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Planting Seeds of Mindfulness During Teacher Preparation

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ABSTRACT

Mindful practices such as intentional breath and body awareness may benefit students in teacher education programs both in their present student roles and in their future careers. This mixed methods study included an 8-week online mindfulness intervention during the Spring of 2020. Quantitative data included pre- and post-questionnaires related to mindful awareness, perceived stress, resilience, and loneliness. Participants (N=16) provided weekly records of mindful practice and attendance at group meetings, and at the conclusion of the program, semi-structured interviews were conducted. Scores for mindful awareness and resilience significantly increased over the course of the program while perceived stress and loneliness decreased. A statistically significant, inverse correlation was observed pre-intervention between mindful awareness and perceived stress, $r(14) = -.671$, $p = .004$. Interview themes indicated teacher education students felt their Self-Awareness and Social Connections were affected throughout the intervention. Noting aspects of transformative learning, participants also indicated an intention to integrate mindful practices into their future classrooms.

Keywords: Stress Reduction, Teacher Education, Preservice Teachers, Mindfulness, Coping, Quantitative Research

The COVID-19 pandemic has had a major impact on our world. We have borne witness to stresses and traumatic events such as fear, loss, and general uncertainty. Children and teachers alike experienced these ongoing stresses, and a call has gone out from many sources to encourage the promotion of emotional coping skills as we attempt to establish normalcy (Weisbrot & Ryst, 2020). With this aim to create new and emotionally supportive educational spaces, this gardening metaphor will be used. When planting a garden, one must first transfer the seeds from a place of holding into the ground where the seed itself is left to utilize available resources and transform into something more. Keeping this image in mind, we can also consider the transfer of practices and content from professor to university student similar to the planting of a seed. In the case of a student learning to become an educator, the transformed bloom has potential to inspire the next generation of students. The opportunity for the exponential spread of beneficial growth because of meaningful and effective practices during teacher training is promising. However, a search for evidence of the intentional teaching of mindful practices to preservice teachers is limited.

This paper will first examine the terminology associated with resilience and discuss current issues of interest within public schools in the United States. Next, we will relate the research findings to the need for additional training for future teachers during their college education. Once the need for additional research and theoretical foundations has been described, findings from an 8-week mindfulness training intervention will be shared. The results of this study will then be used to facilitate a discussion of the potential for integrating this type of intentional training into pre-service teacher programs to provide K-12 students with essential coping strategies that may facilitate their own development of resilience and coping following any traumatic experiences in their childhood.

Although research has provided evidence of mindful practice assisting educators (Ellison & Woods, 2019; Gu & Day, 2007) and students little attention has been given to the incorporation of mindfulness training during formal teacher education and the impact it may have long term after graduation on future K-12 students. Of course, such data will require a longitudinal design to investigate the downstream effects. At the outset, it is important to consider ways to initially inspire students in teacher training programs to learn about mindfulness practices themselves. Therefore, the purpose of this study was to investigate pre-service teachers' experiences during an 8-week mindfulness program and to see if their experiences would naturally result in an intention to integrate skills learned into their own future pedagogical practices when they move into the educational field.

LITERATURE REVIEW

At the forefront of the integration of mindfulness into mainstream conversations, Kabat-Zinn (2015) described mindfulness as simply paying attention in the present moment. A common misconception about mindfulness is that it is practiced solely through seated meditation. Although meditation is a part of the cultivating of mindful awareness, mindful practices include many actions that are all undertaken with the intention of increasing awareness of oneself. Practices often begin with breath awareness and then expand to include physical movements, focusing on sounds, and

exploring inner reactions to stimuli. Kabat-Zinn stressed that these systematic practices must be intentionally rehearsed to be internalized and become a routine. The practice of mindfulness has been shown to positively influence emotional regulation, which is a person's ability to influence the emotion they are experiencing (Roemer et al., 2015). When discussing negative responses to stress, emotional regulation is often a topic of interest because a person's ability to first recognize their current emotional state and then to choose to make changes to their emotional state takes both practice and effort. It has been suggested that K-12 teachers perceive that their own ability to regulate emotions is connected to their effectiveness in the classroom (Sutton, 2004). However, little is known about teachers' extension of mindful practices and coping strategies intentionally included to teach their students.

