students, university supervisors, other PSTs) beneath each overarching source. Not only were nuanced sources of Bandura's self-efficacy detailed, but a new TSE source, other job stress, was also identified [3] [5]. Bolstering research on TSE, the results expand upon Poulou's nuanced source results with PSTs' appraisals as they calibrated nuanced sources to form TSE during student teaching and confirm Morris et al.'s speculation that other sources, apart from Bandura's are influencing PSTs' TSE [3] [5] [29] [37]. Other job stress comprises a fifth and novel influence on PSTs' TSE to add to the corpus of TSE literature. Confirming the concept of other job stress realized by Schwarzer and Hallum's analysis of the mitigation of stress by TSE, PSTs identified stress within their environments that affected their abilities to access personal resources and thereby influenced TSE [42]. Respective of teacher shortages and challenges from pandemic-related issues on teacher retention, identifying and understanding the specific influences on PSTs' TSE is vital.

4 Conclusion

PSTs' TSE is differentially influenced depending on how they interpret influencing sources. PSTs may gravitate toward certain sources and have tendencies to appraise information as negative or positive, and therefore are more likely to develop TSE accordingly. Understanding the influential sources and how they may be interpreted by PSTs places power into the hands of those forming programs within EPPs.

Individuals facilitating EPPs can create fertile grounds for high TSE development by ensuring the sources influencing PSTs' TSE are accurate, effective, and being positively appraised. Yet the reality that PSTs enter EPPs with their own experiences and preconceptions of teaching remains a salient fact. To tailor programming decisions based on PSTs' individual characteristics and appraisals of sources, further research must explore PSTs' preconceptions and experiences in relation to their interpretations of TSE influences. With that information, EPPs might address their expectations, and guide them toward success as teachers.

To support EPPs in fostering positive TSE and reducing the number of unfilled teaching vacancies in the U.S., particularly in schools rich with diversity, future researchers may investigate targeted interventions for PSTs' personal characteristics in relation to their perceived influences on TSE. Intervention studies may target PSTs' responses to critical feedback, various PST-mentor pairings for age or demeanor, or PSTs' responses to affective states/physiological arousal. By ascribing positive appraisals to affective states/physiological arousal with evaluation moments, PSTs in the present study were able to filter evaluative feedback with a sense of growth and maintain optimism about their abilities. Considering the perceived effectiveness of mentor teachers as models through vicarious experiences [3], PSTs in the study noticed when they shared certain personality traits (e.g., age, demeanor) with their mentor teachers and when mentor teachers transparently displayed their means for overcoming failures [40]. Student reactions or behaviors perpetuated feelings of accomplishment or frustration for PSTs, and the affective states or physiological arousal PSTs experienced when students displayed maladaptive behaviors were sometimes interpreted as confirming their incompetence as teachers or could be dismissed. Future studies could reveal specific connections between PSTs' characteristics and how they interpret sources of TSE to facilitate EPPs in creating optimal environments for TSE development.

Future studies may seek to confirm or identify more sources of other job stress and reveal how other job stress (e.g., edTPA or pandemic-related issues) influences PSTs' TSE. The stress perceived from edTPA by PSTs in the current study may have been a negative influence on their abilities to access personal resourcefulness or resilience during challenging times in clinical experiences. By making challenging tasks more daunting or requiring more effort than expected with depleted resources for energy/time/resilience, assessments like edTPA co-occurring with student teaching may contribute to lower overall perceived levels of PSTs' TSE. Likewise, in confusing or uncertain circumstances like Covid-19 PSTs' abilities to access their own personal resourcefulness may have been limited, increasing their stress levels and thereby lowering their perceptions of TSE. Identifying and understanding sources of other job stress on PSTs' TSE in future studies may lead to EPPs taking preventative actions or enacting coping strategies to ensure PSTs become beginning teachers with positive TSE levels who can manage challenging situations better and experience higher levels of career choice commitment [28].

References:

[1] Andrews, M., Squire, C., Tamboukou, M. (2013). Introduction. In Andrews, M., Squire, C., Tamboukou, M. (Eds.), Doing narrative research (2nd ed., pp. 1–26). Sage Publications, Inc.

[2] Armor, D., Conroy-Oseguera, P., Cox M., King, N., McDonnell, L., Pascal, A. Pauly, E., & Zellman, G. (1976). Analysis of the school preferred reading programs in selected Los Angeles minority schools. (REPORT NO. R-2007-LAUSD). Rand Corporation. (ERIC Document Reproduction Service No. 130 243).

[3] Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191. https://doi.org/10.1037/0033-295x.84.2.191

[4] Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147. https://doi.org/10.1037/003-066x.37.2.122

[5] Bandura, A. (1986). Social foundations of thought and action: a social cognitive theory. Prentice Hall.

