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The Effect of Mindfulness Training and Practice on Student Clinicians' Reported Stress

by

Madison Quinton

A thesis

submitted in partial fulfillment of the requirements for the degree of

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Committee Approval

To the Graduate Faculty:

The members of the committee appointed to examine the thesis of MADISON QUINTON find it satisfactory and recommend that it be accepted.

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TABLE OF CONTENTS

LIST OF FIGURES

The Effect of Mindfulness Training and Practice on Student Clinicians' Reported Stress

Thesis Abstract--Idaho State University (2020)

Graduate students in healthcare training programs frequently experience stress that can negatively impact them both personally and professionally. Mindfulness has been shown to be an effective intervention for mitigating the negative impacts of stress for student clinicians and professionals. However, the effect of mindfulness training and practice on graduate Speech Language Pathology (SLP) students' self-reported stress levels is not well understood, especially within the context of immersive clinical experiences. The primary objective of this pilot case-series study was to investigate the effect of a mindfulness training program and practice on SLP as compared to Counseling graduate student clinicians' perceived stress levels during an intensive interprofessional stuttering clinic that utilized an Acceptance and Commitment Therapy (ACT) informed framework for collaborative client care. Results indicated a reducing in PSS and CFQ7 raw scores and an increase in TMS raw scores 1 week and 1 month following the clinic.

Key Words: mindfulness, interprofessionalism, speech-language-pathology, counseling, student clinician, stress, acceptance and commitment therapy

INTRODUCTION

Across healthcare disciplines, professionals frequently report high levels of stress that often begins during their student-clinician-training (Beck & Verticchio, 2014). As a result, their individual well-being and professional performance may be negatively impacted (Irving, Dobkin, & Park, 2009). This may be especially true during intensive clinical experiences and interprofessional collaborative care, as the stress-levels and expectations may be amplified. Mindfulness training and practice has been shown to be an effective strategy for mitigating some of these negative effects in healthcare professionals and students (Beddoe & Murphy, 2004; Irving et al., 2009; Kabat-Zinn, 2006; Rizzolo, Zipp, Stiskal, & Simpkins, 2011). Counseling students and professionals have a high degree of academic and clinical exposure to self-care strategies, including mindfulness (Brown, Marquis, & Guiffrida, 2013; The Council for Accreditation of Counseling and Related Educational Programs [CACREP], 2015), whereas Speech Language Pathology (SLP) students and professionals have less. The purpose of this pilot ABA case-series study was to investigate the effects of mindfulness training and practice on SLP student clinicians' perceived stress, fusion to thoughts and feelings (indicative of trait mindfulness) and state mindfulness during an interprofessional intensive clinical experience.

BACKGROUND

Stress prevalence in graduate programs

Students from all academic levels report experiencing stress due to relationships, education, and performance expectations (Hurst, Baranik, & Daniel, 2013), which may be intensified for graduate students. Graduate students typically have high personal expectations and a multitude of other responsibilities in addition to their academics during their programs.

Graduate students commonly report stressors that include “academic workload, competing demands, conflict between research interests and unrelated academic requirements, finances, holding a job, career planning, loneliness, adjusting to new environments, time management, and poor school/work–life balance” (Cabrera-Caban, Garden, White, & Katelyn, 2016, p. 121).

Students enrolled in graduate healthcare training programs such as medicine, physician assistant, nursing, physical therapy, occupational therapy, and counseling have consistently reported especially high stress (Dyrbye, Thomas, & Shanafelt, 2006; Hernandez, Blavo, Hardigan, Perez, & Hage, 2010; Kardatzke, 2009; Rizzolo, Zipp, Stiskal & Simpkins, 2009). This may be due to the additional stressors that students in healthcare training programs have such as knowledge application and demonstrated skill toward patient care, sometimes with only a very short duration of academic exposure to the content, and clinical practicum placements which involve onsite supervisory evaluation of performance (Rizzolo, Zipp, Stiskal & Simpkins, 2009). When providing patient care, the student-clinician must demonstrate an expertise in treatment application, employ best practice strategies through integration of evidence-based practice, and provide adequate client education, all while justifying their practices to their supervisor and maintaining professionalism and appropriate client interactions throughout.

The nature of each clinical experience involves unique aspects that contribute to clinician and client stress. Recent trends of increased interdisciplinary collaboration is an undeniable factor in many clinics. Hall and Weaver (2001) identified potential contributors to conflict within multidisciplinary healthcare teams. They found that differences in provider attitudes towards teamwork and treatment, goal development, and perceived professional status were key sources of friction. Providers concurrently treating a patient often also have a limited working knowledge of their colleagues’ exact roles and perspectives. Difficulty understanding and communicating

effectively with team members thus results in ineffectiveness and anxiety. Verhovsek, Byington, and Deshkulkarni (2009) confirmed that poor interprofessional communication was perceived by radiologic technologists to increase occupational stress, decrease job satisfaction, and impact patient outcomes. Despite efforts to develop interprofessional educational programs, this dynamic remains pervasive. It stands to reason that these effects would be further amplified in intensive clinical settings. While there is limited research investigating student clinicians' experiences during intensive clinics, it is likely that the extended daily clinic hours, heavy interprofessional collaboration, novel treatment approaches, and pressure to foster strong client-clinician relationships within a limited time frame that are characteristic of such settings would contribute to a heightened sense of urgency and perceived stress.

Speech-language pathology graduate students appear to report similarly elevated levels of perceived stress as their healthcare-student counterparts (Beck, Verticchio, Milliken, & Schaab, 2017). Speech-language pathology programs include exams, projects, papers, and supervisor feedback of clinical performance (American Speech-Language-Hearing Association [ASHA], 2020). Lieberman, Raisor-Becker, and Sotto (2018) collected data from 85 SLP programs across the United States, Canada, and Australia and found that 44% (N=105) of SLP graduate students experienced high levels of stress, 52% (N=123) experienced moderate levels, and only 4% (N=10) reported experiencing low stress. Students who participated in the study expressed that academic factors such as grades, papers, and studying caused “moderate stress” and that examinations, tuition cost and time management caused “extreme stress.” Clinical placements rely heavily on knowledge application and include treatment, examination, and time pressures, thus culminating in an environment that can be especially conducive to "extreme" student stress.

Unfortunately, the issue does not necessarily resolve with more time spent in programs. On the contrary, the initial stress experienced by SLP graduate students at the beginning of their program frequently remains elevated and even increases throughout their education (Beck, Verticchio, Milliken, & Schaab, 2017; Ellis & Briley, 2018). Effects may be further amplified when co-treating unfamiliar or intimidating disorders. Stuttering is one such disorder, which SLPs commonly report as being their most feared condition to provide treatment for (Kelly, et al., 1997; Maviş, St. Louis, Özdemir, & Toğram, 2013; Yaruss, 1999; Yaruss & Quesal, 2002). The related treatment approaches themselves can also be anxiety-inducing. Pseudostuttering, for example, is a technique specific to stuttering treatment where the clinician may model stuttering behaviors with the client or in generalized settings to provide vicarious exposure to different styles of communication effectiveness and to develop empathy for their clients' lived experiences (Ham, 1990). The clinician also often has the client pseudostutter to increase acceptance, openness, awareness, identification, desensitization and self-monitoring abilities (Byrd, Gkalitsiou, Donaher, & Stergiou, 2016).