Another benefit that has related to mindful practices is that of resilience. Resilience itself is a complex construct of which some define as when one focuses on good outcomes (Masten, 2009). Others base their understanding of the term resilience through ability, such as children who bounce back from adverse experiences (Benard, 1993). A person being described as resilient is generally agreed upon based on their end point being positive as opposed to a process by which their resiliency was developed. Ultimately, a person's ability to have a positive outcome even when exposed to negative circumstances (context under which others might succumb to negative outcomes) is the identifying detail of resilience. Early research and discourse about resilience focused on the negative presses and risk factors for lacking resilience. In the past twenty years, a preference to focus on positive aspects that may counter-balance negative experiences has taken root. Such positive aspects are called protective factors (Dent & Cameron, 2003) and include a wealth of characteristics (biological, psychological, family, community, and cultural) that reduce the likeliness of a person engaging in negative behaviors even when exposed to opportunity.

Hjemdal and colleagues (2006) note a combined effect of both risk and protective factors along with how individuals respond to adversity as equally contributing to the development of resilience. This suggests that adversity is necessary but also those certain settings can increase the chances for a positive outcome. To this effect, Rutter (2012) also noted that although some situations or experiences which initially appear to be negative or labeled as a risk factor, may result in being protective by leading to developing successful coping strategies. Therefore, it must be acknowledged there are times protective factors can only be identified in hindsight as opposed to predictively.

The Field of Education

Mindfulness, emotional regulation, and resilience are all skills from which current teachers could benefit. Common concerns related to teachers' limited ability to cope with stress are that stress results in burnout and high turnover rates. Even before the negative effects stemming from the pandemic and the increased stress, burnout, and high numbers of teachers leaving the field, there was evidence that many teachers leave the profession early in their career, and, in particularly higher rates at schools serving racial/ethnic minorities (Redding & Nguyen, 2020). High rates of teacher turnover have been connected with deleterious effects on student learning and

district budgets (Carver-Thomas & Darling-Hammond, 2019), causing issues of teacher shortages and increased class sizes.

Previous research has shown promising evidence that mindful practices learned during teacher preparation in university training may benefit practicing teachers in multiple ways. For instance, Brown (2017) followed twenty pre-service teachers from a single college course during a single semester. Participants were enrolled a literacy methods course in which mindfulness strategies were integrated. Brown found that through applying mindfulness skills learned during the course, pre-service teachers learned to actively monitor and decrease their own stress. In another study of 330 pre-service teachers, Tekel and Erus (2020) examined the relationships between mindfulness, perceived stress, and conflict management styles. Researchers noted that being mindful had no relationship to a dominating management style which supports that mindfulness increases empathy. Additionally, participants who were more mindful were less likely to avoid conflict which means they can accept and deal with problems rather than ignoring them.

By learning to recognize and manage stress during university training, pre-service teachers may be better able to fully attend to and remember course content. Additional benefits of mindful practices noted in a recent review related to post-graduation in the areas of resilience, wellbeing, and decreased burnout (Birchinall et al., 2019). Learning coping strategies within preservice training could provide teachers skills to deal with challenges they may face as a teacher. Along with the benefits for the teacher, and learning how to model mindfulness themselves, after graduating, the teacher can teach coping strategies to their students for their own future application. Prior evidence has shown promise that mindful practices may assist young students in coping and even decrease participation in risk-related behaviors (Roche et al., 2019). Additionally, with the teacher understanding numerous coping strategies through university training, they can assist students to have an arsenal of coping tools that have been linked to better management of stress (Shigemoto & Robitschek, 2021).

Other work focusing on aspects of teacher resiliency provided common characteristics which seem to support teachers' career longevity, even in the face of challenges. Ellison and Woods (2019) investigated ten physical educators in high-poverty schools and concluded aspects related to administrative leadership and support such as collaboration, respect, and trust fostered greater resilience in teachers. Other themes such as a need for teachers to establish work/life balance, having positive connections within the school, and self-efficacy have surfaced as positively supporting resilience (Gu & Day, 2006).

As current retention rates of those in the teaching occupation struggle, universities need to begin to evaluate how to assist pre-service teachers to be able to manage the stress of the job to decrease burnout and turnover rates. Topics including mindfulness, emotional regulation, and resilience may be skills that need to be taught and prioritized within university teacher education programs. As noted earlier, emotional regulation is a means by which mindfulness may benefit practitioners (Roemer et al., 2015). Similarly, Kerr and colleagues (2017) found that pre-service teachers' emotional regulation improved following a 6-week mindfulness intervention. Previous literature has suggested the potential of mindfulness-based

strategies as a resource for pre-service teachers to learn about personal wellbeing and the management of stress.