[6] Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman and Company. https://doi.org/10.5860/choice.35-1826

[7] Bandura, A. (2006). Toward a psychology of human agency, Perspectives on Psychological Science, 1(2), 164-180. https://www.jstor.org/stable/40212163

[8] Bandura, A. (2018). Toward a psychology of human agency: Pathways and reflections. Perspectives on Psychological Science, 13(2), 130-136. https://doi.org/10.1177/1745691617699280

[9] Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. Cognitive Therapy and Research, 1(4), 287-310.

[10] Bleicher, R. E. (2010). Revisiting the STEBI-B: Measuring self-efficacy in pre-service elementary teachers. School Science and Mathematics, 104(8), 383-391

[11] Borman, G. D., & Dowling N. M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. Review of Educational Research. 78(3), 367-409. https://doi.org/10.3102/0034654308321455

[12] Cantrell, S. C., Almasi, J. F., Carter, J. C., & Rintamaa, M. (2013). Reading intervention in middle and high schools: Implementation fidelity, teacher efficacy, and student achievement. Reading Psychology, 34(1), 26-58. http://www.tandfonline.com/doi/abs/10.1080/02702711.2011.577695

[13] Caprara, G. V., Barbaranelli, C., Steca, P., & Malone, P. S. (2006). Teacher self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. Journal of school Psychology, 44(6), 473-490. https://doi.org/10.1016/j.jsp.2006.09.001

[14] Carver-Thomas, D. (2022, February 9). Teacher shortages take center stage. Learning Policy Institute. https://learningpolicyinstitute.org/blog/teacher-shortages-take-center-stage

[15] Clark, S., & Newberry, M. (2019). Are we building preservice Teacher self-efficacy? A large-scale study examining teacher education experiences. Asia-Pacific Journal of Teacher Education, 47(1), 32–47. https://doiorg.proxy.bsu.edu/10.1080/1359866X.2018.1497772

[16] Creswell, J. W., & Poth, C. (2017). Qualitative inquiry and research design: Choosing among five approaches. Sage.

[17] Darling-Hammond, L., Furger, R., Shields, P., & Sutcher, L. (2016). Addressing california's emerging teacher shortage: An analysis of sources and solutions. Palo Alto: Learning Policy Institute. https://files.eric.ed.gov/fulltext/ED606333.pdf

[18] Douglas, E. P., Jordan, S. S., Lande, M., & Bumbaco, A. E. (2015). Artifact elicitation as a method of qualitative inquiry in engineering education. In Proceedings of the American Society for Engineering Education (ASEE) Annual Conference and Exposition (p. 26.235.1–26.235.10). https://doi.org/10.18260/p.23574

[19] Giorgi, A. (1985). Sketch of a psychological phenomenological method. In A. Giorgi, Phenomenology and Psychological Research (pp. 8–22). University Press.

[20] Harper, D. (2010). Talking about pictures: A case for photo elicitation. Taylor Francis Online, 17(1),13-26. https://doi.org/10.1080/14725860220137345

[21] Hendricks, K. S. (2016). The sources of self-efficacy: Educational research and implications for music. Applications of Research in Music Education, 35(1), 32- 38. https://doi.org/10.1177/8755123315576535

[22] Husserl, E. (1931). Ideas: General introduction to pure phenomenology (D. Carr, Trans.). Northwestern University Press.

[23] Ingersoll, R. M., Merrill, E., Stuckey, D., & Collins, G. (2018). Seven trends: The transformation of the teaching force-Updated October 2018. CPRE Research Reports. https://repository.upenn.edu/cpre_researchreports/108

[24] Klassen, R. M., & Durksen, T. L. (2014). Weekly self-efficacy and work stress during the teaching practicum: A mixed methods study. Learning and Instruction, 33, 158–169. https://doi.org/10.1016/j.learninstruc.2014.05.003

[25] Li, X., & Zhang, M. (2000). Effects of early field experiences on preservice teachers' efficacy beliefs —A pilot study. ERIC Document Reproductive Service No. ED 444973 https://doi.org/10.1111/ssm.12067

[26] Manning, J. (2017). In vivo coding. In Matthes, J. (Ed.), The international encyclopedia of communication research methods. Wiley-Blackwell. https://doi.org/10.1002/9781118901731.iecrm0270

[27] Martins, M., Costa, J., & Onofre, M. (2015). Practicum experiences as sources of pre-service teachers' self-efficacy. European Journal of Teacher Education, 38(2), 263-279. https://doi.org/10.1080/02619768.2014.968705

[28] Moe, A., Pazzaglia, F., & Ronconi, L. (2010). When being able is not enough. The combined value of positive affect and self-efficacy for job satisfaction in teaching, Teaching and Teacher Education, 26, 1145-1153. https://doi.org/10.1016/j.tate.2010.02.010

[29] Morris, D. B., Usher, E. L., & Chen, J. A. (2017). Reconceptualizing the sources of teaching self-efficacy: A critical review of emerging literature. Educational Psychology Review, 29, 795-833. https://doi.org/10.1007/s10648-016-9378-y

[30] Moustakas, C. E. (1994). Phenomenological research methods. Sage Publications, Inc.