Throughout these experiences, and therapy in general, it is helpful for the clinician to frequently model pseudostuttering across settings, which is a stress-inducing practice. For example, SLP undergraduate students who engaged in pseudostuttering with the general public reported high anxiety prior to pseudostuttering (4.6 on a 5-point scale), and embarrassment, avoidance, and anger towards negative listener reactions following interactions (Mayo & Mayo, 2020). However, the majority of participants also reported increased empathy towards their clients as a result.

Putting oneself into clients’ shoes during an intensive and emotional period of change is invaluable in creating a strong client-clinician alliance and providing effective therapy (Floyd,

Zebrowski, & Flamme, 2007; Prochaska & DiClemente, 1986). An intimate understanding of the experience of stuttering and a positive therapeutic alliance have been described by people who stutter as essential characteristics of effective clinicians (Plexico, Manning, & Dilollo, 2010). Thus, empathy and experiential stress can be beneficial for clinicians in some circumstances, but if left unchecked can increase to levels associated with serious consequences, especially when experienced over a period of time.

The transition to a professional role involves integration with the individual's personal identity, which can be challenging to navigate. The desire to help others is likely a contributing factor in choosing a helping profession such as Counseling or SLP. However, a sustained empathetic response in highly emotional environments without adequate self-care can result in compassion fatigue (Figley, 2002). Compassion fatigue is a sense of emotional exhaustion related to exposure to clients' trauma or pain, especially over an extended period of time, and it reduces the clinician's ability to continue providing empathetic care for their clients. Student clinicians must learn how to manage their own emotions while providing treatment for another. The treatment provided by the student-clinician is directly related to client outcomes and may cause a great sense of responsibility and even additional stress.

Counseling graduate students report educational environments and associated stressors similar to their SLP counterparts. Counseling students report stress related to a variety of influences including challenges in personal relationships, daily responsibilities, finances, and academics (Kardatzke, 2009) as well as their intensive clinical placements and practicums (Nelson, Gray, Friedlander, Ladany, & Walker, 2001). Craig and Sprang (2010) describe secondary traumatic stress, compassion fatigue and burnout as occupational hazards of working in "highly stressful, trauma-laden environments" that are inherent in the counseling field. In this

study, a younger age, less experience in the field, and higher numbers of clients with PTSD on one's caseload were found to be significant predictors of burnout. Thus, Counseling student clinicians, many of whom fall into these categories, are likely especially at risk. In contrast to SLP student clinicians, Counseling students have perhaps the advantage in regards to education covering emotional management and regulation. Because professions related to psychotherapy and social work (e.g. Counseling) are frequently exposed to emotional stressors, recommendations for self-care and prevention of compassion fatigue and associated effects are common in the literature (Figley, 2002). Not only are counseling students trained to provide intervention for clients who are experiencing varying levels of distress, in order to maintain accreditation, counseling programs must include "self-care strategies appropriate to the counselor role" (The Council for Accreditation of Counseling and Related Educational Programs [CACREP], 2015). Programs may approach this aspect of their students' training in a variety of ways including personal and peer counseling, pre-practicum courses, supervisor feedback, etc. These self-care strategies are essential to maintaining student well-being. Conversely, self-care strategies are not a requirement for program accreditation in Speech-Language Pathology and thus may not be included in the essential curriculum (Standards for Accreditation of Graduate Education Programs in Audiology and Speech-Language Pathology, 2004).

Negative effect of stress on students and clients

Without appropriate management, chronic elevated stress can lead to student distress and negative personal and professional outcomes (McCall, 2007). Physical health may be affected due to an increased susceptibility to physical illness (Mayorga, Devries, & Wardle, 2014). Students may also be at increased risk for mental illness, which can impact academics, substance

abuse, and relationships (Hunt & Eisenberg, 2010). Academic performance can also be significantly impacted due to decreased ability to learn new information, maintain productivity, and sustain a positive attitude (Lincoln, Adamson & Covic, 2004; Ross, 2011). Chronic stress negatively impacts job performance as well. For example, elevated stress impairs sustained attention including memory tasks and decision-making (LeBlanc, 2009) which leads to increased errors and poorer patient satisfaction and outcomes (Irving et al., 2009). Stress-inducing clinical environments (e.g. sleep deprivation, time pressure, and sustained empathetic response towards others) result in stress that manifests in burnout, decreased empathy, and communication that is less-client centered (Passalacqua & Segrin, 2012; Reith, 2018). This is significant because the quality of clinician-client interactions has been directly linked to patient outcomes, and less empathic and less patient-centered interactions lead to poorer results. From the provider perspective, physicians who self-report high stress, burnout, and job dissatisfaction report a higher likelihood of errors and lower quality patient care (Williams, Manwell, Konrad, & Linzer, 2007). From the patient's perspective, treatment from physicians with greater self-reported burnout is associated with lower patient satisfaction in their care and longer recovery times (Halbesleben & Rathert, 2008). To this end, the negative effects of stress can prove to be expensive or even actively harmful to clients. Conversely, more empathic and patient-centered communication results in improved treatment outcomes (van Dulmen & Bensing, 2002).

In an intensive setting, stressed student clinicians are likely to have significant difficulty maintaining their personal well-being and positive relationships with their coworkers and clients. Clinicians must be able to facilitate strong relationships within therapeutic teams and be acutely attuned to their clients' readiness and willingness to engage in order to guide them through significant and lasting change (Floyd, et al., 2007). If students are significantly stressed,

however, it is challenging to cultivate such an environment and the effectiveness of the therapeutic intervention is compromised.

Mindfulness in graduate programs

Often it is not desirable, or even possible, to modify clinical environments. In these cases, training clinicians in internal coping strategies is an effective and evidence-based stress management option. Mindfulness training and practice has been identified as an especially promising internal coping method for reducing perceived stress for healthcare professionals, including students, with potential benefits for clients (Beddoe, & Murphy, 2004; Burton, Burgess, Dean, Koutsopoulou, & Hugh-Jones, 2017; Davis & Hayes, 2011; Escuriex, & Labbé, 2011; Felton, Coates, & Christopher, 2015). Mindfulness can be described as "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2006, p. 145). In other words, mindfulness practice intends to change a person's relationship to their environment and encourage a more neutral approach towards stimuli, especially stressors, which includes one's own thoughts. "Over time, these practices are believed to promote healthier ways of relating to inner experiences through enhanced awareness, attention regulation and acceptance of thoughts, emotions and states without the need to invest in, alter or escape from them" (Burton et al., 2017, p.3, *summarizing* Chu, 2010).

