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Effect of Mindfulness Training on Interpretation Exam Performance in Graduate Students in Interpreting

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EFFECT OF MINDFULNESS TRAINING ON INTERPRETATION EXAM PERFORMANCE IN GRADUATE STUDENTS IN INTERPRETING

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THE UNIVERSITY OF SAN FRANCISCO
Dissertation Abstract

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Many graduate interpreting students struggle because the real-time, interactive nature of interpreting dictates that they be able to regulate their attention across different parallel cognitive activities and manage the inherent stress and unpredictability of the task. Within the framework of Cognitive Load Theory, this mixed-methods study explored the effect of short-term mindfulness training on consecutive interpreting exam performance using a quasi-experimental repeated-measures design. It also examined the relationships among mindfulness, stress, aspects of attention, and interpreting exam performance. The sample included 67 students (age M = 26.9 years; 82% female) across seven language programs (Chinese, French, German, Japanese, Korean, Russian, and Spanish). The mindfulness (treatment) group (n = 20) included all students enrolled in Introduction to Interpreting into English who also enrolled in the specially developed Mindfulness for Interpreters elective course. The control group (n = 47) included all other students enrolled in the same introductory interpreting course for each language. The mindfulness group underwent a 4-week (12 hour) mindfulness training. All participants were administered pretests and posttests for consecutive interpreting exam performance (midterm and final), mindfulness (CAMS-R), perceived stress (PSS-10), and aspects of attention (d2 Test of Attention). Qualitative data was collected from the treatment group via online weekly logs, a final written reflection, and a focus group. On average, students in the mindfulness group scored higher on the final interpreting exam than on the midterm, while students in the control group

scored lower, there being a small effect size difference in favor of the mindfulness group both for Accuracy (d = .24) and Delivery (d = .33). The qualitative data suggest that this difference may be attributable to the greater present-focus awareness, self-compassion, acceptance, and self-regulation of attention and emotion that mindfulness-group participants had developed. Mindfulness training appears to help interpreting students optimize their learning and performance by strengthening their self-regulation of attention and emotion and thereby reducing the extraneous load of internal distractors such as mind-wandering, self-criticism, and nerves.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

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Dedicated to the memory of Dr. Madeline Lovell

for the conversation that first inspired this work

1948 – 2016

and

to Denise, Giacinto and Pia

without whose enduring love and support

this work would never have come to fruition

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CHAPTER 1—STATEMENT OF THE PROBLEM

Interpreting is essentially the "task of saying again what has been expressed in another language" (Pöchhacker, 2011a, p. 321). Today, more than 100 institutes of higher education around the world offer degrees in interpreting (AIIC, 2016). Interpreter training programs seek to produce competent interpreters qualified to undertake professional work in the field, from international conferences and organizations, to hospitals and courtrooms (Hale, 2011; Stern, 2011a; Timarová & Ungoed-Thomas, 2008). To this end, post-graduate interpreting programs set rigorous admissions criteria and screen prospective students. An informally estimated 25% of applicants are admitted (Gillies, 2014). Degree programs are typically two years in length and taught by faculty who are professional interpreters themselves (AIIC Training Committee, 2010; Gerver, Longley, Long, & Lambert, 1989).

In its broadest sense, Translation (with a capital T) encompasses both written and oral transfer from one language to another (Gile, 2009). In the profession, however, *translation* refers to written transfer, whereas *interpreting* denotes oral transfer. The two main modes of interpreting are *simultaneous* (like a voice over), or *consecutive* (after the speaker has finished). Translation and interpreting are fundamentally similar tasks requiring the same basic competencies: Be articulate in one's native language; master at least one foreign language to the level of an educated native speaker; have excellent general knowledge and the curiosity to continuously acquire more; possess strong analytical skills (Gile, 2009; Gillies, 2014). These are the core skills on which applicants to translation and interpretation programs are typically screened, because they form the basis for being able to faithfully and effectively transfer meaning from one language to another.

The primary difference between translation and interpreting is the cognitive stress under which interpreters operate as they mediate communication in real-time interactions (Gile, 2004, 2009). While translators process static written texts, working alone at their computer and consulting reference materials as needed, interpreters deal with fleeting discourse that must be instantly deciphered, understood, recalled and reproduced in another language, all in the heat of intrinsically unpredictable human interactions.

A sizable percentage of students admitted to interpreting programs do not make it very far. Many drop out or reorient to (written) translation or other degree tracks by choice, or because they have failed to meet criteria for entry into advanced-level interpreting courses. This dropout/fail rate has anecdotally been estimated to be as high as 70% (Gillies, 2014). If only the most apt prospective students are being admitted to interpreting programs and are being taught by skilled professional interpreters according to methods developed and refined over more than 50 years of formal pedagogy, why do so many students continue to struggle and fail?

Several factors may contribute to such fail rates. First, aptitude tests are not perfect. Having the *potential* to interpret does not mean one can (Gillies, 2014). Also, the real-time, interactive nature of interpreting dictates that interpreters be able to regulate their attention across different parallel cognitive activities, navigate the pragmatics of the interaction, and manage the inherent stress of the task. In particular, interpreting involves "rapid analytical skills from spoken input" and also the ability to cope with and even enjoy the stress and challenge of the task, both in school and throughout one's professional career (Gillies, 2014).

Purpose

The purpose of this dissertation is to explore what can be done to help interpreting students strengthen their general attentional skills and emotional stability under stress in order to build the basic interpreting proficiency required to graduate and begin working professionally. The study examines mindfulness training as a possible pedagogical intervention. Its efficacy is measured through pre- and posttest measures of consecutive interpreting exam performance, mindfulness, attention, and psychological stress, and further explored through the collection of qualitative data. Cognitive load theory suggests that attentional abilities and perceived stress may be mediating variables that help explain any relationship between mindfulness and consecutive interpreting exam performance in graduate interpreting students.

This dissertation addresses two important but often overlooked "filters" Gillies identifies as reasons why students opt or fail out of interpreting programs: attentional demands and stress (Gillies, 2014). It explores the possibility that many of the difficulties students experience arise not just from deficits in verbal fluency and language-processing agility, but from general, underlying cognitive and affective abilities such as to focus, to sustain that attention, and to tolerate stress. The mixed-methods study reported here empirically examines mindfulness training as a pedagogical method that may help student interpreters cultivate such underlying abilities. The overarching purpose is to identify ways in which interpreting programs might better support students as they work to develop professional competence. Quantitatively, the study uses a quasi-experimental repeated-measures design to examine whether a 4-week training in mindfulness had any significant effect on consecutive interpretation exam scores among graduate interpreting students. It also measures changes in mindfulness, stress, and aspects of

attention (executive functioning) as possible mediating variables. Through surveys, written reflections, and a focus group, the study qualitatively probes how student interpreters experienced interpreting, the process of learning to interpret, mindfulness, and any perceived effects of mindfulness training on their interpreting and in their lives in general.

Significance

This study is significant for three reasons. First, it meets an identified need for more research on how student interpreters can strengthen their attentional abilities (Bontempo & Napier, 2011; Ivars & Calatayud, 2013) and emotional stability under stress (Hild, 2014; Ivars & Calatayud, 2001, 2013), particularly when performing in the under-researched consecutive mode of interpreting (Ivars & Calatayud, 2001).

Second, this empirical study is one of the few that specifically explores what duration and format of mindfulness training might be most effective for graduate and professional students (Greeson, Jugerg, Maytan, James, & Rogers, 2014), and one of the first that combines qualitative and quantitative data for this population. Methodologically, the proposed study responds to a call for mindfulness research that controls for attentional effort by using measures of attention shown in at least one study to be uniquely affected by mindfulness training (Jensen, Vangkilde, Frokjaer, & Hasselbalch, 2012).

Third, this study appears to be the first to pilot a stand-alone mindfulness course as part of an interpreting curriculum. Ivars and Calatayud (2013) focused on state-training in relaxation and mindfulness with undergraduate student interpreters, using brief exercises in their regular interpreting courses and at interpreting exams. However, the present study is the first aimed at beginning to cultivate mindfulness among interpreting students as an enduring trait that simply (with continuing practice) becomes a "way of being." The hypothesized advantage of this

approach is that students will learn to access a state of relaxed yet alert attentiveness at will, on their own—in school, in their personal lives, and throughout their professional careers. Furthermore, the sample population includes students from approximately 20 different countries and more than seven different native languages. As such, it offers a possible model that might be developed and generalized to other graduate interpreting programs around the world.

Background and Need

Interpreting and Attention

From its origins approximately 50 years ago, research on interpreting has largely been concerned with identifying and modeling the cognitive capacities and processes involved in interpreting (Pöchhacker & Shlesinger, 2002; Riccardi, Marinuzzi, & Zecchin, 1996). It has been well established that interpreting entails many competing language processes (Liu, Schallert, & Carroll, 2004) and imposes heavy demands on cognitive resources, especially sustained attention and working memory (Cowan, 2000; Köpke & Nespoulous, 2006; Liu et al., 2004). Interpreters often work on the edge of cognitive overload (Gile, 1995, 1997, 2009). When their cognitive capacities become overwhelmed, performance deteriorates (Gile, 1999; Riccardi et al., 1996; Tommola & Hyönä, 1996).

The Effort Model of interpreting developed by Gile (1995, 1997, 2009) categorizes the cognitive processes involved in interpreting into three "efforts": listening and analysis, production, and memory. Gile explained interpreting difficulties and failures in terms of these nonautomatic efforts. Novice interpreters are particularly prone to breakdowns in performance due to difficulties regulating their attention among the many competing cognitive processes involved in the complex task of interpreting (Gile, 1997).

Attentional control is central to listening and analysis (Gile, 1997; Timarová, 2012). Interpreters must be able to selectively focus, sustain, shift, and distribute their attention across different parallel tasks as they semantically process what a speaker is saying (Gile, 1997; Timarová, 2012). In turn, semantic processing appears to be the key to recall (Liu et al., 2004). Köpke and Nespoulous (2006) found that expert interpreters did better than novices on working memory tasks involving semantic processing, whereas results on basic memory tasks were mixed (Ericsson, 2000; Köpke & Nespoulous 2006; Timarová, 2012). These findings suggest that proficiency at interpreting lies in attentional and processing skills built through professional practice.

On the traditional assumption that the general ability to focus and sustain one's attention cannot be taught *per se*, interpreting programs attempt to screen prospective students so as to admit only those who appear to possess these and other basic cognitive abilities already (Gerver, et al., 1989; Longley, 1977) or are at least "teachable" (Tryuk, 2002) or "interpreter ready" (Angelelli & Jacobson, 2009). Accordingly, much of the interpreting research on attentional skills has been aimed at identifying interpreter aptitudes for the purpose of admissions screening (Bontempo & Napier, 2011; B. Macnamara, Moore, Kegl, & Conway, 2011; B. Macnamara, 2014; Timarová & Salaets, 2011; Timarová & Ungoed-Thomas, 2008), not for the pedagogical purpose of helping students *enhance* their attentional skills.