Gu and Day (2007) intentionally selected three teacher profiles from a four-year study about teacher resilience. In the original study, 300 teachers from 100 schools in England were interviewed at various points during each school year to learn about experiences with challenges in their work and home lives. From that data, one teacher each was chosen from early, middle, and late career who reported different levels of resilience. These three profiles were examined to better understand the role resilience played in their teaching. They found that resilience assists teachers' commitment and effectiveness (Gu & Day, 2007). Gu and Day (2007) along with Birchinall and colleagues (2019) who synthesized similar literature support that mindfulness-based interventions should be included within teacher training programs.

Theoretical Framework

Transformative learning theory (Mezirow, 2000) has been used to consider how adults internalize information rather than simply transferring it from what was taught to what is used. More simply, to *transfer* information, is just to move it from one place to another. In terms of education, it could be that a teacher learns a mathematical equation and simply integrates it into their future class to show their students that the equation works. *Transformation*, on the other hand, implies that the information is changed in some way. In the example of a mathematical equation, perhaps the teacher finds a way to give the equation more relevant to real life and demonstrates the usefulness and purpose of the equation as opposed to just the mechanics of it.

Mezirow (2000) suggested a 10-step process that adults use while working through personal thoughts and engagement with any new content. These steps are (a) experiencing a disorienting dilemma; (b) having fear, anger, guilt, or shame; (c) critically assessing assumptions about the real world; (d) realizing others have gone through this; (e) revising one's old belief system and exploring new ones; (f) planning a course of action; (g) gaining knowledge and skills for new plans; (h) trying on the new roles; (i) becoming competent and confident with changes; (j) reintegrating into one's life based on new perspective (Mezirow, 2000). Highlighting a few of these steps, reflecting on personal beliefs, critically assessing assumptions, and trying on new roles are all practices taught in many mindfulness courses. To move beyond *transference* to *transformance* of new content, it would appear that self-awareness is essential. Therefore, by increasing self-awareness through mindful practices, it is reasonable to expect that current students of teacher education programs could, through self-reflection, recognize how practices learned for personal benefit might *transform* to also be beneficial to their own students.

Purpose

The purpose of this mixed methods study was two-fold. The first objective was to investigate the experiences of teacher-education students during an 8-week mindfulness intervention delivered through virtual trainings. This research questions pulled from two avenues. First, to assess a holistic view of perceived stress and

elements of resilience we asked, "What are pre-service teachers' experiences during an 8-week program?". For the secondary purpose related to transformation, we asked, "Will exposure to mindfulness practices result in an intention to integrate similar practices into their future classrooms without being encouraged to do so".

METHOD

All aspects of the study protocol received approval from the university's internal review board. Funding for the project came from an internal grant. These funds were used to provide participants with tools and incentives such as yoga blocks, a mindfulness book, and $10 Amazon gift cards.

Intervention Design

The presenter for the weekly webinars had previous experience leading mindfulness sessions in group facilities prior to this study and read from a script that was developed by the research team. The 8-week *Mindfulness for Future Teachers* program was modeled after a traditional mindfulness-based stress reduction (MBSR) program as described by Kabat-Zinn (1994). Topics typically covered through MBSR programs such as Observing the present moment, Perception, Openness, etc. were used as the main topic for each week's presentation. Additionally, within each week, a teacher-specific topic that was identified in the teacher resilience literature was integrated into the presentation (see Table 1 for an outline the MBSR and resilience topics). Scripts were written based on materials from a Mindfulness, Stress, and Health course taught at a large university in the Southwestern US. The book, *Happy Teachers Change the World* (Hanh & Weare, 2017) was selected to supplement the script and to act as a support for participants to encourage continued practice beyond the intervention. Short sections of the book were chosen that served to reinforce the thematic topics each week. Participants received a copy of the book and a yoga block at the beginning of the study and, later, they were mailed a $25 gift card after their participation in the group interviews at the end of the 8-week program.

Due to COVID-19 regulations at the university, the program was delivered through an online video conferencing system using the webinar feature. The webinar option maintained participant anonymity as only the speaker and their slides were visible to attendees. Weekly 60-minute webinars were streamed, live, twice a week to allow participants to choose the time that worked best for their schedule. Participants were sent an email each Sunday night reminding them of the session times and providing them with a link to register. Several strategies were used to lend credibility to and establish confidence in consistent participant attendance and their adherence to the program. When participants registered each week for the webinar, they received a unique log-in link which allowed for keeping attendance records. The webinar software also recorded how long participants were logged in and any messages they sent to the presenter through the "chat" feature. The chat feature was intentionally utilized to pose prompts to participants at random intervals through the hour (at least two per session) to gage involvement in and attention to the hour-long webinar.