The practice of mindfulness itself can be engaged in through specific exercises, in which the ultimate goal is "cultivating a continuity of awareness in all activities of daily living" Kabat-Zinn, 2006, p. 147). Thus, mindfulness encompasses a set of skills as well as a core mindset. Another way to describe this distinction is to present the differences between *trait* and *state*

mindfulness (Lau et al., 2006). *Trait* mindfulness can be described as an underlying characteristic which manifests the outward expression of mindful behaviors. In other words, *trait* mindfulness can be thought of as an individuals' average mindfulness in daily life. A *state* of mindfulness describes the ability to use a mindful skillset (e.g. observing, describing, acting with awareness, and accepting without judgment, diffusion) during a specific moment in time.

Some mindfulness-based intervention practices relevant to both SLP and counseling focus more heavily on some elements of mindfulness than others and describe mindful skills differently. Acceptance and Commitment Therapy (ACT) for example, defines *present moment awareness* as a basic mindfulness skill that encompasses non-judgemental attention to internal and external events as they occur. Practicing present moment awareness frequently can be indicative of an underlying *trait* of mindfulness, while individuals engaging in present moment awareness at a specific moment in time would be considered to be within a *state* of mindfulness. Similarly, ACT prefers the term *diffusion* to describe the process of mindfully observing thoughts as mental events without necessarily believing them to be true (Gillanders, et al., 2014). The consistent ability to diffuse from thoughts on a regular basis can be more indicative of the overall character *trait* of mindfulness, while the practice of thought diffusion can thus be described as a *state* of mindfulness as it is taking place.

Phenomenological experiences such as stress and mindfulness are often investigated by asking individuals to directly report their experiences. Stress, for example, is often measured using self-report surveys such as the Perceived Stress Scale (PSS; Cohen, Karmarck, & Mermelstein, 1983), while mindfulness has been investigated by either measuring the extent to which an individual reports an overall mindful affect (i.e. *trait mindfulness*) and consistent use of mindful behaviors (e.g. thought diffusion) using a measure such as the Cognitive Fusion

Questionnaire (CFQ7; Gillanders et al., 2014), by investigating the self-reported ability to demonstrate mindful behaviors within a specific moment in time (i.e. *state mindfulness*) using a measure such as the Toronto Mindfulness Scale (TMS; Lau et al., 2006), or both.

Through these kinds of phenomenological measures, mindfulness practice has been shown to decrease perceived stress in student clinicians across disciplines (Beck & Verticchio, 2014; Beddoe & Murphy, 2004; Irving et al., 2009). Counseling training programs have perhaps some of the more robust foundation in this realm, especially since program accreditation requires inclusion of course content related to self-care strategies in addition to strategies for clients (Brown, Marquis, & Guiffrida, 2013; CACREP, 2015; Lee et al., 2018). To this end, Counseling students are more likely to have exposure to mindfulness, both for their clients and for themselves. Explicit mindfulness training for student self-care in counseling programs has demonstrated a decrease in stress, anxiety, rumination and negative affect, with the added positive effects of increased emotional intelligence, self-compassion, social connectedness, and confidence in the ability to ameliorate future stress (Cohen and Miller 2009, Shapiro et al., 2007).

In contrast, the body of literature concerning SLP graduate student stress levels and stress reduction techniques remains sparse and incomplete. The current literature regarding SLP and mindfulness has focused primarily on clinicians implementing mindfulness as an interventional component for clients, which has been revealed to be effective therapeutic element for a variety of communication disorders including aphasia, autism spectrum disorder, and stuttering (Baxter et al., 2015; Beilby, Byrnes, & Yaruss, 2012; Boyle, 2011; Cohen & Janicke-Deverts, 2012; Kiep, Spek, & Hoeben, 2015; Laures-Gore, & Shisler Marshall, 2016).

Less is known about the experiences of SLP students themselves. From the limited number of recent studies available, findings suggest that SLP students experience stress at high levels that often exceed norms relative to the PSS (Beck & Verticchio, 2014; Beck et al., 2017; Ellis & Brilley, 2018). Without adequate understanding of student stress as a field, it stands to reason that few mitigation strategies have been investigated as a result. As a start towards addressing the issue, some SLP academic programs have begun to incorporate mindfulness into their students' coursework, training, and practice. As an example, preliminary research suggests that mindfulness and related practices such as yoga, formal meditation, and reflective journaling decreased stress and increased confidence in clinical skills, particularly the counseling aspects, for SLP graduate students as part of an academic course (Beck & Verticchio, 2014). A related study showed that as part of a between-group design including a control group, SLP students demonstrated decreased perceived and biological markers of stress and negative aspects of perfectionism, and increased self-compassion after participating in 20-minute mindful yoga and breathwork practices weekly over the course of a semester (Beck, et al., 2017). These initial findings demonstrate that mindfulness practices have potential to affect SLP student stress and should be investigated more thoroughly.

The current study

While the state of the literature concerning Speech-Language Pathology student clinicians' perceived stress and potential mitigation strategies is currently under-developed, existing studies suggest that SLP students experience high levels of stress, and several self-care strategies such as journaling and yoga are beginning to be investigated (Beck, et al., 2017; Beck & Verticchio, 2014). At present, mindfulness within the field of SLP is presently underutilized as

a coping mechanism for stressed students. As a strategy, its ability to mitigate stress's negative effects has been demonstrated in other healthcare fields (e.g. Counseling), and preliminary data regarding mindfulness training and practice for SLP students as part of their coursework is promising, but to our knowledge no studies have examined the effect of mindfulness education and practice in other settings. Therefore, the primary purpose of the current pilot study is to examine SLP compared to Counseling graduate student-clinicians' stress and the effect of mindfulness training and practice during their participation in an intensive interprofessional stuttering clinic.

METHODOLOGY

Design

This study used an ABA single-case research design to examine the effect of mindfulness training and practice on SLP and Counseling graduate students' reported mindfulness and perceived stress levels before, during, and after their student-clinician participation in the Northwest Center for Fluency Disorders Interprofessional Intensive Stuttering Clinic (NWCFD-IISC) at Idaho State University. Questionnaires were completed by participants 3 times within the 1 week prior to the clinic to establish baseline, 6 times throughout the clinic, and then 1 week following the clinic and 1 month after the clinic ended as follow-ups. The study was approved with exempt status by the Human Subjects Committee at ISU and participants gave their informed consent following brief education about the study's aims and procedures prior to participation.

Participants

Four SLP and three counseling students were included for a total of 7 clinicians. Four of the students were female and three were male (average age=33, standard deviation=8.3). All student clinicians had completed one year of their graduate programs and multiple clinical placements and had not previously attended the NWCFD-IISC. Prior to participation in the clinic, students had limited exposure to persons who stutter, and had not taken coursework specific to stuttering treatment. Additionally, SLP students had varying levels of prior exposure to mindfulness. Counseling students as a whole reported increased background in mindfulness due to exposure as part of their clinical training. Therefore, counseling student clinicians' results served as a comparison to the SLP students, who were largely unpracticed in mindfulness.