Instead, students' general cognitive abilities are left to develop naturally over time, primarily as a by-product of training that approximates authentic interpreting tasks (DeGroot, 2000; Ericsson, 2000; Longley, 1977; Moser-Mercer, 2010), along with many hours of practice both in and outside of the classroom. But such gains do little to help students early in their training when virtually all of them struggle the most, and many fail. A student interpreter who

has difficulty concentrating and shifting her attention between the different efforts involved in interpreting (listening and analysis, production, memory) will likely have a hard time acquiring the techniques of interpreting and passing the course exams required to advance in the curriculum. We can speculate that interpreter training programs might be able to help more students clear these hurdles by not just teaching the criterion task of interpreting and its sub-skills, but also how to become more aware of and regulate their own focus and attention in general.

Interpreting and Stress

In addition to cognitive demands, interpreting also requires emotional stability, particularly an ability to cope with public scrutiny and stressful situations, such as interpreting high-stakes negotiations, or testimony in a murder trial. Furthermore, human-factors research on vigilance has found that tasks which impose substantial, sustained demands on information-processing resources are highly stressful (Warm, Parasuraman, & Mathews, 2008). In other words, the task itself is stress inducing. Interpreters must be able to manage their own nerves and feelings of efficacy or incompetence such that these internal distractors not undermine their ability to attend to the task at hand. Such tolerance for stress is well documented in the interpreting literature as being a vital general ability for interpreters (Gerver et al., 1989; Hild, 2014; Kurz, 2003; Riccardi et al., 1996).

Here again, most research related to "soft skills" needed for interpreting (such as stress management) has focused on aptitudes and screening (Bontempo & Napier, 2011; Timarová & Salaets, 2011, Timarová & Ungoed-Thomas, 2008). Some researchers have identified a need for more studies on the impact of stress on interpreting performance, but such studies have mainly

focused on professional, working interpreters (Bontempo & Napier, 2011, Ivars & Calatayud, 2001; Riccardi et al., 1996).

Yet tolerance for stress is as vital for student interpreters as it is for professional interpreters. As Guichot de Fortis points out (2011), most students stumble on unsuspected psychological and emotional difficulties during their training. For many, it may be the first time they are learning a demanding performance skill (Guichot de Fortis, 2011). Not surprisingly, many interpreting students suffer symptoms of stress when they have to stand up and perform in class, and especially when facing a jury of professors during exams (Ivars & Calatayud, 2001). Anxiety can become a very real obstacle early in training and cause students to "choke" during exams (Beilock, 2010; Ivars & Calatayud, 2001).

Students also experience the stress of threats to their self-concept. Many have never before been faced with trying to learn a very difficult technical skill that takes many hours of practice to master, along with inevitable failures and seemingly relentless critical feedback (Gillies, 2014; Guichot de Fortis, 2011). As Guichot de Fortis notes, students must learn to take their professors' feedback to heart, without taking it as an indictment of them as a person (2011). That is easier said than done, especially for high-achievers who have a habit of being hard on themselves (Hanson, 2012).

Many interpreting professors try to address issues of stress and self-doubt in their teaching and one-on-one counseling with students. However, most accounts of what helps are largely anecdotal and specific to a particular professor (not generalizable). Moreover, efforts to help students cope with stress and gain self-confidence remain largely in the realm of prescriptive advice (e.g. prepare, practice, develop a professional persona, get plenty of sleep, exercise). Only sporadically do students receive hands-on help, such as occasional stress-

management workshops or brief modeling in class (e.g. take some deep breaths, drop your shoulders, deepen your voice), and through positive feedback on what a student did right. Clearly, helpful advice and a little how-to are not enough.

Just as for learning to interpret, learning to focus one's attention and relate differently to stress take practical guidance and regular, scaffolded practice over time (Davidson et al., 2003). Only now are interpreting studies beginning to appear that empirically examine *how* student interpreters can build the attentional abilities and emotional stability they need to interpret effectively. In Spain, Ivars and Calatayud (2013) included a mix of brief guided focus-meditation and relaxation exercises in almost every class session of their undergraduate simultaneous and consecutive interpreting courses throughout the curriculum. Over the course of four years (2007-2011), they randomly assigned 371 students to one of three conditions at their final exams: one experimental group received eight minutes of guided focus-meditation just before the exam; a second similarly received guided relaxation, and the control group just proceeded directly to the test. The groups that practiced focus-meditation significantly outperformed both the relaxation and control groups. Such results suggest that more students might succeed if interpreting pedagogy aimed not only to teach the task-specific skills of interpreting but also to strengthen the general cognitive and affective abilities underlying them.

Mindfulness in Graduate Education

Mindfulness is a basic human capacity that can be developed (Brantley, 2012; Davidson et al., 2003; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008; Williams & Kabat-Zinn, 2011). This skill of learning to pay attention to one's present moment experience on purpose and without judgment is most commonly learned through meditation. A typical progression begins with noticing sensory perceptions and physical sensations, then gradually learning to steady the

attention and let go of distractions by focusing on one's own breath, holding it in attention, and gently bringing the mind back whenever it wanders. From this place of stability, the practice expands to noticing thoughts and feelings as they arise, without judging or getting caught up in them (Kabat-Zinn, 1994; Salzberg, 2011).

Mindfulness-based interventions (MBIs) have become particularly widespread in healthcare and clinical psychology, but are also increasingly common in higher education because of the growing evidence of their efficacy in reducing anxiety, depression, and stress (Khoury et al., 2013), supporting self-reflection (Miller & Brickman, 2004), and improving a range of cognitive abilities. These include attentional focus (Tang et al., 2007), sustained attention (Chambers, Lo, & Allen, 2008; Jha, Krompinger, & Baime, 2007; MacLean et al., 2010), perceptual discrimination (MacLean et al., 2010), cognitive flexibility (Adam Moore & Malinowski, 2009b), and efficient executive processing (Jensen et al., 2012; Tang et al., 2007).

In Western countries, mindfulness meditation is most commonly taught to adults through mindfulness-based stress reduction (MBSR), originally developed by Jon Kabat-Zinn in 1979 to help relieve suffering associated with pain, stress and illness in patients at the University of Massachusetts Medical Center, and to serve as a model for other hospitals and medical centers (Kabat-Zinn, 2003). The MBSR program is eight weeks long, including one 2.5-hour class a week and a 1-day silent retreat, plus an expected 45 minutes of daily meditation practice. Meta-analyses of empirical studies using MBSR and similar mindfulness-based therapies over the past several decades show medium to large effect sizes for anxiety, depression, stress, and attention (Khoury et al., 2013; Sedlmeier et al., 2012).

Relatively little mindfulness research has focused on applications in higher education. A growing number of recent studies, however, are documenting beneficial effects of mindfulness

training for college, graduate, and professional students (such as in medical school, clinical psychology, the performing arts, and interpreting). In undergraduate students, it has been found to improve GRE reading comprehension scores, decrease distracting thoughts while taking the exam, and to improve working memory capacity (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013). Of particular interest, mindfulness training has been shown to improve the exam scores of interpreting students (Ivars & Calatayud, 2013). Beyond academic performance *per se*, mindfulness training has been shown to reduce students' perceived stress and psychological distress (Felton, Coates, & Christopher, 2015; Greeson et al., 2014; Jensen et al., 2012) as well as sleep problems (Greeson et al., 2014), while improving self-compassion (Felton et al., 2015; Greeson et al., 2014), mood, and positive states of mind (Jain et al., 2007; Warnecke, Quinn, Ogden, Towle, & Nelson, 2011). Mindfulness training has also been found to reduce students' distractive thoughts and behaviors (Jain et al., 2007). In a sample of mostly university students, mindfulness training also improved perceptual thresholds and sustained selective attention in the presence of distractors (Jensen et al., 2012).

Duration and format. Only three of the above-cited studies used a format of eight weeks or longer (Felton et al., 2015; Jensen et al., 2012; Warnecke et al., 2011). Felton, Coates and Christopher conducted a 15-week adapted MBSR course required of all students in the Mental Health Counseling track of a graduate program. Class sessions (75 minutes) twice a week included mindfulness practice (hatha yoga, sitting mediation, conscious relaxation, qi gong) and other activities such as research presentations. Outside of class, students were required to practice some form of mindfulness for 45 minutes four times a week. Attendance and practice compliance are not reported, but were encouraged by the course grade being based in part on attendance and near-daily journal writing. Jensen et al. ran a classic MBSR course,

achieving compliance by paying participants; those randomly assigned to the experimental group each received $850. Warnecke, Quinn, Ogden, Towle and Nelson (2011) gave their medical-student participants an audio CD containing a 30-minute recording for daily, guided meditation on their own for eight weeks. All other studies reviewed devised much shorter programs that consisted of three to eight sessions over two to four weeks, for a total of four to six contact hours, with sessions ranging from 45 minutes to 1.5 hours. Where specified in the descriptions, the students were expected to practice on their own for 10 minutes per day (Greeson et al. 2014; Mrazek et al., 2013).

Several of the authors explained that they opted for a shortened format due to students' busy schedules (Greeson et al., 2014; Morrison, Goolsarran, Rogers, & Jha, 2014) or simply because of academic holidays and the absence of any 2.5-hour blocks available in their schedule (Jain et al., 2007). Such constraints are very real and should not be minimized. They are not, however, the only reason for departing from more extended formats and approaches geared toward the general adult population.

As highlighted by Greeson et al., higher education generally corresponds with the age range of emerging adulthood, from the late teens through the twenties. Emerging adulthood constitutes a unique developmental stage characterized by identity exploration along with frequent changes and uncertainty in all spheres of life (Arnett, 2000, 2004). Emerging adults are extremely busy with school and other activities. They tend to be open to new experiences, but also skeptical, and have difficulty maintaining motivation to change their behaviors (Rogers, 2013). The "Koru" mindfulness courses developed and regularly offered at Duke University, for example, are thus purposely brief, highly structured, and designed such that students are motivated to persist because they experience immediate benefits that make a real difference in

their daily life (Greeson et al., 2014). These are the organizational and content features that, through multiple years of trial and error, were found to be most effective with emerging adults, at least for non-curriculum-specific wellness courses (Greeson et al., 2014; Rogers, 2013; Rogers & Maytan, 2012).

Mindfulness in interpreter training. Now let us take closer look at the study on mindfulness training for interpreting students by Ivars and Calatayud (2013). This empirical study is of particular interest because, like the present proposed study, it was based on the premise that being able to regulate one's own attention and stress may improve students' interpreting performance, and that these abilities can be developed through mindfulness practice.