Table 1: Overview of Topics Covered in the 8-Week Program

Week	Main Topic	Practice/ Homework	Teacher-Related Skill	Reference for Teacher Skill
1	Present Moment	Body Scan	Self-Care first	
2	Perception	Seated Meditation	Feeling like an outsider	Gu &Day (2007)
3	Pleasure/discomfort	Walking Meditation	Resilience	Ellison & Woods (2016)
4	Mental Openness	Stretching and Yoga	Noticing & managing stress	Birchinall et al. (2019)
5	Noticing unhealthy patterns	Practicing Gratitude	Work/life balance	Gu & Day (2007)
6	Coping strategies	Mindful Communication	Communicating with admin/ collaborating with peers	Ellison & Woods (2019)
7	Lifetime commitment	Personal Reflection	Lifelong learning, personal improvement as a teacher	Ellison & Woods (2019)
8	Review		Teacher support resources	Gu & Day (2007)

Recruitment & Participants

Participants were recruited through an email from the Teacher Education program which contained an overview of the study along with a link to an electronic questionnaire. Thirty students completed the initial questionnaire and were invited to participate in the 8-week mindfulness program. Participation included completing the electronic questionnaire both prior to the 8-week program and again after the final

session, attending eight, weekly 60-minute webinars and completing check-in forms weekly, and participating in a group interview after completing the post-questionnaire.

Although all 30 students were engaged in some portion of the program, only 16 completed both the pre- and post-questionnaire and participated in a follow-up interview. These data were used for the final analysis and are included in this manuscript. Participants (n=16) all attended a single mid-sized university in the mid-west. All were female and mostly White (n=14). Academic classification included all years (Freshman = 3; Sophomore = 3; Junior = 2; Senior = 2; Graduate Student = 6).

Data sources

Multiple sources of data were collected to allow for data triangulation and enhance the depth of analytic opportunities. Quantitative data came from an electronic questionnaire completed both pre- and post-intervention, weekly logs of personal practices, and responses through the chat feature during the one-hour sessions. Qualitative data was collected through open-ended questions in the weekly logs and through semi structured interviews. The interviewer utilized practices of bracketing to acknowledge their personal connection to the content and used interview techniques such as encouraging participants to expand on their thoughts and intentionally avoiding any gestures or phrases to indicate personal reactions to responses. Interview transcripts were dually coded by a researcher who was not involved in the intervention or the interviews and themes were discussed by the full research team (two members with no previous work related to mindfulness and resilience) to encourage open reflection and minimize researcher bias.

Electronic Questionnaire

The questionnaire was created using previously validated measures and included the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), the Perceived Stress Scale (PSS; Cohen et al., 1983), the Brief Resilience Scale (BRS; Smith et al., 2008), and the Three-Item Loneliness Scale (3-LS; Hughes et al., 2004).

MAAS includes 15 statements regarding awareness of one's surroundings such as "*I break or spill things because of carelessness, not paying attention, or thinking of something else.*" Respondents are asked to rate each statement from 1 (almost always) to 6 (almost never). The score is simply an average of the 15 responses whereas higher numbers suggest higher levels of awareness. This scale has been previously assessed with college students and general adult populations with adequate internal consistency reliability of $\alpha = 0.82$ (Brown & Ryan, 2003).

In the PSS, respondents read 14 questions about their experiences over the past month such as "*In the last month, how often have you found yourself thinking about things that you have to accomplish?*" to which they select 0 (Never) to 4 (Very Often). A sum of the 14 questions is taken to indicate a single score with a possible range from 0-56 with higher scores indicating higher perceived stress. The PSS has also been previously used with college students and demonstrated adequate internal consistency reliability with $\alpha = 0.86$ (Cohen et al., 1983).

The BRS is comprised of 6 items which asses a person's ability to bounce back from negative stress. An example statement includes, "*I usually come through difficult times with little trouble*". Three items are stated negatively and are then reverse coded to add trustworthiness to respondents' answers as they must read each question attentively before answering. An example of a statement requiring reverse coding is, *"I have a hard time making it through stressful events".* Scores were summed (after reversing) to provide a range from 6-36 with higher scores indicating more resiliency. The BRS was validated on two samples of undergraduate students with α ranging from 0.84 to 0.87 (Smith et al., 2008).