Materials

Stress Measures

Perceived stress levels were measured using the *Perceived Stress Scale* (PSS; Cohen, Karmarck, & Mermelstein, 1983). The PSS is a classic measure of stress that is commonly used to measure how frequently one has experienced certain thoughts or feelings. It consists of 10 questions that ask about the frequency of perceived stress in the last month or since the individual last completed the PSS. Individuals are instructed to indicate how often they have felt or thought a certain way over a period of time on a 5-point likert scale ranging from 1 (almost never) to 5 (very often). The purpose is to measure how an individual perceives stress in their daily life. The measure includes questions such as "how often have you been angered because of things that were outside your control?"

Mindfulness Measures

Both the underlying *trait* of mindfulness and the active *state* of mindful actions were measured in this study. This was done by measuring general fusion in daily life to distressing thoughts--in this case, concerns about clinical competency (*trait)* as well as by measuring students' perceived ability to demonstrate mindful behaviors during specific moments in time (*state).*

The diffusion aspect of *trait* mindfulness was measured using the *Cognitive Fusion Questionnaire (CFQ7).* The CFQ7 is a 7-question survey in which individuals are instructed to circle the number that indicates how true statements are for them. Numbers range from 1(Never true) to 7(Always true). The purpose is to measure how "fused" or attached individuals are to their distressing thoughts or beliefs. Cognitive fusion is inversely related to mindfulness, and indicates a lack of non-judgemental observation of thoughts, which would be characteristic of a more mindful approach to daily activities. The authors recommend modifying the questionnaire to be relevant to topics relevant to the target population, so the concept of "clinical competency" was determined to be an appropriate potentially universal concern for the student clinicians. Examples of items include "I get upset with myself for having certain thoughts about my clinical competency."

Clinicians' *state* mindfulness was evaluated using the *Toronto Mindfulness Scale* (*TMS*). The *TMS* is a 13-question survey in which individuals are instructed to indicate how much they agree with statements on a 5-point likert scale ranging from 0 (not at all) to 4 (very much). The purpose is to measure how frequently or to what extent the

individual demonstrates mindful behaviors (e.g. diffusion, observation, curiosity, etc.) during a period of mindfulness. The measure includes items such as "I am curious about each of my thoughts and feelings as they occur."

Description of the intensive clinic program setting

Idaho State University's Northwest Center for Fluency Disorders Interprofessional Intensive Stuttering Clinic (NWCFD-IISC) is a residential two-week clinic in which SLP and counseling graduate students work together to treat clients who stutter. The cornerstone of intervention during the clinic is Acceptance and Commitment Therapy (ACT). Mindfulness is an integral part of the ACT-informed framework and was incorporated throughout for both clients and clinicians. Counseling and SLP students were assigned to triadic teams, including the client as a member, and they worked in their groups throughout the entirety of the clinic. Clinicians were encouraged to utilize mindfulness during daily activities including therapy sessions in addition to designated periods of focused and intentional practice. Clinicians led their clients in mindfulness exercises throughout the clinic at their discretion for the benefit of the client.

Clinician training

Prior to treating clients, clinicians attend three 8-hour training days with an additional follow-up day after the clinic to debrief, making their cumulative participation 19 days total. During the training, information about client disorders and treatment utilizing ACT principles (including mindfulness practice) were presented through didactic lectures, class discussions, experiential activities including mock counseling sessions. Clinicians practiced speech modification

techniques and pseudostuttering with peers during all three days of training, including a half day in public with unfamiliar listeners.

Clinic schedule and procedures

The clinic ran for 15 days, approximately 8 hours per day. Clinicians were assigned to work in triadic teams (SLP, counseling, and client) for the duration of the clinic. Typical days included: two guided group discussions in the morning followed by an educational session on a clinically relevant topic, with three individual therapy sessions, one client group therapy session, and a group debriefing for student clinicians and their supervisors scheduled throughout. The clinic also included: skill-generalization activities in which clinicians and their clients utilized speech modification and pseudostuttering together in public, one half-day at a ropes course, one half-day at a farmer's market, and two full days in shopping districts. Training and treatment activities took place between 9 am and 5 pm each day (8 hr/day).

Student clinician participation and expectations

Student clinicians had a rigorous workload and numerous responsibilities during the clinic that were likely stress-inducing. Student clinicians participated jointly in all of the same clinical activities as their clients with the exception of the client group therapy session. Clinicians required a detailed knowledge of each day's scheduled therapeutic focus, treatment principles (including mindfulness), and application to ensure adequate participation in group discussions, generalization activities, and individual therapy provision. Treatment included modifying their typical treatment approach to support program procedures and reinforce ACT principles while preparing, modeling, and debriefing after generalization scenarios targeting therapeutic skills (e.g.

pseudostuttering, mindfulness). Interprofessional communication was a critical element in all formal and informal clinic activities, including developing treatment plans and interacting within sessions.

Student responsibilities also included additional work outside of scheduled clinical hours. Within the first 3 days of the clinic, students analyzed assessment data and wrote initial treatment reports and assessment plans after the day's sessions concluded. During the middle 1/3 of the clinic they developed 1-2 hours of client homework each night and wrote detailed clinical notes of the day's activities and the client's progress. Near the end of the clinic, students performed post-clinical assessments which were also analyzed and summarized in final reports and developed into year-long maintenance plans with relevant SLP and counseling referrals.

Procedures

Self-reported surveys were used to assess self-reported mindfulness and stress levels. Clinicians were tracked pre, peri, and post their participation in the NWCFD-IISC. Participants provided pseudonyms to ensure the anonymity of their questionnaire responses. The *Perceived Stress Scale (PSS), Cognitive Fusion Questionnaire (CFQ7),* and *Toronto Mindfulness Scale (TMS)* were emailed to participants 1 week prior to the clinic and completed 3 times within this week for baseline. The same questionnaires were provided as hard copies during the clinic at the beginning of each day (just prior to the first group meeting) approximately every other day for a total of 6 days over 2 weeks. The same questionnaires were emailed to participants 1 week after the clinic for post-treatment data, and once again 1 month later for maintenance data. Eleven data points were taken per participant total. Some minor variability occurred per participant in regards

to days reported (see figures). Following the clinic, surveys were scored and responses were transferred using the provided pseudonyms into a password-protected hard drive for analysis.

Data

Data analysis

Questionnaires--*Perceived Stress Scale (PSS), Cognitive Fusion Questionnaire (CFQ7),* and *Toronto Mindfulness Scale (TMS)* --were scored according to each measure's prescribed scoring method (Cohen, Kamarck, & Mermelstein, 1983; Gillanders et al., 2014; Lau et al., 2006). Figures are presented for each questionnaire (see Figures 1 and 2).