Ivars and Calatayud aimed to determine if there was any significant difference in interpreting performance on final exams (DV) according to the randomized condition students variously experienced immediately prior to the exam (IV): guided focus-meditation (one aspect of mindfulness practice), guided relaxation, or a control condition. In the experimental conditions, students got settled in their interpreting booth, heard an 8-minute audio recording guiding them through the focus-meditation or relaxation exercise, then took the interpreting test. Those in the control condition proceeded directly the test. Ivars and Calatayud hypothesized that students in the focus-meditation condition would outperform those in the relaxation condition because, while both techniques typically have a calming effect, only focus meditation tends also to induce heightened alertness (Jain et al., 2007), that is, the kind of awareness and focused, sustained attention that interpreting tasks require.

Over the course of nine exam sessions spanning four academic years (2007-2011), 371 undergraduate students (88% female and almost all under age 25) were batch tested in a lab in both simultaneous and consecutive interpretation from English into Spanish during the last year

of their interpreting program. Given the limited lab space and large size of each class, students signed up for one of three testing time slots, unaware of which condition they would receive, since these were randomly set at each exam session. The audio-recorded and coded student interpretations were then scored according to the standard 10-point scale used in Spain.

An analysis of variance (ANOVA) revealed significant differences among the three conditions, $F(2, 118) = 3.15$, $p < .044$. Independent *t*-tests showed this variability to arise from significant differences, with small effect sizes, between the focus-meditation and relaxation groups, $t(240) = 2.30$, $p < .022$, $d = .29$, and between the focus-meditation and control groups $t(248) = 1.99$, $p < .022$, $d = .24$. In other words, the focus-meditation group outperformed both the relaxation and control groups, indicating that focus-meditation may be a promising pedagogical intervention that helps improve students' interpreting performance, particularly when practiced immediately before an exam. In contrast, there was no significant difference between the relaxation group and control group.

These results, however, should be considered with some caution for a number of reasons. First, the statistical *t*-tests used as post-hoc comparisons do not appear to have been corrected for chance significant differences with multiple comparisons. More fundamentally, the ANOVA test used assumes independence of the groups being compared, yet it appears that they were not independent in this study. All of the students were very familiar with the focus-meditation and relaxation exercises, since both had variously been practiced almost daily in interpreting courses throughout the program. Thus, on test day, students may well have actually employed some preferred combination of the techniques, regardless of which audio recording they received. Furthermore, any of the students, including controls, may plausibly have followed the customary classroom routine on their own, doing some focus-meditation or relaxation prior to coming to the

exam.

Second, the findings cannot necessarily be attributed to the treatments. The generally lower performance of the control group may have had more to do with this group's potentially more stressful condition of proceeding directly to the exam without an 8-minute interlude, than to the effectiveness of either the focus-meditation or relaxation treatment. This possibility could have been tested by including a second control group given a blank (no treatment) eight minutes in the booth before starting the exam.

Other questions surround the inclusion of scores from both simultaneous and consecutive interpreting exams. The same student could end up in the same or a different experimental condition for the respective exams, which were administered at separate times within about a 3-week period. The scores were then grouped together for one ANOVA on "performance" (A. J. Ivars, personal communication, July 3, 2014). Comparing difference scores between the students' simultaneous and consecutive exams according to condition may have been revealing. For example, a student may have been in the same focus-meditation condition for both exams, but performed very well on one and poorly on the other, suggesting that performance in this case was attributable to factors other than the condition. Further limitations include the absence of measures at baseline and of possible covariates.

The present study employs some of the same elements that Ivars and Calatayud used to understand whether mindfulness training helps students improve their interpreting performance, but addresses the above-identified limitations and extends the research in multiple ways. The repeated-measures design includes an initial questionnaire (age, gender, languages, degree track, previous meditation experience) for analysis of homogeneity and covariance. Training consists of mindfulness alone, and is received only by students in the experimental group. This design

makes it possible to measure differences both within and between independent groups.

Also, the present study shifts the focus of inquiry from the *state* effects of brief guided treatments immediately prior to exams, to *trait* training aimed at autonomy, that is, enabling students to access a state of relaxed yet alert attentiveness at will, on their own, without outside guidance. To better understand the mechanisms at play, it also measures perceived stress and aspects of attention as possible mediating variables between mindfulness training (IV) and interpreting performance (DV). The present study focuses exclusively on consecutive interpreting to better understand how mindfulness might help students meet the particular public-performance and memory challenges of this interpreting modality.

The present study extends that of Ivars and Calatayud to graduate interpreting students with different languages and cultural backgrounds. While the sample is necessarily much smaller, baseline comparisons make for more meaningful quantitative measures. These measures are accompanied by qualitative survey, written-reflection, and focus-group data that help explain the quantitative data by revealing how students actually experienced the mindfulness training, the stress and cognitive demands of interpreter training, and how the two interrelate. The qualitative data also balance the inherent limitations of self-report quantitative measures and uncover rich themes for future research and pedagogy.

Theoretical Rationale

Cognitive Load Theory (CLT) provided a particularly useful framework for this study because it accounts for the complex interplay of external factors and internal factors involved in interpreting. This major theory in cognitive psychology, educational psychology, and applied learning (Plass, Moreno, & Brüken, 2010) is broad enough to encompass the phenomena and processes of interest, yet sufficiently circumscribed to provide a meaningful model of the

relationships among them and to yield testable hypotheses. Furthermore, the theoretical assumptions of CLT are already familiar both in interpreting studies and mindfulness research.

Cognitive Load Theory was first proposed in the late 1980s (Sweller, 1988) and developed as an instructional theory that takes into account the capacities and limitations of human cognition, in this way providing guiding principles for the design of instructional materials that optimize meaningful learning (Plass, et al., 2010). CLT is mainly concerned with the learning of complex tasks (Moreno & Park, 2010). It thus shares the purpose of this study, which was aimed at effective educational interventions for students learning the complex task of interpreting.

Based on the early work of Schneider & Shiffrin (1977), CLT views human cognition as a capacity-limited information processing system built for learning (Plass et al., 2010). Learning is the process of constructing new knowledge by drawing on prior experience and blending it with new information to form mental models, or *schemas* (Clark & Clark, 2010). These schemas then facilitate retention and retrieval of that knowledge from long-term memory, thus supporting ready understanding of new related information in the future. From this cognitive perspective of learning, CLT assumes that schema formation is the building block of skilled performance and requires that attention be directed toward problem solving. Mental activity that detracts from attending to schema formation must remain limited, otherwise learning is diminished due to cognitive overload, that is, over-saturation of one's cognitive capacities (Moreno & Park, 2010).

The task of interpreting can be described in very similar terms: Understanding novel information to be interpreted requires organizing that information into a mental model and associating it with one's existing schemas based on prior knowledge and experience (Gile, 2009). Doing so facilitates retention and retrieval for ready expression of those ideas in the

target language. Both in cognitive psychology and interpreting models, these processing units, organized according to existing knowledge and experience, are often referred to as *chunks* (Gile, 2009; Mayer & Moreno, 2010). Semantic processing of incoming information into meaningful chunks constitutes a central mechanism of skilled interpreting performance and requires that the interpreter direct maximum attention to solving comprehension and re-expression problems as they arise (Gile, 2009). Mental activities not directed to such processing (but rather to internal or external distractors) can contribute to a cognitive overload that results in decrements to performance (Gile, 2009). This is particularly true given the "chronic tension between processing capacity supply and demand" in interpreting (Gile, 2009, p. 182). According to Gile's "tightrope hypothesis," interpreters work close to saturation most of the time, thus allowing little margin for sub-optimal allocation of attentional and processing resources (Gile, 2009).

Intrinsic, Extraneous and Germane load

Cognitive load theory identifies three main variables that determine the level of demand (*cognitive load*) on one's capacity-limited processing resources: the inherent complexity of the information to be learned, how that information is presented, and the mental effort required given a particular individual's prior experience and knowledge. The following paragraphs describe these variables in terms of intrinsic, extraneous, and germane load, and describe how each relates to interpreting. Figure 1 provides a theoretical model of how these loads differ between novice and expert interpreters.

Intrinsic load. Intrinsic load refers to the inherent difficulty of the information to be learned (or interpreted) due to "the number of [interacting] elements that must be simultaneously processed in working memory" (Moreno & Park, 2010, p. 16). Intrinsic load varies from one

individual to the next because the interactivity of the elements varies depending on a person's prior knowledge: "[A] large number of interacting elements for a novice may be a single element for an expert who has integrated the interacting elements into one schema" (Moreno & Park, 2010, p. 16). Expertise studies, for example, have shown that while novice chess players typically see just a few moves a head, some expert players are so familiar with chessboard configurations that they can play multiple games at once (Horn & Masunaga, 2006).

In interpreting, intrinsic load can be conceived as including not just the semantic content of a speaker's message, but also how that speaker expresses him or herself (speed, volume, accent, speaking style). These two aspects of discourse inherently interact and are mostly beyond the interpreter's control (despite largely unheeded requests for a speaker to slow down or speak more loudly). Thus, in interpreting, essential processing (intrinsic load) includes both semantic content and manner of delivery.

Extraneous load. Extraneous load means "cognitive processing that does not contribute to learning" (Mayer & Moreno, 2010, p. 133). In instructional materials, extraneous load typically results from poor presentation and inclusion of non-essential material (Mayer & Moreno, 2010). Information is harder to learn, for example, if the materials are busy or confusing. For learning to interpret, extraneous load can be defined as cognitive processing that does not contribute to comprehending and conveying the speaker's message, internalizing content knowledge (e.g. terminology) and automatizing interpreting skills. Extraneous processing occurs whenever the interpreter has a lapse in attention due to external distractors (such as ambient noise or commotion in the room) or internal distractors (Gile, 2009). Examples of internal distractors include worrying about one's performance and its consequences, engaging in self-criticism or self-congratulation, or having wandering associative thoughts. Extraneous

processing also includes overly focusing on incidental fillers in the speaker's discourse, or excessively trying to find exact lexical equivalents for individual words at the expense of focusing on the intended meaning. In consecutive interpreting, poorly structured or illegible notes can also require extraneous processing when it comes to remembering and re-producing the message in the target language. These examples show that for performative skills like interpreting, extraneous load is not fixed for the learner as it is with instructional materials presented or assigned, but largely depends on the learner's self-regulation of emotion and attention.

Germane load. Germane load is cognitive processing devoted to schema formation and automation (Moreno & Park, 2010), that is, processing aimed at organizing a mental representation of the essential information and integrating it with existing knowledge (Mayer & Moreno, 2010). For interpreting, and especially for student interpreters, germane load can be described as the processing capacity devoted to building and automating declarative knowledge (e.g. subject-matter mental models, concepts and terminology) and cognitive, procedural knowledge (e.g. attention split, note-taking techniques, and coping tactics) (Gile, 2009).

According to CLT, these sources of cognitive load are additive, meaning that together they equal total cognitive load. When that total load exceeds total processing capacity, one experiences cognitive overload. Also, extraneous processing diminishes one's processing capacity available for essential and generative processing (learning) (Moreno & Park, 2010).