Finally, the 3-LS, has been evidenced to correlate with much longer surveys with just three questions and an α= .072 (Russell, 1996). The three answers are summed to demonstrate less or more feelings of loneliness ranging from 3-12. Questions ask how often respondents feel (a) a lack of companionship, (b) left out, and (c) isolated, to which they respond on a scale from 1 (Never) to 4 (Often). Again, a sum of the three scores was used to provide a single score of loneliness with a higher score indicating more of a sense of feeling isolated and/or alone with a possible range of 3-12. For all statistical analyses, a threshold of .05 was set for statistical significance determinations.

Weekly Google Forms

Participants completed Google Forms in weeks one, two, four, and six to document their personal practices related to the week's topic. These responses were anonymous so participants would feel encouraged to share honest answers and reflections about their experiences. Each of these check-ins also asked participants if they had shared what they were learning with others during the week. Check-ins also solicited feedback about suggested at-home practices which included a 10-minute body scan each day in week one, sitting for a 5-minutes breath awareness in week two, and progressive muscular relaxation in week six.

In the fourth week, the check-in included questions about participants' experiences in the first four weeks such as, "Are you able to watch the weekly webinars without distractions for the hour?" and "Have you been able to apply mindful breathing strategies informally during your 'normal life' outside of the webinars in the past four weeks?" Week four and six also included open-ended questions what participants felt was the most important skill they had learned or practice they experienced thus far in the mindfulness program.

Webinar Chats

Within each week's script was included at least two questions during which participants were asked to respond through the chat feature. The questions were posed to encourage a sense of participation in the session since the participants could only see the presenter and not other attendees. For instance, when discussing the idea of non-judgement, the presenter stated, "Please type an exclamation in the chat if you can remember a time you have thought negative things about a person because of something completely unrelated to their personality or behaviors." Later in the same

webinar, participants were prompted with, "In the chat, please type a 1 if you have done any seated meditation before and type a 2 if this is brand new to you." These data were used to both create a sense of participation and to build confidence in the active attention by attendees during the sessions.

Semi-structured interviews

At the conclusion of the study, participants attended one of three group interviews through zoom. Sessions were audio recorded and transcribed by a third party. Both inductive and deductive analysis strategies were employed (Patton, 2015) while constant comparison and thematic coding (Strauss & Corbin, 1990) were utilized to identify patterns of consistency within the transcripts (Saldaña & Omasta, 2016). Trustworthiness practices included involving an independent, parallel coder, negative case searches, and participant checks.

Data Analysis

All quantitative data were entered into SPSS (Version 27) for analysis. Basic descriptive statistics were run for each individual question as well as for the calculated scores of the various scales included. Frequencies of answers were investigated for categorical data. Paired sample t-tests were run to compare pre- and post-intervention results. Bivariate correlations were run to investigate relationships among the sections of the questionnaire. Interviews were transcribed, verbatim, by a third-party service (rev.com) and read through after transcription to ensure accuracy. Participants were invited to create their own pseudonym or to allow the research team to assign one to them. All names on the original transcripts were changed to reflect only the pseudonym prior to coding. Transcripts were read and coded thematically by two different members of the research team using constant comparison (LeCompte et al., 1993). Resulting themes and evidence were discussed until consensus was met. The research team discussed the themes through a lens of Transformative learning theory (Mezirow, 2000) to consider evidence of intervention content being internalized or transformed by the participants as opposed to simply memorized.

RESULTS

Quantitative Results

Means, standard deviations, and changes in questionnaire pre- post-scores are presented in Table 2. All scores changed over the course of the intervention in ways to suggest positive outcomes of students' experiences such as increases in mindfulness and decreases in perceived stress. Mindfulness Attention Awareness Scale scores increased significantly as from pre- (M=3.36, SD=1.17) to post-intervention (M=4.31, SD=0.70); $t(15)$= 2.64, p=.018. The increase in MAAS score suggests that students were experiencing more awareness of their own attention to events within and around them in the present moment. This is a desired outcome of practicing mindfulness strategies.

Table 2
Pre- and Post-Questionnaire Scores

	M	*SD*	Range	Change in *M/SD*
MAAS Pre	3.63	1.17	1.33-5.87	-
MAAS Post	4.31	0.70	3-6	0.68; 1.03
PSS Pre	34.06	7.38	16-44	-
PSS Post	27.06	6.05	16-37	7.00; 6.31
BRS Pre	22.94	4.19	16-29	-
BRS Post	20.94	2.86	12-24	2.00; 5.10
3-LS Pre	7.75	1.88	4-11	-
3-LS Post	7.13	1.67	5-12	0.63; 1.93

Perceived Stress Scale responses were also significantly different between pre- (M=34.06, SD=7.38) and post- (M=27.06, SD=6.05); t(15) = 4.44, p=.000. This indicates that participants felt they had less stress by the end of the 8-week program. Similarly, students' sense of resilience increased which suggests participants recognized more coping skills and protective factors by the end of their participation. Higher resilience scores are connected to having more coping strategies and recognizing more sources of support. Loneliness scores did not change substantially from pre- to post-intervention. This may reflect the lack of social interactions due to the use of webinar-based delivery or that the content of the intervention did not address feelings of loneliness as much as mindful awareness and coping with stress.