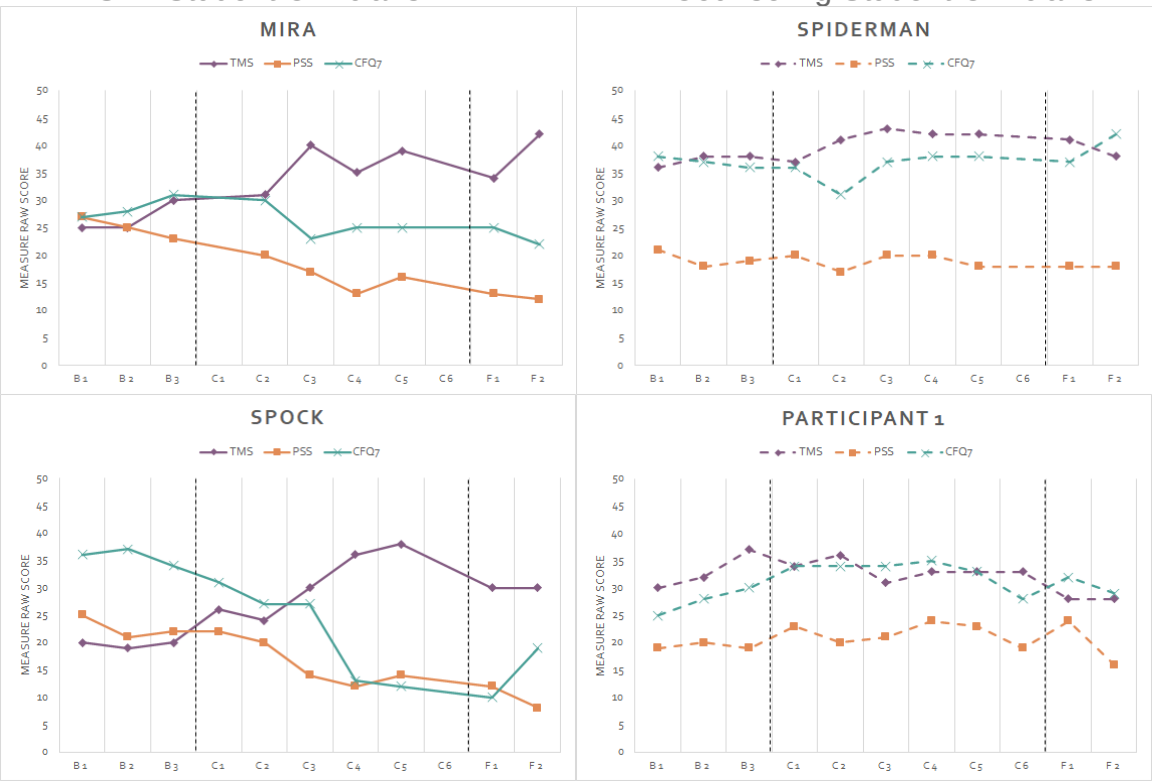
RESULTS

Figure 1 presents baseline, training and practice, and follow-up raw scores for all participants on PSS, CFQ7, and TMS measures presented individually. Figure 2 shows the same data in an alternate visualization in which data is grouped by measure and discipline for comparative purposes. The students' self-selected pseudonyms are maintained in the presentations. In studies which utilize a single-case design, each participant serves as their own control and data obtained through repeated measures are traditionally analyzed through visual analysis (Kratochwill et al., 2010), and is thus utilized in the presentation of results and the following discussion. Within the graphs, participant data is presented sequentially and each point on the x axis represents each subsequent data collection, approximately every 2 days for each participant during baseline and clinic phases. The following labels are used: B1, B2, and B3 for baseline, C1 -- C6 for clinic, and F1 for 1 week post, F2 for 1 month post. The y axis of each graph represents the raw score range of the questionnaire while the x axis represents the date the

questionnaire was taken. The same data set is displayed two ways: change over time for all questionnaires relative to each individual and change over time for each cohort (SLP vs. Counseling students) relative to each questionnaire.

SLP Student Clinicians

Counseling Student Clinicians



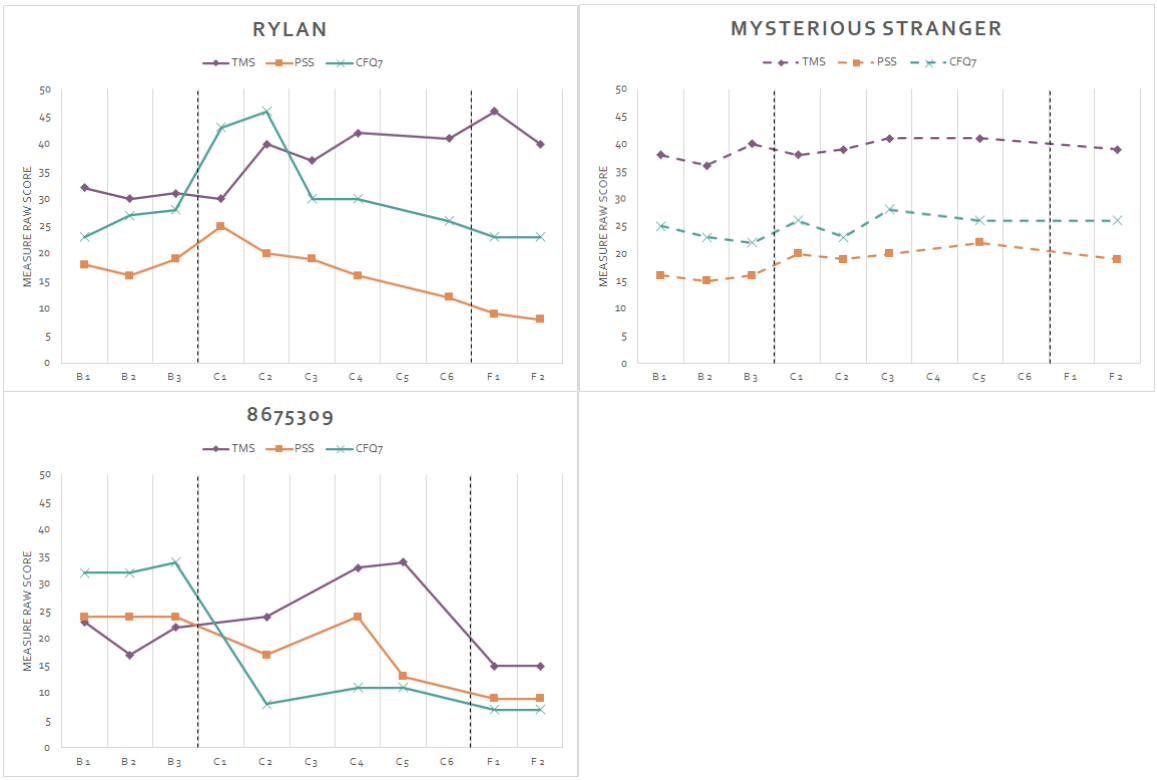


Fig. 1. PSS, CFQ7, and TMS raw scores over time for each participant. Participant data is presented sequentially. Each point on the x axis represents each subsequent data collection, approximately every 2 days for each participant during baseline and clinic phases. The following labels are used: B1, B2, and B3 for baseline, C1 -- C6 for clinic, and F1 for 1 week post, F2 for 1 month post.