For student interpreters, the goals are (a) to learn to manage the cognitive processing essential to understanding and conveying the message (*intrinsic load*) and (b) to acquire and automate both content knowledge and interpreting skills (*germane load*) (Gile, 2009). Both of these loads are higher in novices than they are in experts (Feltovich, Prietula, & Ericsson, 2006),

though the cognitive demands of interpreting are such that even expert interpreters often work at or near their total processing capacity (Gile, 1997, 1999, 2009). According to CLT, extraneous processing unnecessarily consumes limited cognitive resources, thus making these goals harder to achieve. As illustrated in Figure 1, the theory suggests that reducing extraneous processing will facilitate both the interpreting task and learning to interpret. For student interpreters, this means becoming aware of when their attention has been diverted and being able, in that moment, to refocus it on essential processing of the speaker's message.

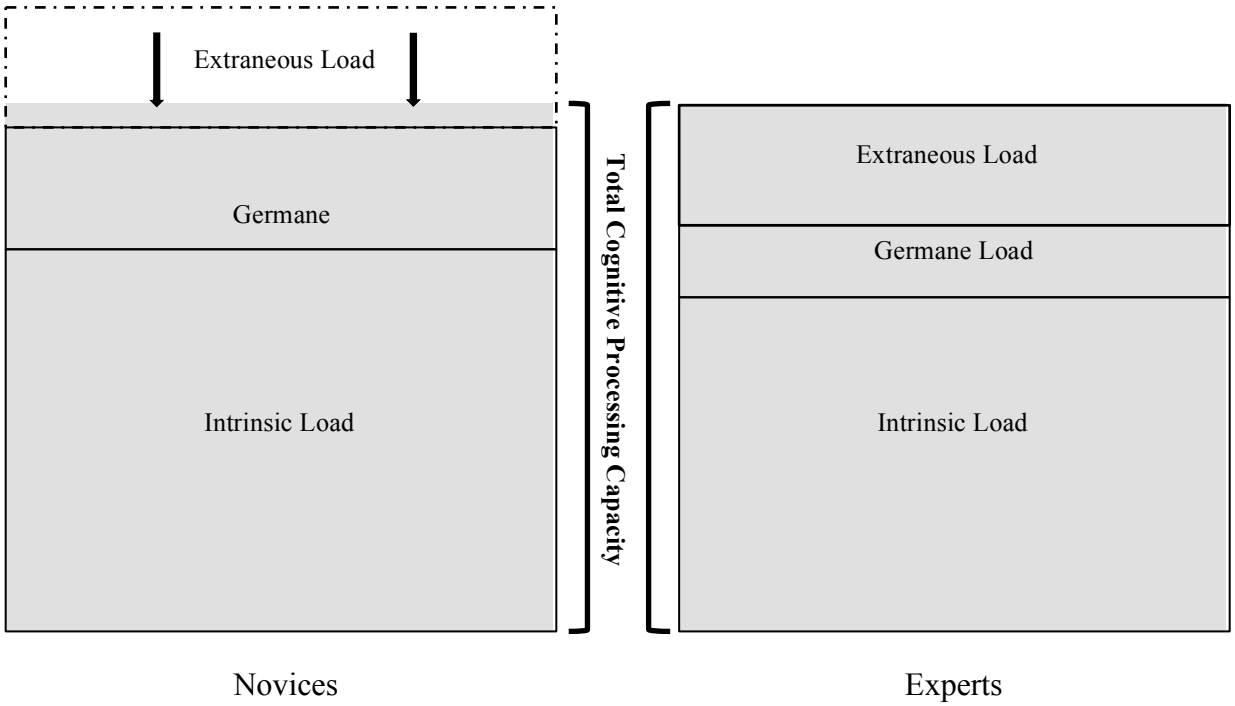

Figure 1. Cognitive Load Theory model of interpreting, novices compared to experts. **Intrinsic Load** refers to processing essential to understanding and conveying the message. **Germane Load** is processing needed to acquire and automate content knowledge and interpreting skills. **Extraneous Load** includes any internal and external distractors that do not contribute to comprehending and conveying the speaker's message. As schematically represented here, experts have the same limited processing capacity as novices, yet the allocation of those resources is different. Having developed extensive schema and automated interpreting skills, experts experience less intrinsic and germane load, and thus can manage more extraneous load without decrements to their performance resulting from cognitive overload.

CLT and Attention

Attention lies at the intersection of CLT, interpreting studies, and mindfulness research. CLT, and especially the off-shoot Cognitive Theory of Multimedia Learning (CTML), is concerned with designing multimedia materials that optimize learning by minimizing non-essential or poorly laid out material that requires extraneous processing. Numerous interpreting studies examine how interpreters focus, allocate, and coordinate their attentional resources to accomplish interpreting tasks. Many mindfulness studies examine how mindfulness practice affects attentional networks in the brain and whether it strengthen self-regulation of attention. All three areas of research share *working memory* (WM) as a central attention-related construct. In simple terms, WM refers to the encoding, maintenance, integration and retrieval of information needed to accomplish a task or otherwise used for goal-directed activities (Clark & Clark, 2010; Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010). It involves both storage and processing functions, and is limited both in capacity and time. WM is one of the most studied constructs in the interpreting literature, which has primarily focused on storage capacity (memory). Recent research, however, has identified the central-executive (processing and attentional control) aspects of WM as being most central to the task of interpreting (Timarová, 2012). Possibly related to this finding is recent research comparing brain scans of graduate conference-interpreting students with other multilingual students. In one study, cognitive neuroscientist Laura Babcock found that, in certain areas of the brain, the interpreting students had not only a greater volume of grey matter (associated with knowledge and processing), but also a greater integrity of white matter (associated with communication between grey matter areas and with other parts of the body) (Babcock, 2015).

Attentional control and working memory are also widely studied in mindfulness research. Georges Dreyfus describes mindfulness practice as gradually leading to a "meta-attentive ability to monitor one's mental states" (2011, p. 50) and being "a cognitive activity closely connected to memory, particular to working memory" (2011, p. 47). Evidence indicates that mindfulness practice seems to improve multiple aspects of attention and attentional control (Black, Semple, Pokhrel, & Grenard, 2011; Jensen, 2011; Jha, Stanley, & Baime, 2010; Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010; Mrazek et al., 2013; van Vugt & Jha, 2011). These findings suggest that mindfulness may be a mediating factor in interpreters' ability to process and re-express discourse.

CLT and Stress

Cognitive load theory also provides a useful framework for understanding the relationship between interpreting and stress, particularly in the context of students performing consecutive interpreting tasks. Psychological stress is the state that occurs when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their wellbeing (Lazarus, 1966).

Consecutive interpreting intrinsically involves heavy cognitive demands as students attempt to decipher and understand what a speaker is saying, capture and retain that meaning through note taking, and reproduce the speaker's message in a different language. Furthermore, students must perform this inherently unpredictable task in front of an audience.

How one responds to these demands can be either productive or unproductive, and optimize or undermine performance. According to the Yerkes-Dodson law (Yerkes & Dodson, 1908), a certain amount of arousal (a physiological stress response) is productive in that it mobilizes and focuses one's inner resources to meet a demand. This is particularly true when an

individual appraises the situation as an exhilarating challenge (Lazarus, 1993). If, however, the demand exceeds an individual's ability to cope, performance suffers, especially when the situation is appraised as a threat to one's wellbeing. Student interpreters may experience consecutive interpreting performance demands as a threat to their image and social acceptance, sense of competence, or academic standing and professional prospects (Ivars & Calatayud, 2001). Such "threat" appraisals can actually block mental operations (Lazarus, 1993).

In CLT terms, stress can serve to optimize one's processing capacity for essential and generative processing and raise the threshold of cognitive overload. Stress becomes unproductive insofar as psychological stress responses (e.g. self-judgment, fear of failure, or a desire to impress) distract the interpreter from the task at hand. Such responses contribute to extraneous load, thereby layering additional load on top of the already substantial intrinsic load of the task and germane load of learning. The interpreter's processing capacity thus more quickly becomes saturated and the resulting overload may result in decrements to performance.

According to CLT, releasing stress-related extraneous elaborative thinking should lower the total cognitive load experienced, thus freeing up cognitive processing capacity. It should also allow more capacity to be devoted to the generative (that is, germane) load of acquiring declarative and procedural knowledge, such as effective note-taking and optimal allocation of processing resources to the different efforts involved in consecutive interpreting (Ivars & Calatayud, 2013; Schneider & Shiffrin, 1977). CLT thus enables us to hypothesize that students' interpreting performance will improve if they can learn to recognize and calm their own unproductive responses to stress.

CLT and Interpreting Studies

With the influence of Gile's Effort Model (1995, 1997), the term "cognitive load" has become increasingly used in the scholarly literature of interpreting studies. It should be noted, however, that these are not references to CLT as a learning theory concerned with intrinsic, extraneous and germane load. Rather, the term tends to be used as a general-language synonym for "mental load" when referring to the attention and effort required by different elements and processes variously involved in simultaneous or consecutive interpreting.

To complement the holistic conceptual framework of his Effort Models (1995, 1997), Gile introduced the notion of "local cognitive load" in simultaneous interpreting (Seeber, 2011), meaning the variable effort required to interpret any particular clause, sentence or small group of sentences. In this context, he used the terms "imported load," "current load," and "exported load" to refer to efforts that linger from interpreting the previous segment of speech, that are associated with the current segment, and that spill over into processing the subsequent segment (Gile, 2009).

Seeber's Cognitive Load Model (2011) of simultaneous interpreting similarly aimed to identify the cognitive demands inherent to simultaneous interpreting, but is explicitly based on Wickens' (1984) Multiple Resource Model of attention and focuses on "the conflict potential posed by an overlap [of concurrent tasks] and the interference they cause" (p. 189). She used the term "local load" to denote specific demands at "discrete levels of language processing" (Seeber, 2011, p. 190) and to discuss strategies interpreters use to save processing capacity where they can. For example, if a phrase in the source language can naturally be expressed in the target language using a very similar syntax, the interpreter will likely use a low-demand "transcoding" (word-for-word) strategy in order to save capacity for syntactically asymmetrical or otherwise

difficult segments that require a more effort-intensive meaning-based strategy involving a conceptual stage between comprehension and production, and thus a longer lag time that taxes short-term working memory (Seeber, 2011). Seeber proposed that local and overall cognitive load could be quantified using matrices ("cognitive load models") based on Wickens' demand vectors and conflict coefficients. In a related study, she empirically compared these measures to pupillometry measures (Seeber & Kerzel, 2011). Seeber also recently reviewed objective methods, such as pupillometry and a psycho-physiological method, for measuring cognitive load in real time during simultaneous interpreting (Seeber, 2013).

Seeber's notion of "cognitive load" as it is emerging in the interpreting literature is useful for studies aimed at analyzing and measuring cognitive load as it arises during interpreting tasks from inherent linguistic and discourse characteristics, specific cognitive processes, and interpreting strategies employed. The present study, however, is about effective educational interventions for helping students enhance their general attentional abilities and emotional stability to facilitate learning this complex task of interpreting. For this purpose, "cognitive load" will thus be used throughout this study as conceived within CLT as a theory of learning, but as applied to learning a performative skill such as interpreting.