The correlations were generally weak across the measures in both pre- and post-questionnaires (Table 3). Directions of relationships were as expected such as PSS having negative, albeit weak, correlations with BRS and MAAS. This provides supportive evidence that increased resilience and mindful attention partner with lowered perceived stress. In the pre-intervention scores, the scores for MAAS and PSS shared a significant, inverse relationship (r= -.671, p < .000). This correlation supports the idea that higher mindful awareness is connected to less perceived stress even before the intervention.

Table 3: Correlations among Questionnaire Sections

	MAAS Pre	MAAS Post	PSS Pre	PSS Post	BRS Pre	BRS Post	3-LS Pre	3-LS Post
MAAS Pre	1	0.493	* **-.671**	-0.188	0.369	-0.366	-0.188	-0.352
MAAS Post		1	-0.273	-0.396	0.301	-0.486	0.214	-0.433
PSS Pre			1	0.573	-0.362	-0.085	* **0.636**	* .562
PSS Post				1	-0.074	-0.292	* .588	0.422
BRS Pre					1	-0.011	-0.138	-0.027
BRS Post						1	-0.263	0.351
3-LS Pre							1	0.415
3-LS Post								1

*Note: * indicates significance at p<.000. Bold font indicates significance for the same time of questionnaire (pre- or post-).*

After the conclusion of the 8-week program, this relationship was still inverse but failed to meet statistical significance (r= -.396, p =.129). Additionally, PSS and 3-LS demonstrated a positive correlation in the pre-questionnaire (r= .636, p < .000) and trended similarly after the intervention with a positive but non-significant relationship (r= .422, p = .104). This correlation suggests that feelings of isolation or loneliness were connected to perceived levels of stress. Keeping in mind these data were collected during COVID-19, it is understandable that students may have been experiencing issues around isolation.

Google form responses indicated by week four, 81.8% of participants were engaging in some type of informal mindfulness-related practices at least once a day. On average, 40% (37.5-45.5% across weeks) indicated they had shared the web resources (such as open-access 10-minute guided body scan [mindfulness.org] or 5-minute seated meditation) with someone else in their lives during any given week.

The week four check-in suggested that less than half (42.9%) were finding they were able to fully attend to the weekly 1-hour sessions without any distractions. Other participants indicated occasional distractions (35.7%) or constant distractions that caused them to just allow the webinar to play while they multitasked at their home (21.4%). In the same week, however, a vast majority (85.7%) noted they were intentionally scheduling time outside of the webinar session to practice one of the skills (body scan, breath awareness, seated meditation, walking meditation) each week both formally and informally.

Qualitative Results

Two main themes of *Self-Awareness* and *Social Connections* represented the participants' experiences during the 8-week program. Participants were directly asked about what they thought regarding embedding the mindfulness skills and themes from the intervention in their future classrooms. It must be acknowledged that the topic of future use of mindfulness skills was intentionally brought to the discussion as opposed to naturally entering the interviews through participants' spontaneous contributions. The responses, however, were needed to address the secondary research question and the resulting discussions were enlightening regarding ideas of transfer, transforming, and practicality of strategies learned during teacher preparation and those utilized in classrooms. Thus, the results pertaining to *Use of Mindfulness Skills As Future Teachers* are presented after the overall themes of *Self-Awareness* and *Social Connections*.

Self-Awareness

The theme of self-awareness appeared to demonstrate transference of the intervention content to students' common practices. As such, examples tended to relate directly to skills practices and visual examples provided in the 8-week content. Students shared reflections of noticing more about their own reactions to experiences around them as well as recognizing their ability to control their own responses.

Demonstrating this self-awareness, Yazmin (Freshman, K-12 Language Arts major) shared:

> "*One thing I noticed was I just became more aware of my breath. So not necessarily like doing a practice without knowing it, but like just knowing when, like I can tell when I'm in a stressful situation that my breathing is increasing, and it might be nice to take a second to do one of those practices*."