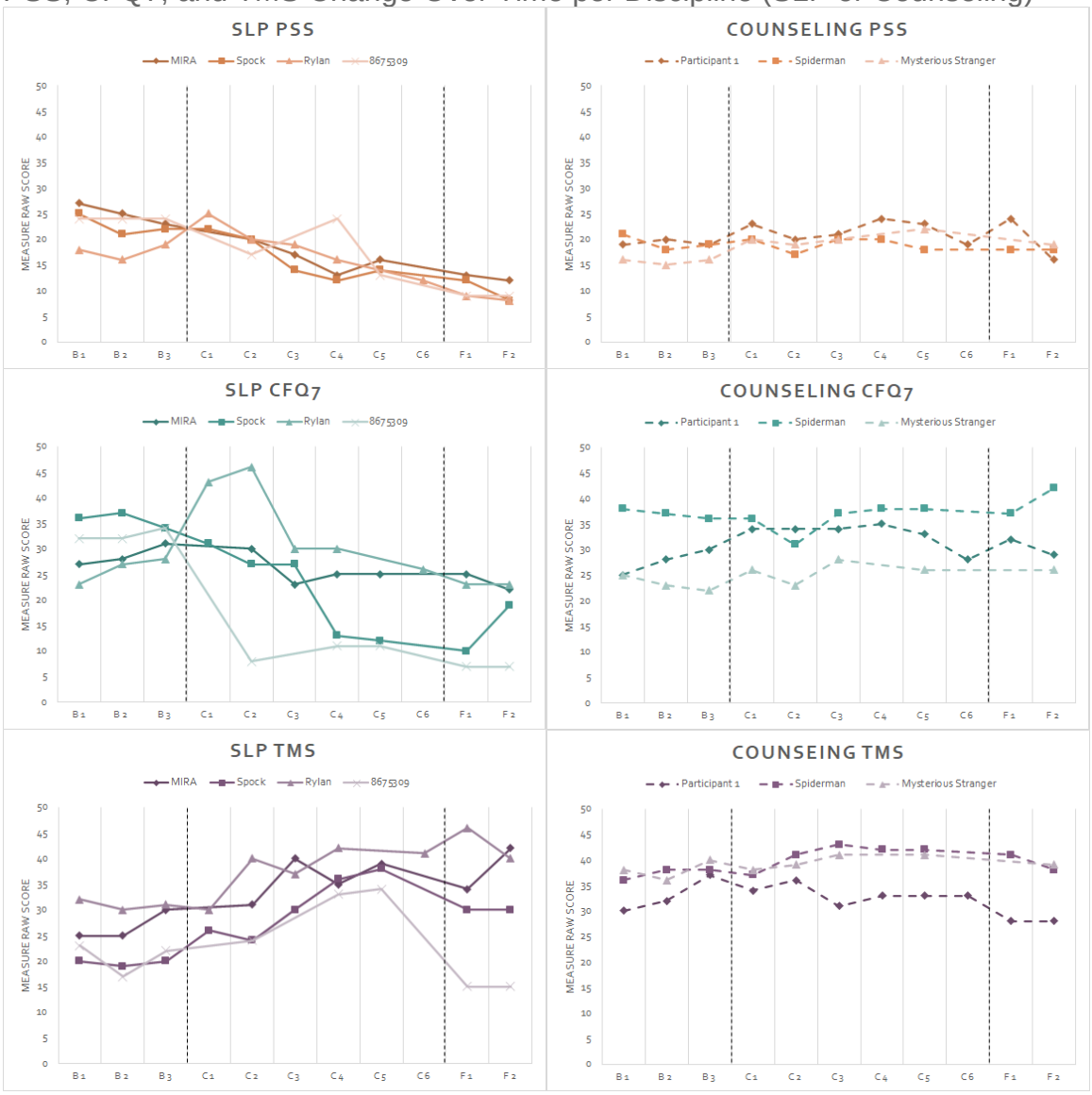


Fig. 2. Raw scores change over time for each participant on each measure (PSS, CFQ7, TMS), grouped by discipline (SLP or Counseling). The same x axis scaling and labels are used as the individual participant graphs (see Fig. 1): B1, B2, and B3 for baseline, C1 -- C6 for clinic, and F1 for 1 week post, F2 for 1 month post.

Counseling student data had stable trends on all three measures throughout the clinic: PSS, CFQ7, and TMS with similar levels during baseline, intervention, and follow-up phases (Figures 1 and 2), though a slight reduction in TMS and a slight increase in CFQ7 scores were

observed. Speech-Language Pathology students data had stable baseline trends on all measures, and downward trends on the PSS and CFQ7 and an upward trend on the TMS during the intervention phase (start of the clinic) (see Figure 1).

Stress (PSS)

As a whole, SLP PSS scores decreased significantly throughout. Mira's baseline PSS scores demonstrated a downward trend. This trend continued throughout the clinic and continued to decrease 1 month post to levels below baseline. Because of the downward trend in baseline, it is unclear whether the intervention phase is responsible for reducing scores. However, it should be noted that the intensive clinic environment did not increase PSS scores. Spock's baseline PSS scores were stable. PSS scores decreased during the clinic and continued to decrease 1 month post to levels below baseline. Rylan's baseline PSS scores were stable. Levels peaked on the first day of the clinic. PSS scores decreased during the clinic and continued to decrease 1 month post to levels below baseline. 8675309's baseline PSS scores were stable. Levels peaked on August 6th, which was a generalization activity at a farmer's market which included pseudostuttering with unfamiliar listeners. PSS scores decreased during the clinic and continued to decrease 1 month post to levels below baseline.

Trait Mindfulness (CFQ7)

As a whole, SLP CFQ7 scores moderately decreased throughout. Mira's baseline CFQ7 scores were stable. Levels peaked on the first day of the clinic. CFQ7 scores decreased during the clinic. CFQ7 score rose slightly immediately following the clinic (1 week) and decreased 1 month post to levels below baseline. Spock's baseline CFQ7 scores demonstrated a downward trend. CFQ7 scores continued to decrease during the clinic. CFQ7 scores increased 1 month

following the clinic, but remained at levels below baseline. Because of the downward trend in baseline, it is unclear whether the intervention phase is responsible for reducing scores. Rylan's baseline CFQ7 scores were stable. His CFQ7 scores peaked on July 31st. CFQ7 decreased during the clinic and increased slightly 1 month post but remained at levels below baseline. 8675309's baseline CFQ7 scores were stable with a slight upward trend. CFQ7 scores decreased significantly on July 31st, and remained at similar levels with a slight increase during the clinic. These CFQ7 scores were maintained at levels below baseline 1 month post. On an individual basis, there were marked differences near the beginning of the clinic. CFQ7 scores for SLP students decreased overall during the clinic. As a whole, CFQ7 scores remained at levels below baseline 1 month post.