Summary and Restatement of Purpose

In summary, the purpose of this dissertation is to explore what can be done to help interpreting students strengthen their general attentional skills and emotional stability under stress in order to build the basic interpreting proficiency required to graduate and begin working professionally. This study examines mindfulness training as a possible pedagogical intervention. Its efficacy is measured through pre- and posttest measures of consecutive interpreting exam performance, mindfulness, attention, and perceived stress, and further explored through the

collection of qualitative data. Cognitive load theory suggests that improved self-regulation of attention and stress may be mediating variables that help explain any relationship between mindfulness and consecutive interpreting exam performance in graduate interpreting students.

Research Questions and Hypotheses

Quantitatively, this study addresses a number of questions: Do students who receive mindfulness training perform better on consecutive interpreting exams? If so, is this difference associated with greater mindfulness, better attention, and lower perceived stress? More formally, there are three primary research questions:

1. Is there a statistically significant difference in consecutive interpreting exam performance between students who do and do not receive mindfulness training?
2. Is there a statistically significant difference in mindfulness, attention or perceived stress between students who do and do not receive mindfulness training?
3. Are there correlations among changes in mindfulness, attention, perceived stress and consecutive interpreting exam performance?

Those students who received mindfulness training were expected to outperform those who did not and to report higher levels of mindfulness, demonstrate better attention, and indicate lower perceived stress. The data were expected to show positive correlations between mindfulness, attention and consecutive interpreting exam performance and negative correlations between these variables and perceived stress.

Qualitatively, this study explored such questions such as: How do interpreting students experience the cognitive demands of consecutive interpreting? What do interpreting students experience as stressful? How do they define stress and how does it manifest for them personally? Do they believe it affects their interpreting performance? If so, how? How do they

deal with stress in interpreting situations? How do students experience mindfulness training and the Mindfulness for Interpreters course overall? What if any effects of the training do they experience in their lives and specifically with respect to interpreting?

Definition of Terms

Attention: "A basic set of mechanisms that underlie our awareness of the world and the voluntary regulation of our thoughts and feelings" (Posner & Rothbart, 2007, p. 6). More specifically, attention is "a psychological mechanism responsible for filtering and prioritizing information and allocating internal resources so as to adapt to external demands" (Ivars & Calatayud, 2013, p. 341).

Consecutive interpreting: Mode of interpreting in which the interpreter typically sits with participants or stands next to the speaker, takes notes of what is said, then gives an oral translation after the speaker pauses or has finished speaking (Longley, 1977; Pöchhacker, 2011b).

Cognitive Load Theory: An instructional theory that views human cognition as a capacity-limited information processing system built for learning (Plass, Moreno & Brünken, 2010). Cognitive load theory describes the distribution of working memory to different "loads" (Sweller, 1988): *intrinsic load*, *extraneous load*, and *germane load*.

Extraneous load: In Cognitive Load Theory, "cognitive processing that does not contribute to learning" (Mayer & Moreno, 2010, p. 133) or, for interpreting, that does not contribute to comprehending the speaker's message and conveying it in the target language, appropriating content knowledge, and automatizing interpreting skills.

Germane load: In Cognitive Load Theory, cognitive processing devoted to schema formation and automation (Moreno & Park, 2010). For interpreting, this means processing

capacity devoted to building and automating declarative knowledge (e.g. subject-matter mental models, concepts and terminology) and cognitive, procedural knowledge (e.g. attention split, note-taking techniques, and coping tactics) (Gile, 2009).

*Interpreting (*also*, interpretation):* Term of art meaning oral transfer from one language to another (spoken message to spoken message). In contrast, *translation* denotes written transfer (document to document). In general language, and in its broadest sense, "Translation" can refer to both written and oral transfer (Gile, 2009),

Intrinsic load: In Cognitive Load Theory, the inherent difficulty of information to be learned [or interpreted] due to "the number of [interacting] elements that must be simultaneously processed in working memory" (Moreno & Park, 2010, p. 16).

Mindfulness-based stress reduction (MBSR): An 8-week mindfulness course originally developed by Jon Kabat-Zinn in 1979 to help relieve suffering associated with pain, stress and illness in patients at the University of Massachusetts Medical Center (Kabat-Zinn, 2003). It has since become a common form of complementary medicine offered by many hospitals and clinics, and a widely used intervention in empirical research on mindfulness (Kabat-Zinn, 2003, 2005).

Mindfulness: The quality of inner and outer awareness that arises when one pays attention to one's present moment experience on purpose and without judgment (Kabat-Zinn, 1994). Operationally, mindfulness has been defined as involving two components: 1) "self-regulation of attention so that it is maintained on immediate experience" and 2) adopting an orientation of "curiosity, openness and acceptance" toward that present-moment experience (Bishop et al., 2004). Across the scientific literature on mindfulness, this second "orientation" component has been further characterized as including non-judgment, compassion, and non-identification with or reactivity to one's experiences (Bergomi, Tschacher, & Kupper, 2013).

Mindfulness thus refers both to a quality of being and the attention and awareness practices found to cultivate it (Williams & Kabat-Zinn, 2011).

*Perceived stress (*also, *psychological stress):* State that occurs when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their wellbeing (Lazarus, 1966).

Simultaneous interpreting: Mode of interpreting in which the interpreter listens to a message in one language and immediately renders that message verbally into another language, while at the same time continuing to listen to the incoming message. Given that the speaker and interpreter are talking at the same time, the interpreting must be done either by whispering (*chuchotage*) or using audio equipment (microphone and headsets).

Source (s. language, s. text): Language and discourse uttered by a speaker and that is to be interpreted into another (*target*) language.

Target (t. language, t. text): Language into which a source text is interpreted, the resulting interpretation being the target text.

Text: As used in interpreting studies, "text" may refer to either a written document or oral discourse.

Translation: Translation (with a capital T) encompasses both written and oral transfer from one language to another (Gile, 2009). In the profession, however, *translation* refers to written transfer (document to document). In contrast, *interpreting* denotes oral transfer (spoken message to spoken message).

Working memory (WM): The encoding, maintenance and retrieval of information needed to accomplish a task (Clark & Clark, 2010). Working memory involves both storage and processing functions, and is limited both in capacity and time.

Working memory capacity (WMC): "A domain general measure, reflecting an individual's ability to control his/her attention." More specifically, WMC refers to "the attentional processes that allow for goal-directed behavior by maintaining relevant information in an active, easily accessible state outside of conscious focus, or to retrieve that information from inactive memory, under conditions of interference, distraction, or conflict" (Kane, Conway, Bleckley, & Engle, 2001, p. 23).

CHAPTER 2—LITERATURE REVIEW

Chapter One proposed Cognitive Load Theory (CLT) as a useful framework for understanding and addressing the challenges that graduate student interpreters face as they learn how to interpret and perform increasingly difficult interpreting tasks aimed at preparing them for high-level professional work upon graduation. It was argued that interpreting tasks typically demand students' complete cognitive processing capacity as they endeavor both to understand and convey the speaker's message (*intrinsic load*) and to acquire and automate (*germane load*) content knowledge such as subject specific concepts and terminology, plus interpreting skills such as note-taking, and attention split.

In this context of learning to perform the cognitively complex task of consecutive interpreting, CLT predicts that any extraneous processing will consume limited cognitive resources and quickly lead to students experiencing cognitive overload, with a resulting degradation in performance. According to CLT theory, reducing extraneous processing (e.g. wandering thoughts, self-judgment, worrying about feeling nervous, over-focusing on incidental details) should facilitate the interpreting task and learning to interpret. Thus, the more a student is able to minimize extraneous processing, the more one would expect to see greater improvements in performance over time.

Mindfulness was proposed as a means to reduce extraneous processing. Mindfulness training involves regular practice at purposely directing one's attention so as to become aware of what is happening in the present moment in one's mind, body, and environment; simply observing rather than getting caught up in those thoughts, emotions, sensations, or external events; and gently but intentionally redirecting one's attention back to a point of focus. According to mindfulness theory, such practice enhances one's general awareness, ability to

focus, shift, and sustain attention, and to relate differently to whatever may arise. The more one practices, the more these abilities can be expected to transfer to everyday life. For graduate students, this might mean generally experiencing greater enjoyment, feeling less stressed, or distracted, more intentional about how they spend their time, and better able to handle emotions in their personal life and relationships. Academically, one would also expect to see "far transfer," that is, evidence of learning being applied in tasks that do not resemble the original training activities —in this case, evidence of greater mindfulness during consecutive interpreting tasks. Specifically, one would expect student interpreters who have received mindfulness training to more easily become aware of when their attention has drifted while interpreting, step back from whatever has distracted them, and re-focus on the essential task of understanding and conveying the speaker's message.

This chapter examines the scholarly literature for empirical evidence regarding these theory-based expectations and claims. To situate this inquiry, the chapter begins with a brief history of interpreting and interpreting studies. Research relevant to each of the variables in the present proposed study is then reviewed. The aim was to review articles that report original empirical research, closely match the present proposed study in terms of design, variables, or sample population, and that point to pedagogical implications. However, this scope was broadened as necessary to take account of the most relevant pertinent literature.

The chapter is organized into two main sections: the characteristics and challenges of consecutive interpreting, and the effects of mindfulness training. Each section begins with an introductory overview of that body of research, presents the relevant empirical evidence with a particular focus on attention and stress, and ends with a brief summary of findings.

Brief History of Interpreting and Interpreting Studies

Interpreting is essentially the "task of saying again what has been expressed in another language" (Pöchhacker, 2011a, p. 321). Throughout history, bilinguals have been able to perform consecutive interpreting of short utterances (Pöchhacker, 2011b). As international organizations emerged in the 20th century, however, so did the demand for multilingual (not just bilingual) interpreters (Pöchhacker, 2011a). Also, speakers at international meetings did not want to have to pause continually for interpretation, but to be able to deliver a whole speech without interruption. Initially, all interpreting was done consecutively either completely from memory, or with a special kind of note-taking for complete, accurate rendition of the speech (Pöchhacker, 2011a). In the consecutive mode, the interpreter speaks after the original speaker has finished. Typically, the interpreter sits with participants, takes notes of what is said and, at end of the speaker's remarks, gives an oral translation. But interpreting segments that are multiple minutes long takes special skill (Pöchhacker, 2011a). The need for multilingual interpreters with such specialized skills led to the development of conference interpreting as a profession and to the establishment of training programs.