Tina, a Junior, Elementary Education major also commented, "*I can tell I'm more able to recognize now, 'okay, you're stressed, let's go outside. Just inhale, exhale, and listen to the sounds that are around you', just focus on things that are important*." Another student talked about her heightened self-awareness and described how she investigated her feeling, saying, "*Okay, why do I feel anxious? What is making me feel this way? I'm like, okay, I feel anxious because I have to do this, this, this, and this. And I'm worried that I don't have enough time." And it just identifying like "Why I feel anxious?" I'm like "Oh, okay." Well, it doesn't matter, if you get it done great if you don't get it done great"* (Hayley, Senior, Secondary Spanish Education major). Later, Yazmin talked about being self-aware and noticing a need for activating her mindfulness skills:

> *"It wasn't until finals week where I was able to really remind myself or kind of just automatically go into like a body scan. It was right before a final that I was about to take and I was naturally very nervous about it and ready to be done, and I could definitely feel my heart rater increasing and my appetite was gone and I was just an anxious ball of mess. So I just did a quick body scan for about a minute or two and I could literally feel my heart rate go back down, get back to normal, and then I felt much more even, just more confident going into my exam…and then I did surprisingly well [on the exam] so I'm not sure if there's any relation to that, but it was a lot better than I previously have done on other exams through the semester."*

The open-ended weekly check-ins also provided students a way to anonymously articulate their experiences with self-awareness. "*This session has also really taught me how much work I need to do on just sitting still and giving myself time to regroup*." Another participant wrote, "*The most helpful thing for me has been to name feelings and identify what's causing them."* Joy (Junior, Elementary education major) beautifully summed up this theme of improved self-awareness and the benefits participants gained through her comment, *"Because if you're aware of it, then you can deal with it".*

Social Connections

Leaning more towards the *transformative* aspect of learning, participants' descriptions of social connections extended beyond repeating practices and examples shared in the 8-week course. These reflections showed that students were transforming what they learned into something that was able to be modified into their

unique lifestyle. As was indicated through the weekly Google form check-ins, many participants shared what they were learning with friends and family members. In the interviews, this was discussed as providing a positive way to interact with others and talk about daily stress. For instance, Yazmin shared about the body scan, *"…that's something that I've incorporated into every night before I go to bed…and I actually got one of my friends kind of hooked on it too and it just like helped us both so much to be relaxed and be able to go to sleep."* Beth and Carlie both talked about sharing with family members about breath awareness saying, *"I shared it with my family, especially my sister, she has stress issues like I do. I shared some of my tips to her and she said they're really helpful."* (Beth, graduate student, Elementary Curriculum and Instruction major); *"Yeah, I shared [my resources] pretty much every week, I was like 'this is what we're learning' with my family"* (Carlie, Sophomore, Elementary Special Education major)

In describing an experience with her child, Hayley recounted how one of the lessons about observing negative reactions and investigating their true source affected her during a trip to the store. She began by sharing, *"I didn't realize how much anxiety I had. I had never called it that before…"* In this she was referring to a session where the presenter shared that if you can name the emotion, you can likely tame it (borrowed from the t.v. show, Dr. Who). Hayley continued by recalling that she was rushing her daughter and getting impatient when she realized, *"..we didn't have anywhere to go, we had nothing pressing and we had nowhere to be, and I realized it was anxiety, not impatience. I wasn't being impatient, I just felt anxious. And to be able to name that was kind of eye-opening for me."* She finished her story by saying it was an opportunity to be calm and connect to her daughter by letting her know, *"Hey, you know what, I'm sorry, we don't have to go, take your time, we don't have to be anywhere."*

Use of Mindfulness Skills as Future Teachers

All participants suggested they saw a benefit in the potential for including mindful practices in their futures as teachers. Some noted ways they would use practices for themselves as teachers such as this note in the week four check-in, *"I think the different strategies we've learned about how to stay grounded and mindful is so important in my future teaching career in staying aware of myself and avoiding burnout."* Another comment from the same week four check-in said, *"I really like the idea of standing meditation. As a teacher, I feel like this would help me when I have short breaks."*

Many participants offered thoughts about how they can share content with their students once they are teaching. Examples included *"I'm going to use a lot of these practices to help stay calm and help students be able to see that I'm ready for them while they're learning and then if I keep my breath calm, there'll be able to see that I'm in control and help them feel calmer."* (Beth). Another graduate student in the study who was in charge of an undergraduate lab section talked about having already integrated some practices for her students, "*I ended up doing some mindfulness practices with them because they were all talking about how stressed out they were and stuff…I did have a few students that said they really liked it"* (May, graduate

student in Athletic Training). Hayley also shared an intention to integrate simple practices such as breath awareness, *"...I'm just going to keep it going because I think it's good for them."*