State Mindfulness (TMS)

As a whole, SLP TMS scores increased significantly throughout. Mira's baseline TMS scores were stable with a slight upward trend. TMS scores increased during the clinic. TMS scores decreased slightly 1 week post clinic, but increased 1 month post to a level higher than the highest score during the clinic. Spock's baseline TMS scores were stable. TMS scores increased during the clinic. TMS scores decreased 1 week post, but increased 1 month post to levels above baseline. Rylan's baseline TMS scores were stable. TMS scores increased during the clinic. TMS scores continued to increase 1 week following the clinic, with a slight decrease 1 month post, but remained at levels above baseline. 8675309's baseline TMS scores were stable. TMS scores increased during the clinic. TMS scores were not maintained at 1 month post and were at levels similar to and slightly below baseline.

DISCUSSION

The primary objective of this pilot case-series study was to investigate the effect of a mindfulness training program and practice on SLP as compared to Counseling graduate student clinicians' perceived stress levels during an intensive interprofessional stuttering clinic that utilized an Acceptance and Commitment Therapy (ACT) informed framework. Speech-language Pathology and Counseling students completed the Perceived Stress Scale (PSS), Cognitive Fusion Questionnaire (CFQ7), and Toronto Mindfulness Scale (TMS) before, during, and after the training and clinic to assess student clinicians' levels of perceived stress, fusion to thoughts or feelings, and mindfulness.

Counseling student stress and mindfulness

Counseling student clinicians' stress and mindfulness levels remained relatively stable throughout. As stated previously, Counseling students as a whole typically have greater exposure to self-care strategies, especially relative to highly emotional environments that put students at risk of compassion fatigue (Brown, Marquis, & Guiffrida, 2013; CACREP, 2015; Figley, 2002; Lee et al., 2018). The Counseling students in this study were likely aware of mindfulness as a method of coping with emotional reactivity (personally or the client's). It is possible that Counseling students used mindfulness or other self-care strategies at baseline that continued throughout the clinic. Thus, neither mindfulness nor stress varied significantly with the introduction of mindfulness during the training period, nor during practice throughout the clinic. However, SLP student clinicians are less frequently exposed to more emotionally-laden environments and possible self-care strategies, so as a whole have less experience and understanding of how to cope with stressors, especially related to secondary stress stemming

from clients' experiences. For some, it may have even been their first time directly engaging with the content and increased variability is an expected outcome. As a result, mindfulness training and practice appeared to have a much more significant effect on SLP students' perceived stress and mindfulness levels.

SLP student stress and mindfulness

Our data indicate that at baseline, SLP students overall had high levels of stress (PSS), high levels of cognitive fusion (CFQ7), and low levels of state mindfulness (TMS). While participating in the intensive clinic, SLP students' stress levels decreased while both state and trait mindfulness increased throughout. Following the clinic, stress continued to decrease, while state and trait mindfulness appeared to decrease slightly immediately following, but remained at levels higher than baseline one month post for most students, indicating maintenance and carryover of skills learned with some regression. Some patterns in the data, both as a cohort and at the individual level, correlate to events or curriculum that occurred during the clinic, which may indicate variability in each individual's ability to utilize mindfulness skills in various contexts.

Stress

Baseline PSS scores for SLP students exceed average levels found in the general population (Cohen & Janicke-Deverts, 2012). According to 2009 national survey norms reported by Cohen and Janicke-Deverts (2012), SLP student clinicians' baseline PSS scores as a whole were greater than 1 standard deviation above the mean for several demographics (e.g. gender, age, ethnicity). Ellis and Briley's 2018 study found that 48% of second year students (N=23) reported moderate or greater levels of perceived stress (a PSS score of >20 out of 40 possible)

with a mean score of 18.48 at week 4 of their fall semester. In comparison, 75% (N=4) of SLP students clinician in the present study reported moderate or greater levels of stress with a mean score of 22.33 at baseline (average of all 3 baselines for all participants). These levels peaked near the beginning of the clinic (C2) with a mean of 19.25 (N=4). As discussed previously, adjusting to new environments, engaging in new treatment methods, and becoming part of an interprofessional team (possibly for the first time and in close proximity) can increase perceived stress. However, stress levels decreased significantly for SLP students as the clinic continued, despite these conditions being maintained throughout. The average PSS score near the end of the clinic (points C5-C6) was 13.75 (N=4) and was 9.25 (N=4) at 1 month following the clinic. All SLP student clinicians thus reported low levels of stress (<20/40) at these times. It is unclear whether prolonged exposure and increased familiarity to the stressors of an intensive clinic contributed to decreased perceived stress levels. It is possible that increased comfortability with the environment and expectations, etc. may have played a role in decreasing the intensity of the stressors. However, working closely with clients in intensive environments without adequate coping mechanisms in place is likely to result in increased stress, emotional exhaustion, and burnout (Malasch & Jackson, 1981). Therefore, it appears that mindfulness training provided some effect, as stress levels were not observed to increase, but instead decreased to levels below baseline, even greater than 1 standard deviation below national averages for similar demographics (Cohen & Janicke-Deverts, 2012) for several participants.

Cognitive Fusion/Trait Mindfulness

As a whole, SLP student clinicians' CFQ7 scores decreased throughout the clinic, but effects appeared less pronounced than score changes on other measures and also varied more considerably per individual. For example, Mira and Spock's scores remained at relatively stable

moderate levels and showed little change before, during, and after the clinic, while Rylan and 8675309 showed dramatic changes initially which steadily decreased to low levels as the clinic progressed. For example, On July 31st (C2) Rylan's cognitive fusion spiked while 8675309's decreased dramatically. This day correlated with an experiential activity at a ropes course. Because this study measured fusion to a particular thought ("concern about clinical competency") to investigate an underlying trait of mindfulness, the types of activities each day may have had varying influence on each students' relationship to their "clinical competency." The dramatic difference in state mindfulness on the ropes course day, for example, may be influenced by each individual's personal relationship to the activity. The curriculum's progression from more Counseling-focused emotional work to more SLP-based speech modification techniques and generalization activities (see Appendix A) may have impacted SLP student clinicians' concerns about "clinical competency" in a similar way. Supervisor feedback and style may have also had some influence. Because of these factors and the variability in results, it appears that an intensive 2-week mindfulness training and practice had a small impact on trait mindfulness in SLP students, with pronounced differences at the individual level. This stands to reason since mindfulness is a skill and the underlying character trait takes time to develop.

State Mindfulness

State mindfulness levels of SLP students increased to levels similar to Counseling students during the 2-week clinic. This indicates that mindfulness training and practice can markedly increase SLP students' ability to use mindfulness skills in a relatively short period of time. The largest increase in TMS scores was observed between C2-C3 for most SLP students.

The clinic was divided into 3 phases (see Appendix A). Phase I: *Understanding Stuttering and Yourself: From Avoidance to Acceptance* was the most mindfulness-heavy portion of the clinic. As mentioned previously, point C2 was correlated with an experiential activity at a ropes course. Point C3 marked the beginning of Phase II: *The Process of Change* which focused more heavily on exploration of personal values and identity. Between points C2 marked the transition from Phase I to Phase II. At the end of Phase I, the themes of mindfulness, openness, and acceptance were discussed and summarized within group discussions and encouraged within individual therapy sessions. It appears that a change in TMS practice was observed during this summarization and transition period, which stands to reason based on the curriculum. It should be noted however that although the subsequent phases of the clinic were less explicitly mindfulness-focused, SLP TMS scores continued to increase throughout, indicating a continuation of skills and practice.