Interpreter training programs can be distinguished according to whether they train interpreters for conference interpreting, community interpreting, or both. *Conference interpreting* refers to highly professional bi- or multilingual interpreting in international conference or conference-like settings, usually in the simultaneous mode via soundproof interpreting booths, microphones and headsets (Pöchhacker, 2011a). However, it also includes diplomatic and media interpreting, which may more typically occur in the consecutive mode (Pöchhacker, 2011a). In conference interpreting, communication is primarily monologic (one way, speaker to audience), and the subject matter typically pertains to societal or international

issues at a macro-level (Hale, 2011). A defining characteristic of conference interpreting is the assumed ability of the interpreter to interpret speeches of any length and complexity (Pöchhacker, 2011a), in either the simultaneous or consecutive mode. Consecutive is still used today in many settings because it is much less costly than simultaneous, more flexible, and requires no equipment (Pöchhacker, 2011a). Also, in some settings, participants prefer to hear first one language and then the interpretation. This enables them to confirm their understanding of a language they may partially understand and to monitor accuracy of the interpretation.

Community interpreting (also widely referred to as *public service interpreting* and *liaison interpreting*) refers to face-to-face dialogic interpreting in a wide variety of settings—legal, medical, business, social service, and other (Hale, 2011; Wadensjö, 1998). For the most part, these interpreter-mediated interactions deal with personal matters and enable communication between individuals not able or willing to communicate in a common language (Hale, 2011; Wadensjö, 1998). Within the general category of community interpreting, *court interpreting* and *medical interpreting* have increasingly become recognized as distinctive professions in their own right that require specialized skills, training, and certification (Hale, 2011; Stern, 2011b). Community interpreting is usually performed in the consecutive mode, but may also involve simultaneous interpreting, either whispered, or through wireless hand-held transmitters and receivers (Hale, 2011).

The selection and training of conference and community interpreters is informed by a now substantial body of research shaped by historic international meetings such as the 1977 NATO Symposium on Language and Communication, part of the NATO Special Program Panel on Human Factors (Gerver & Sinaiko, 1977), the Second (2000) Ascona Conference convened to establish a research paradigm for interpreting studies, and the first Critical Link congress on

community interpreting in 1995 (Hale, 2011). Over a span of nearly five decades, interpreting studies has evolved into a distinct field of academic research, focused primarily on cognitive processes (especially in simultaneous interpreting), product and performance, practice and the profession, and pedagogy (Pöchhacker, 2010).

As reviewed by Pöchhacker (2010), early research in the 1960s initially approached interpreting as a process of linguistic transfer. Danica Seleskovitch of the Paris School challenged this narrow conception with her *théorie du sens*, which holds that interpreting is not about linguistic transcoding but understanding and conveying the sense of verbal input by drawing on prior knowledge (Seleskovitch, 1968). Interestingly, Seleskovitch's *théorie du sens* closely matches closely matches the Cognitive Load Theory view of learning is the process of constructing new knowledge by drawing on prior experience and blending it with new information to form mental models, or *schemas* (Clark & Clark, 2010), which then facilitate retention and retrieval of that knowledge from long-term memory and make it possible to understanding of new related information.

The first full-process models of [simultaneous] interpreting (Gerver, 1971; Moser, 1978) appeared in the 1970s, coinciding with a focus on information processing in the cognitive sciences. In the 1980s and 1990s, this cognitive approach in interpreting research broadened to consider interpreting from different perspectives. Gile developed his didactic Effort Models of interpreting (Gile, 1995, 1997, 2009) aimed at helping students understand issues of processing capacity management in the simultaneous and consecutive modes, respectively. At about the same time, Setton proposed a Cognitive-Pragmatic model of interpreting (Setton, 1998) that encompasses both the cognitive and discourse perspectives.

Up to this point, most empirical research in interpreting studies had focused on the

cognitive processes involved in simultaneous interpretation of monologic speeches at conferences, with little attention to interpreting in face-to-face interactions, often in the consecutive mode. In the 1990s, researchers such as Wadensjö (1992, 1998) and Roy (2000) thus started examining interpreting in terms of interpersonal and intercultural communication from a discourse perspective, focusing on "what goes on between the participants…of [an] encounter, rather than what goes on between the ears of the interpreters" (Wadensjö, 1998, p. 3).

Characteristics and Challenges of Consecutive Interpreting

The purpose of this section is to ascertain what is known about the cognitive demands and challenges of consecutive interpreting and of learning this skill. Note that here we are referring not to sentence-by-sentence interpretation, but "true" or "long" consecutive, where the interpretation is rendered after the speaker has finished or paused (for students, generally 2 to 5 minutes of uninterrupted discourse). Gile's conceptual Effort Model of Consecutive Interpreting provides a good starting place.

Effort Model of Consecutive Interpreting

Gile made processing capacity and attentional control the cornerstones of his Effort Model, which he developed initially for simultaneous interpreting and later extended to consecutive interpreting (1997). While information-processing models focus on describing the cognitive architecture and processes involved in interpreting, the Effort Models are meant as conceptual models of the cognitive constraints under which interpreters operate and to account for performance errors and omissions not "easily attributed to deficient linguistic abilities, insufficient extralinguistic knowledge, or poor conditions in the delivery of the source text" (Gile, 1999, p. 154). The Effort Models categorize the cognitive processes involved in interpreting into three basic "efforts": listening and analysis (L), production, (P), and memory

(M). Coordination (C) of listening, production and memory represents a fourth effort. Coordination corresponds to what is more commonly referred to in cognitive psychology as *attentional control* or *executive attention* (Timarová, 2012).

The Effort Models are based on a number of assumptions, particularly that attentional resources are limited and that the efforts involved in interpreting are largely non-automatic and thus require attention. The models also assume that the efforts are sufficiently distinct that they compete with each other for attentional resources, even though they may cooperate and share some resources (like long-term memory). In other words, capacity consumed for one effort will result in that much less available for other concurrent efforts (Gile, 1999). Note the parallel in CLT that capacity consumed by extraneous load reduces the capacity available for essential and also generative processing, that is, for learning.

As summarized in Table 1, the Effort Model of Consecutive Interpreting identifies two phases in consecutive interpreting: a speech comprehension phase and a speech reformulation phase. In Phase I, the interpreter listens to the source-language speech, mentally processing, noting down, and otherwise committing to memory what the speaker says. These efforts require coordination, since they are all happening concurrently. In Phase II, the interpreter remembers what the speaker said by referring to his or her notes taken in Phase I and produces (reformulates) the speech in the target language. Though not emphasized by Gile, these three reformulation efforts also occur in tandem and thus require coordination (executive attention) (Mead, 2002a, 2002b, 2014).

Table 1

Effort Model of Consecutive Interpretation

	Phase I: Comprehension (SL speech comprehension)		Phase II: Reformulation (TL speech production)	
Efforts	L	listening and analysis	REM	remembering
	P	production of notes	READ	note reading
	M	memory	P	TL speech production
	C	coordination	C	coordination*

* Not included in Gile's model

Interpretation difficulties and failures are explained in terms of these efforts. There are two general reasons for failures (errors or omissions): total processing capacity saturation (cognitive overload), or a problem of capacity management among efforts. In Phase I, if the processing requirements of listening, production, memory and coordination exceed the interpreter's available processing capacity at a given moment, elements of the source speech are liable to be lost or mistaken (Gile, 2004).

Based on his Effort Model, Gile hypothesized the existence of "problem triggers," that is, "segments or tasks requiring heightened attentional resources" that typically cause difficulties for interpreters (Gile, 1999, p. 157) in the comprehension phase. These include "names, numbers, enumerations, fast speeches, strong foreign or regional accents, poor speech logic, poor sound, [and] time required for manual note-taking" (Gile, 2009, p. 171). Phase II difficulties (apart from subject-knowledge or target-language deficiencies) generally arise from failures in Phase I—an interpreter who has missed, not understood, or been unable to mentally process and note elements of the source speech will have difficulty then rendering them in the target language (Gile, 2004).

The efforts of consecutive interpreting differ from those of simultaneous interpreting in

several ways. In consecutive, there is more time and processing capacity available for target language production because it happens in a different phase than source-language comprehension, rather than concurrently (Gile, 2004, 2009). Yet listening and analysis for comprehension are constrained by the manual and mental effort of note-taking and greater demands on memory (Gile, 2004, 2009). Information has to be held in short-term memory until it can be noted and in long-term working memory until it is rendered in the target language, potentially many minutes later (Gile, 2004, 2009).

Another difference between simultaneous and consecutive interpreting not accounted for in the Effort Model but that should be mentioned here is the more pronounced public-performance nature of consecutive, which is executed in the physical face-to-face presence of interacting participants or literally in front of an audience. Simultaneous is also a live performance, but the interpreter typically works in the private space of a soundproof interpretation booth at the back of the room, which provides some psychological distance. Handling the public nature of consecutive does not require cognitive processing capacity in the same sense as listening, production, memory and coordination, but may divert limited attentional resources from these task-essential operations.

The interpreting studies literature was searched for empirical evidence of the explanations and predictions offered by Gile's Effort Model of Consecutive Interpreting. This search yielded a total of approximately 65 articles along with several theses and dissertations on consecutive interpreting. Fewer than 15 of these reported an empirical study and, of these, most focused primarily on particular teaching techniques, aspects of consecutive note-taking, and interpreter aptitude testing. Only a handful were of relevance to the present study and available in English.

Consecutive Interpreting and Attention

The tightrope hypothesis. Based on his Effort Models, Gile proposed the "tightrope hypothesis," according to which

> many errors and omissions are due not to the intrinsic difficulty of the corresponding source-speech segments, but to interpreters working close to processing capacity saturation, which makes them vulnerable to even small variations in the available processing capacity for each interpreting component. (Gile, 1999, p. 153)

This hypothesis does not appear to have been tested for consecutive interpretation, but Gile himself tested it for simultaneous interpretation (1999). In a study designed for this purpose, Gile recruited a small sample of 10 professional interpreter colleagues during three different professional interpreting assignments in Paris. All were French<>English interpreters with more than 15 years experience (except one who had seven). During the first half of a simultaneous working day when they were still fresh but had warmed up with one or two turns in the booth interpreting, each was asked to simultaneously interpret a 1'40" audio recording from English into French and then, immediately upon completion, to repeat the exercise, that is, interpret the same speech again. In this way, all variables were held constant (e.g. individual, time, text content and difficulty, context, preparation, speed and sound quality, instructions) except variability in one individual's performance and benefit, in the second version, of having already interpreted the speech once before.

The source speech was played and the interpretation recorded in a simultaneous interpreting booth. The 245-word segment from a video-recorded press conference with the newly appointed CEO of Kodak required no specialized knowledge except for one technical term, which was provided in both English and French to the interpreters in advance. Gile analyzed the transcribed interpretations for errors and omissions (e/o's) himself. Only "flagrant"

e/o's were counted and two colleagues, who also rated the transcriptions, independently agreed that all of the segments Gile had identified were indeed substantive e/o's.

Among the 10 first-version interpretations, 17 e/o's were identified. In their second versions, five interpreters made fewer e/o's, two made the same number, and one made one more. The key finding, however, is that of the nine interpreters for whom two versions were available (one second version did not record properly), six (66.6%) made at least one *new* error in their second version not made in their first version.