The concept of carrying mindful practices into educational practices was intentionally not mentioned during the 8-week program. Even so, the majority of participants indicated they had given thought throughout the study to using these strategies in their future classrooms. In the spirit of transparency, it is important to recognize that by asking the question, we introduced the thought to the participants who had not previously considered it which was highlighted in the comment by Reyna (graduate student in Library sciences), *"I had not thought about it, but I was a middle school teacher, and so sometimes, you end up with a couple of minutes at the end of class, or there's just transitions where you could just implement some of the practices or in your homeroom."*

DISCUSSION

The purpose of this study was to investigate the experiences of teacher-education students during an 8-week mindfulness intervention. The results from the questionnaire data would suggest that participants experienced positive changes through the course of the 8-week program. Their mindful awareness increased, perceived stress decreased, resilience responded positively, and their feelings of loneliness decreased. It is important to note that both the pre- and post-intervention PSS scores indicate perceived stress was higher than previous research on college students (González-Ramírez et al., 2013). COVID-19 acts as both a limitation and a strength in this study. First, constraints to in-person research required the intervention to utilize a webinar format as opposed to face-to-face sessions. This presented a challenge in authentically engaging with the participants and being able to share in discourse related to each week's content. On the other hand, these types of challenges were being experienced in all areas of the participants' lives and research indicates stress was high for everyone during the pandemic. In this sense, COVID-19 challenges highlight a strength within the present study design as even in these uniquely stressful times, the participants demonstrated improvements in their perceived stress levels.

Connected to the need for webinar-based programming, it was evident that many participants were unable to give full attention to the program for the full hour each week as evidenced in their Google form responses. Many participants indicated there were distractions at home during the sessions that prevented them from being able to devote a quiet hour to the program. However, it is encouraging that even with this limitation, they consistently reported putting the lessons into practice both informally through day-to-day activities, and formally through setting aside five to ten minutes for practice. This provides a promising picture that even with limited interaction, participants reported some changes in their personal practices and positive outcomes in their daily lives.

The secondary question for the study was whether exposure to mindfulness practices during university training might result in an intention to integrate similar practices into their future classrooms. Throughout the 8-week program, according to

the Google forms, just under half of the participants reported they had already shared resources and practices with friends and family to help them through stressful situations. Although there is not a clear set of transformational learning outcomes from Meziro's theory, the sharing of practices and discussion of content learned in the intervention with persons outside of the program may suggest evidence of transformation through opportunities to discuss and compare experiences as well as additional time to reflect on their own thoughts on the subject (Harris et al., 2008). Additionally, this is a promising indication that the participants saw personal benefits to the practices they were learning and their value of the practices as useful was increasing. Previous research suggests that teachers' personal values translate to classroom practices (Barni et al., 2018) and student experiences (e.g., Gilemkhanova et al., 2022; Wentzel et al., 2012).

The full extent of the second question cannot be fully answered as we do not yet know if *transformation* will occur for a fact in these preservice teachers' future classrooms. However, the intervention did provide opportunities for participants to reflect on personal beliefs, critically assess assumptions, and try on new roles which are all aspects of Meziro's Transformative theory (2000). Therefore, it is reasonable to expect that the positive experiences may result in these participants internalizing the lessons and *transforming* them into meaningful opportunities for their own future students.

There is evidence that children who have experienced trauma benefit from having access to a variety of coping strategies. For instance, Roche and colleagues (2019) demonstrated that by college, adolescents who had experienced trauma as children and who lacked adequate coping skills demonstrated avoidance and engaged in more risk-associated behaviors. Consistently, the ability to draw from a variety of coping skills is associated with resilience and the ability to deal with stressful events in healthy ways (Bonanno et al., 2011).

Birchinall et al. (2019) discussed the current levels of stress pre-service teachers face. Their review identified aspects such as increasing challenges of diversification, surveillance, challenges related to digital and social media, and political pressures all as reasonable sources of stress effecting future teachers. The quantitative findings suggest that over the 8-week program, participants' stress levels decreased, and their awareness levels increased. Additionally in consideration of transference of learned skills, qualitative findings supported the idea that as pre-service teachers were practicing and reflecting on their own mindful awareness, they also contemplated the practical application of these skills in their future classrooms. These results provide promising suggestions that even a webinar-based mindfulness program could have positive outcomes related to future teachers' ability to cope with stress and their decision to share mindfulness and coping strategies with future students. These findings hold hope that planting seeds of mindfulness may transform into future blooms of widely used mindfulness coping strategies.

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