While trait mindfulness showed only small changes within the duration of the clinic, the significant increase in state mindfulness as measured by the TMS is suggestive of future trait mindfulness development, as increased state mindfulness during meditative moments is predictive of trait mindfulness development over time (Kiken, Garland, Bluth, Palsson, & Gaylord, 2015). The rate at which trait mindfulness develops will also vary per person, since "individuals who are predisposed to more rapidly develop the capacity to access deeper states of mindfulness across repeated meditation sessions may be more likely to increase in trait mindfulness by the end of a [mindfulness based intervention]" (Kiken, et al. 2015, p. 42). The interest and effort individuals place upon continued practice will also determine trait mindfulness development, and will vary per individual. This is demonstrated in the data, as Mira, Spock, and Rylan maintained TMS scores for 1 month, while 8675309's scores showed a significant drop

immediately following the clinic. Thus, as SLP student clinicians understand and consistently choose to use mindfulness skills, they have the opportunity to continually foster a mindful disposition and its associated benefits, but it will depend on personal motivation to do so.

CONCLUSION

Speech-Language Pathology (SLP) student clinicians experience a variety of stressors during their programs that are specific to graduate programs and healthcare-specific fields alike, including navigation of their clinical placements. During these practicums, SLP students interact closely with clients during a period of significant professional identity development while coaching their clients through their own stages of change. The need for sustained empathetic response, especially in relation to chronic communication disorders that include anxiety-inducing therapeutic approaches (e.g. pseudostuttering), puts SLPs at significant risk of compassion fatigue, burnout, and other negative outcomes of stress. Intensive clinical programs in particular have the potential to further exacerbate the experience and cause personal and professional harm to students and compromise their clients' outcomes. Mindfulness in the SLP literature to date has been geared towards client treatment, which led to the development of the Northwest Center for Fluency Disorders Interprofessional Intensive Stuttering Clinic (NWCFD-IISC), a residential clinic that incorporates a mindfulness-informed approach towards stuttering treatment utilizing Acceptance and Commitment Therapy (ACT). Participation in the 2-week intensive clinic that provided mindfulness training and practice for SLP student clinicians increased the participating SLP student clinicians' state and trait mindfulness and significantly reduced their perceived stress. Additionally, these effects were maintained over 1 month following the clinic. These results suggest that brief, intensive mindfulness training and practice can increase SLP students'

state mindfulness skills to levels similar to Counseling students and reduce perceived stress even during an intense and emotionally-laden environment, which SLP students may not be accustomed to. Trait mindfulness takes time to develop, but state mindfulness principles once learned may be practiced consistently and develop a mindful affect over time and the potential associated benefits. In conclusion, intensive mindfulness training and practice may be an attractive intervention for SLP students in order to develop mindfulness skills over a relatively short period of time, which student clinicians can continue to use throughout their programs and into their careers and personal lives to mitigate future negative effects of stress.

Limitations and Direction for Future Research

Single-case designs have several inherent limitations, including fewer data points, potential threats to internal validity, reduced generalizability, human variability in baseline, and maturation effects (Lobo, Moeyaert, Cunha, & Babik, 2017). While 3 data points is acceptable during the baseline phase, it is preferable to have 5 or more. Baseline measures were taken within the first week of the clinic, and the anticipation of the clinic itself may have increased perceived stress to levels higher than observed during typical program activities. Baseline was also somewhat variable per participant, with each individual's beginning date varying per participant. Baseline measures taken farther in advance (e.g. 1+ month) prior may have also strengthened results. A larger number of data points taken throughout may have provided clearer trends and more information relative to clinic activities. Two additional student clinicians (1 SLP and 1 Counseling) had agreed to participate in the study but did not complete an adequate number of questionnaires to be analyzed, which may have led to an attrition effect. Similarly, there was some variability in when questionnaires were received, and 1 SLP and 1 Counseling

student did not provide follow-up data, which reduces the strength of maintenance results. Single-case studies have limited generalizability due to the small number of participants, so it is unclear whether intensive mindfulness training and practice in other formats (e.g. not embedded in an ACT-informed curriculum) or different settings would yield similar results. Our intensive clinic also focused on treating clients who stutter, which may limit generalizability to treatment of other communication disorders. Prior exposure to mindfulness, other self-care strategies, stuttering, or other relevant stressors were not probed, so it is unclear how these factors interacted with the intervention phase for each participant. For example, it is unclear whether particular fears (such as heights) may have contributed to stress levels (such as during the ropes course activity) or what other personal events occurred during the clinic. Interactions with each client individually and their personal process of change also likely had an influence on student clinician's levels of stress and frequency of which mindfulness practices were engaged in during clinic hours. Each individual's mindfulness practice outside of clinic hours were not probed and are unknown. Questions on each measure were presented in the same order with each completion, and randomization could have altered results. Maturation effects are also possible, as the students became more familiar with the clinic structure, procedures, and expectations over time.

Future research should be done in typical long-term clinical settings to determine how mindfulness training and practice affects SLP student clinicians in other circumstances and at more typical stress levels. In particular, short intensive mindfulness training programs (i.e. 2 weeks) should be investigated in contrast to semester-long courses to determine effectiveness of alternative delivery method/dosage compared to existing studies. In future studies, frequency of

personal mindfulness activities outside clinic hours could be investigated to more accurately determine dosage. It is also recommended to investigate mindfulness training and practice for SLP student clinicians with larger sample sizes and more diverse populations to increase generalizability of results.

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APPENDIX A

Clinic Curriculum Schedule

Clinician Training

July 26, 27 -- Didactic training and practice, ACT

July 28 -- Student clinician community pseudostuttering

Phase I: Understanding Stuttering and Yourself: From Avoidance and Acceptance

July 29 -- Assessment, education, client introduction to ACT and mindfulness

July 30 -- Practical application of mindfulness and defusion techniques

July 31 -- Ropes course activity, overcoming obstacles and self as context: redefining one's self conceptualization

Aug 1 -- Reducing negative impacts from stuttering via acceptance and willingness

Phase II: The Process of Change

Aug 2 -- Supported generalization and exploration of values

Aug 3 -- Farmer's market generalization and change: committed to action

Aug 4 -- Day off

Aug 5 -- Supported generalization, putting it all together: identity, resistance to change, choices and balance

Phase III: Choosing to Live Your Life on Your Terms: Planning for Long-Term Success

Aug 6 -- Supported generalization: individualizing success

Aug 7 -- Supported generalization and travel

Aug 8 -- Generalized success: planning for the long-term

Aug 9 -- Continued generalization and relapse prevention

Aug 10 -- Becoming your own clinician and graduation