Gile concludes that the results support the tightrope hypothesis. They certainly do suggest that "many errors and omissions are due not to the intrinsic difficulty of the corresponding source-speech segments" (Gile, 1999, p. 153). However, the results do not necessarily indicate that interpreters are "vulnerable to even small variations in the available processing capacity for each interpreting component" because they work "close to processing capacity saturation" (Gile, 1999, p. 153). While this may often be the case, it is not very probable that the short, general-language text in this study required these seasoned interpreters to rally their full processing capacity to interpret it. There are other plausible explanations: Some of the observed first- or second-version e/o's may have occurred because of a momentary lapse in attention unrelated to concurrent cognitive efforts. Also, some new errors may have occurred in the second version because the interpreters were relating differently to the text the second time around. For example, one interpreter changed a correct first-version statement (in French) that, in the future, visual memories would be communicated in "ways that are *perhaps* totally different than people envision today" to an incorrect *certainly* the second time around. One plausible explanation for this shift is that the interpreter personally believed this future was "certain" and this view slipped into the interpretation because the repeat performance required

less processing capacity, allowing the interpreter to more personally relate to the already familiar speech.

One limitation of this study was the inherent bias in how Gile approached establishing inter-rater reliability. Rather than additional raters being asked to independently analyze the transcripts themselves, they were asked whether or not they concurred with Gile's analysis. One can imagine that these interpreting colleagues of Gile would generally be inclined to concur. (I agree that some of the e/o's observed are important errors of sense, but would describe many others not as "flagrant" but as slight shifts or minor omissions of elements that in a later study using the same data (2001) Gile himself describes as "unimportant modifiers.")

Attention during comprehension. The Effort Models state that interpreters typically work near saturation of their processing capacity. The Models predict that interpreters will employ strategies to reduce their cognitive load, but that those strategies may lead to a loss of information and thus a decrease in accuracy (Gile, 2001). Gile hypothesized that some difficulties will pose more of a problem in simultaneous or consecutive. For consecutive, these include quickly enumerated lists and elements that take a long time to write (multi-word names, digressions) and thus result in a lag time that taxes working memory. To avoid missing neighboring elements, the interpreter may skip or only partially note such elements, especially if they seem unimportant. Such strategies, however, may result in corresponding errors or omissions during reformulation (Gile, 2001).

To test the relative accuracy of simultaneous and consecutive with respect to these and other specific difficulties, Gile used the data from his study testing the tightrope hypothesis in simultaneous interpretation (1999) and, under the same conditions, similarly recruited 10 additional interpreting colleagues with a similar profile (>5 years experience) to interpret from

English into French the same press-conference recording, but consecutively. This time the source text was first analyzed for problem triggers. Nine were identified, including false starts, modifiers, digressions, and lexical units with no obvious target-language equivalent. The simultaneous and consecutive interpretations were then examined for e/o's corresponding to these segments. A possible limitation of this study is that Gile performed this analysis alone and did not specify whether the simultaneous data used from his previous study consisted of the interpreters' first or second time interpreting the passage.

As expected, the simultaneous interpreters (who interpret with just a slight lag as the speaker is speaking) faltered on false starts and incomplete ideas (13 e/o's), but the consecutive interpreters did not (1 e/o). In contrast, digressions and incidental modifiers resulted in significantly more e/o's for the consecutive interpreters (25) than for the simultaneous interpreters (12)—possible evidence that the consecutive interpreters were lagging behind in their note-taking or keeping up by purposely not noting incidental elements they thought they could just remember, or deemed to be unimportant. Elements with no obvious target-language equivalent were problematic for both the simultaneous and the consecutive interpreters—21 and 17 e/o's, respectively. The consecutive interpreters probably committed relatively fewer e/o's on these difficult-to-translate terms because they had more time to think about how to translate them. Overall, these findings suggest that (a) the comprehension phase of interpreting does involve multiple competing attentional efforts, (b) interpreters cope by employing capacity-saving strategies involving attentional tradeoffs that may lead to performance decrements, (c) executive attention plays a major role in the comprehension phase of consecutive interpreting, since this is the aspect of WM responsible for coordinating attentional efforts and strategies (Timarová, 2012).

Interpreting teachers and books on consecutive interpreting often warn students about the importance of noting proper names and that taking too many notes will divert their attention from actively listening to the source speech and result in missing information. To evaluate whether these axioms are actually true and let students experience these potential phenomena for themselves, Gile conducted an experiment with 14 new interpreting students during class in their second week of training (Gile, 1991). At this point they understood what consecutive interpreting was, but had not yet learned any particular techniques such as note-taking. Gile's simple experiment focused just on proper names. These had previously been shown to be difficult in simultaneous interpreting (Daniel Gile, 1984) and would likely provide students with quick, visual evidence of the potential interference between concurrent listening and note-taking in consecutive interpreting.

The students were randomly divided into two equal groups (those sitting on the right or left of the room). After Group B was invited to step outside, Group A was instructed to listen carefully to three short recordings from introductory remarks made at a real conference and to *note down any proper names they heard* (the texts collectively contained 10 names of people introduced or thanked). Clear, logical and presenting no particular difficulties, the texts included a slow 9" excerpt in English, a medium-speed 1'54" excerpt in French, and another medium-speed 2'54" excerpt in English. The groups then switched and Group B was instructed to carefully listen to the same recordings but was instructed to *take notes with a view to interpreting the remarks consecutively*. The groups were then reassembled and for each proper name, the students each were asked to indicate if they had (a) caught the name and noted it in a way that would enable them to render it correctly in the target language (= correct); (b) noted the name

but gotten it wrong such that they would mispronounce it (= incorrect, e.g. *Auouitsse* for "Horowitz"); or (c) had missed it altogether.

Results confirmed the difficulty of capturing and rendering proper names in consecutive interpreting: Not a single name was correctly noted by all of the students in Group B (who were taking notes), and only one was correctly noted by all of the students in Group A (whose only task was to listen and note the names). Of the 10 names, only five were correctly noted by more than half of Group A and only three by more than half of Group B. Results also provide evidence that note-taking detracts from listening: Group A performed better than Group B on six of the 10 names, the same on three names, and worse on only one.

These findings support the Effort Model hypothesis that the listening and note-taking efforts compete with each other for processing capacity in the comprehension phase of consecutive interpreting. They also provide evidence that in consecutive interpreting, like in simultaneous (Daniel Gile, 1984), proper names require heightened attention and constitute a "problem trigger."

In 1998, Giambagli followed up on Gile's inquiry into whether note-taking interferes with listening by observing the effects of note-taking on three different students, each at a different stage of a one-year training in consecutive interpreting from French into Italian (Giambagli, 1998). Her purposes were twofold: (a) see if training in how to actively and selectively listen for key information in a source speech is necessary and enough to reproduce the logical thread of the speech in the target language; and (b) see if note-taking helps or hurts when it comes to producing an accurate and complete interpretation of the source text.

Each of the three participants was asked to listen attentively to the same 2-minute general-language French text on household recycling with a view to then conveying as much of

the information and logical thread of the passage as possible in Italian. Their renditions were recorded. Participant 1 performed this task at the beginning of the year before receiving any training either in how to listen or take notes in consecutive interpreting and thus did so just from memory. Participant 2 performed the task mid-way through the year after training in how to listen and in basic note-taking. This participant did take notes while listening, but was then asked to set them aside and convey the substance of the passage in Italian from memory alone. Participant 3 performed the task at the end of a full year of training in consecutive interpreting. This participant took notes and used them when conveying the French text in Italian, as one normally would in consecutive interpreting.

As reported by Giambagli, the Italian rendition by Participant 1 (beginning student) from memory and without taking notes was very lacking both in logical coherency and content. As Giambagli notes, this result suggests that untrained listening alone is not enough to retain the essence of a speech given in one language and to restitute that meaning in another. The rendition by Participant 2 (intermediate student) from memory (after taking notes while listening) clearly conveyed the essence and logical thread of the French speech, although many details were left out. This result indicates that the student was effectively able to mentally filter and organize the incoming information in the source speech such that it was possible to remember and re-express it in Italian. There is no evidence of note-taking interfering with this student's ability to pay attention to and mentally register the substance of the speech. The rendition with notes by the student with a year of training (Participant 3) was, not surprisingly, much more complete and detailed than the other renditions. Enabling capture of such details is in fact one of the functions of note-taking (Giambagli, 1998). However, this Italian interpretation contained several statements that were illogical or even the opposite of what was meant. This result suggests

possible interference from note-taking. The interpreter may have been too absorbed in noting as much as possible to focus on grasping the essential sense and structure of the speech or, upon reformulation in Italian, "believed" those notes more than his or her own logical inferences and deductions from listening.

Giambagli's results provide further evidence that (a) consecutive interpreting requires heightened, non-automatic attention and purposeful analysis that must be learned, (b) note-taking may support comprehension and memory if used as a support (cooperating effort) for active listening, and (c) note-taking may detract from comprehension and clear memory if given attentional priority over endeavoring to grasp and mentally organize the concepts being conveyed (Jin, 2010). These findings highlight Gile's characterization of interpreting as a "cognitive management problem" Gile, 1997) or, in essence, one of executive attention.

Attention during reformulation. In a pair of articles, Mead (2002a, 2002b) highlights various aspects of a study he carried out to compare how interpreters retrospectively perceive why they hesitated at various points when interpreting consecutively, depending on level of training and experience and language direction. The 45 participants consisted of three comparison groups (n = 15 each): beginning conference interpreting students (third year undergraduate), advanced interpreting students (fourth year undergraduate), and professional interpreters, most of whom had more than 10 years experience and none less than two. All participants had Italian as their A (native) language and English as their B (first foreign) language, except one who was natively bilingual.

Every participant performed two short consecutive interpretations of the same texts, one into Italian and into English, mostly on separate occasions. The English and Italian source recordings (just under 4 minutes each) were similarly authentic extemporaneous remarks of a

general nature (one on British attitudes toward Europe and the other on the 1973 oil crisis). Immediately following each interpretation, a recorded interview was conducted with the interpreter where the interpretation was played back. Whenever there was a major hesitation or cluster of brief ones, the recording was paused and the interpreter was asked, "Is there any particular reason for this hesitation?"

The interpreters' explanations were sorted into one of five pre-established categories based on a pilot study:

- difficulties with formulation (e.g. searching for the right word);
- difficulties with notes (e.g. illegibility);
- logical doubts (questioning whether something made sense);
- interpreter didn't know why; or
- other.

For each recording, the number of explanations in each category was calculated as a percentage of the total number of that interpreter's explanations pertaining to that recording.