[31] O'Neill, S., & Stephenson, J. (2012). Exploring Australians pre-service teachers' sense of efficacy, its sources, and some possible influences. Teaching and Teacher Education, 28, 535-545. http://dx.doi.org/10.1016/j.tate.2012.01.008.

[32] Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. Review of Educational Research, 62(3), 307-332. https://doi.org/10.3102/00346543062003307

[33] Pearson Education, Inc. (2021, May 30). About edTPA. edTPA. https://www.edtpa.com/PageView.aspx?f=GEN_AboutEdTPA.html

[34] Peoples, K. (2021). How to write a phenomenological dissertation: A step-by-step guide. Sage Publications Inc.

[35] Pfitzner-Eden, F. (2016). Why do I feel more confident? Bandura's sources predict preservice teachers' latent changes in teacher self-efficacy. Frontiers in Psychology, 19, https://doi-org.proxy.bsu.edu/10.3389/fpsyg.2016.01486

[36] Potts, M. (2022). Here's a classroom go nuts: Exploring nuanced sources of influence on preservice teacher self-efficacy in clinical experiences [Doctoral dissertation, Ball State University]. ProQuest. https://www.proquest.com/dissertations-theses/here-s-classroom-go-nuts-exploring-nuanced/docview/2680184889/se-2

[37] Poulou, M. (2007). Personal teaching efficacy and its sources: Student teachers' perceptions. Educational Psychology, 27, 191–218. https://doi.org/10.1080/01443410601066693

[38] Rosenthal, T. L., & Zimmerman, B. J. (1972). Instructional specificity and outcome expectation in observationally induced question formulation. Journal of Educational Psychology, 63(5), 500–504. https://doi.org/10.1037/h0033246

[39] Saldaña, J. (2021). The coding manual for qualitative researchers (4th ed.). Sage.

[40] Schunk, D. H. (1987). Peer models and children's behavioral change. Review of

Educational Research, 57, 149-174. https://doi.org/10.3102/00346543057002149

[41] Schunk, D. H. (1989). Self-efficacy and achievement behaviors. Educational Psychology Review, 1, 173-208. https://doi.org/10.1007/BF01320134

[42] Schwarzer, R., & Hallum, S. (2008). Perceived teacher self-efficacy as a predictor of job stress and burnout: Mediation analyses. Applied Psychology: An International Review, 57, 152-171. https://doi.org/10.1111/j.1464-0597.2008.00359.x

[43] Siwatu, K. O., & Chesnut, S. R. (2014). The career development of preservice and inservice teachers: Why teachers' self-efficacy beliefs matter. In H. Fives & M. Gill (Eds.), International handbook of research on teachers' beliefs (pp. 212–229). Routledge. https://doi.org/10.4324/9780203108437-20

[44] Siwatu, K. O., & Starker, T. V. (2010). Predicting preservice teachers' self-efficacy to resolve a cultural conflict involving an African American student, Multicultural Perspectives, 12(1), 10-17, https://doi.org/10.1080/15210961003641302

[45] Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. Journal of Educational Psychology, 99(3), 611-625. https://doi.org/10.1037/0022-0663.99.3.611

[46] Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding teacher shortages: An analysis of teacher supply and demand in the United States. Education Policy Analysis Archives, 27(35). http://dx.doi.org/10.14507/epaa.27.3696

[47] Tschannen-Moran, M., & Woolfolk-Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. Teaching and Teacher Education, 17, 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1

[48] Wheatley, K. F. (2005). The case for reconceptualizing teacher efficacy research. Teaching and Teacher Education, 21, 747–766. https://doi.org/10.1016/j.tate.2005.05.009

[49] Winters, B. K. (2012). An investigation of pre-service teachers' perceptions of personal and general teaching efficacy prior to and following student teaching. ETD Collection for Fayetteville State University. AAI3464552. https://digitalcommons.uncfsu.edu/dissertations/AAI3464552

[50] Zeichner, K., Payne, K. A., Brayko, K. (2015). Democratizing teacher education. Journal of Teacher Education, 66(2), 122–135. https://doi.org/10.1177/0022487114560908