Of the more than 2000 explanations offered by the 45 participants, nearly half (45.70%) had to do with formulation (linguistic factors), and approximately one third (33.38%) related to notes or logic (non-linguistic factors). In about one fifth of the instances (17.42%) the interpreter could not identify any reason for the hesitation. "Other" explanations were very few (3.50%). The advanced students cited the most difficulties with formulation (51.50%), followed by the beginning students (46.63%), while the professional interpreters cited the fewest (36.19%). Yet all three groups attributed about one third of their hesitations to non-linguistic factors (31.63%, 34.15% and 35.36%, respectively).

The results of this study provide evidence that the efforts involved in the reformulation phase of consecutive interpreting are not automatic and not just linguistic. The advanced students may have grappled with formulation the most because, having integrated the techniques of consecutive interpreting, they had more available processing capacity than the beginning students to do so, but less experience than the professionals with this kind of manipulation between languages. The findings provide compelling evidence that hesitations and other breakdowns in production (such as linguistic errors) "can be considered the tip of the iceberg," the underlying cause often tracing back to "the need to divert attentional resources from production to other Efforts" (Mead, 2002a, p. 74). In consecutive interpreting, those "other efforts" include self-monitoring, checking for logic, and restituting the substance of the source speech from one's long-term memory and notes (Mead, 2002a, 2002b).

In a recent article referring back to the study described above, Mead (2014) further argues that delivery in the reformulation phase of consecutive interpreting requires a coordination of efforts, including reading ahead, in order for the interpretation to be smooth and convincing:

> Part of the interpreter's professional skill consists of the ability to anticipate problems (e.g. a translation difficulty not addressed during the listening phase) and ensure that they can be appropriately addressed without betraying the doubts and uncertainty which accompany this process. (Mead, 2014, p. 3)

Reading ahead is not explicitly mentioned in Gile's Effort Model of Consecutive Interpreting, yet represents a substantial effort that in itself involves divided attention. Borrowing from Butler (1920, p. 37) and adding emphasis, Mead points out that "*attention of the mind must be divided,* the eyes and voice being differently engaged" (Mead, 2014, p. 3). Failing

to read ahead can make an interpreter's omission or other stumble "all the more glaring by last-minute hesitation" (Mead, 2014, p. 3). Mead warns that "[s]uch betrayal of uncertainty is not only aesthetically displeasing but – even worse – may compound the interpreter's difficulties by creating a lingering sense of self-consciousness and awkwardness" (Mead, 2014, p. 3). Here Mead evokes the non-trivial and potentially stressful public performance aspect of consecutive interpreting.

A qualitative ethnographic study of the self-regulation effects of using metacognitive guides with students learning consecutive interpretation (Arumí and Esteve, 2006) provides evidence of attention and other efforts student interpreters experience in both the comprehension and reformulation phases of consecutive interpreting.

Arumí and Esteve observed the entirety of two beginning undergraduate German-to-Spanish consecutive interpretation courses in which the metacognitive guides they developed were used. Six guides were introduced sequentially from week to week:

1. About listening, attention, and concentration
2. About remembering and analyzing the original discourse.
3. About note-taking.
4. About comprehension of original discourse.
5. About the presentation and reproduction of the discourse in the target language, and
6. An overall guide covering all of the skills, which was used during the remaining four sessions of the course.

These titles of the metacognitive guides indicate the skills taught, which closely match Gile's Effort Model of Consecutive Interpreting. Arumí and Esteve also had the students fill out an initial and final questionnaire, keep a diary, and participate in a final group interview. From

this data, they selected as case studies two students who had participated fully and were representative of the progress and problems experienced by students in the class.

The data collected were analyzed for evidence of self-regulation, yet are also of interest for our purposes here. Although only a few brief excerpts and summary tables from these first-hand accounts were included in the article published, they contribute evidence of students' experience of the efforts involved in learning to interpret consecutively.

Comprehension-phase problem triggers mentioned by the learners include unfamiliar proper names, abbreviations, terminology, numbers, and cultural references. They also found it challenging to analyze and note verbs and connectors (logical links between ideas) and extract principal ideas from secondary ones, sometimes spending more time than necessary on a piece of information that captured their attention. One learner also mentioned "fear of not remembering certain information" and "difficulty principle ideas from secondary ones" (Arumí & Esteve, 2006, p. 178). These students felt that interest in the subject, prior knowledge of the subject, practice, and time helped their performance, while it was negatively affected by tiredness or external noises that disturbed their concentration and attention, difficulty internalizing note-taking symbols, and "time" (not specified in what sense). These comments highlight the competing, concurrent efforts of listening and analyzing, producing notes, and holding information in memory.

Reformulation-phase challenges mentioned include problems with reading notes, fear of not remembering information, and target-language expression: equivalences, "difficulties in transforming the overall idea in to the form of discourse," and "failure to be concise" (Arumí & Esteve, 2006, p. 179). One of the students attributed having gone "blank" both to "nerves and a lack of attention and concentration when it comes to listening to the original" (Arumí & Esteve,

2006, p. 179). Here we see evidence of the remembering, note-reading, and speech-production efforts described in Gile's Effort Model.

In CLT terms, these accounts illustrate the intrinsic, extraneous and germane cognitive load students experience when learning consecutive interpreting. For these students, intrinsic load included source-speech elements like proper names, numbers, and unfamiliar terminology, analyzing the logic of the speech, time pressure and challenges during note-taking, holding information in memory, and reformulation in the target language. Extraneous load included external noises, fear of not remembering, notes that were difficult to read, and nerves. Germane load included learning to listen for logical connectors, internalizing note-taking techniques and symbols, gaining subject-area knowledge, acquiring source- and target-language terminology, and trying to be more concise (Arumí & Esteve, 2006).

When questioned about what aspects of consecutive interpreting they had mastered or improved, the two students in these case studies notably mentioned being able to understand and remember the general idea of the speech; finding it easier to understand, concentrate, and listen with greater attention; and feeling more secure, with a greater capacity for control of stress and anguish (Arumí & Esteve, 2006). In this context of a beginning course in consecutive interpreting, "mastered" and "improved" should probably be interpreted to mean, *began to get the hang of*. Yet the students' comments provide evidence that the practice of consecutive interpreting itself helps students improve their attention and self-regulation of emotion.

Consecutive Interpreting and Stress

Chapter One (see Background and Need) provided a brief introduction to interpreting research on stress. The axiomatic view that interpreters must be able to deal with task-related stress was supported by Zeier's review of the existing research (1997). Interpreters experience

mental overload because of time on task, extremely fast or unintelligible speakers, and other stressors. The following studies provide empirical evidence of the stressors involved in interpreting, and how novice and expert interpreters variously experience them.

Stress experienced by interpreters. Most bilinguals (including interpreters) are not equally strong in both of their languages. Under stressful task conditions, differences between the dominant and subordinate language (e.g. native and non-native) emerge and can be studied. In early research, Dornic (1977) conducted several experiments in which he and his colleagues asked Swedish-English bilinguals to perform tasks designed to involve increasing levels of task stress and emotional stress. *Task stress* was defined as high information or mental load due to high input rate and/or task complexity (Dornic, 1977). In one study, participants performed a visual search task, searching for one, two or three two-digit target numbers at the same time. In one condition, the numbers were displayed as digits. In a second condition, the numbers were spelled out as words either in English or in Swedish. In both conditions, participants were also to remember the target names as spoken by the experimenter in Swedish or English. In another study, participants performed closed-system-thinking tasks like counting backwards by threes (presumably in Swedish or English). In some trials the researchers also induced *environmental stress* (such as noise) and *emotional stress* (incentive, fear, risk-taking).

Dornic's summary suggests highly relevant evidence of the effects task, environmental, and emotional stresses involved in interpreting. These results are thus reported here even though the study description did not provide more specific methodology information.

As expected, the more difficult the task, the more performance deteriorated for all participants, regardless of whether it involved their dominant or subordinate language. However, the deterioration was much more pronounced for tasks in the non-dominant language. These

differences became even greater when environmental or emotional stress was introduced. Dornic concludes that tasks performed in a weaker language are more complex than corresponding tasks in a dominant language, and the same degree of stress arousal may benefit performance in a dominant language but impair it in a weaker language.

Unexpected events also strongly affected language dominance. Such events involve both task and emotional stress: They require an in-the-moment response and are often emotionally loaded. Dornic reports that when interpreters (and bilinguals in general) encounter an unexpected event while speaking in their subordinate language, they may revert to their dominant language, slow down, become less precise, or even become momentarily speechless.

Dornic further reports that *mental fatigue* from "prolonged verbal and intellectual activity" results in "latencies, less efficient and effective memory search, [and] impaired short-term memory with less buffer capacity" (Dornic, 1977, p. 267). These effects are more pronounced in a subordinate language. Mental fatigue can also cause bilinguals to falter in keeping their language systems distinct and even to switch between them without realizing it (Dornic, 1977)—an obvious risk and not uncommon experience among interpreters, and especially interpreting students. These language-dominance effects under stress were reportedly observed during *decoding* (comprehension) tasks as well as *encoding* (speech production) tasks.

Psychological factors. Bontempo and Napier conducted a study exploring the predictive value of goal orientation, self-efficacy, and negative affect on sign language interpreters' perceived competence (2011). *Goal orientation* is a "dispositional trait that leads some individuals to seek challenging tasks and to thrive under difficult conditions" (Bontempo & Napier, 2011, p. 91). *Self-efficacy* refers to "a level of expectancy of succeeding at a task, resulting from belief in one's overall performance competence" (Bontempo & Napier, 2011, p.

90; Chen, Gully, & Eden, 2001). *Negative affectivity*, as a trait, is the "enduring tendency to experience negative mood and emotion" (Bontempo & Napier, 2011, p. 88). People with high negative affectivity "respond poorly in stressful situations, have less resourceful coping strategies, are more emotionally reactive, become anxious more rapidly, [and] have a negative perception of themselves" (Bontempo & Napier, 2011, p. 91).

Bontempo and Napier widely distributed a survey questionnaire by various means and received completed questionnaires back from 110 accredited Australian Sign Language (Auslan) interpreters. Respondents represented an estimated 42% of the population of working Auslan interpreters in Australia.

The 10-page questionnaire measured interpreters' own perceived competence by asking them to rate themselves on a scale of overall competence. However, this question came after a list 50 skills and areas of knowledge identified in the literature as relevant to sign languages interpreters, where respondents were asked to rate the importance of each and assess their own competence in that skill, ability or area of knowledge. In this way, the design of the questionnaire greatly enhanced validity of the overall self-assessment scores by first engaging respondents in substantive reflection on aspects of competence they might consider.

The questionnaire also included three widely used psychological scales: the goal orientation scale developed by Button, Mathieu and Zajac (2001), the 10-item Positive and Negative Affect Scale (PANAS, Watson, Clark, & Tellegen, 1988), and the New General Self-Efficacy Scale (NSES, Chen et al., 2001).

As hypothesized, perceived competence correlated positively with self-efficacy ($r = .21$) and negatively with negative affectivity ($r = -.26$); however, it did not correlate with goal orientation. A regression analysis showed that, together, the three psychological factors (self-

efficacy, negative affectivity, and goal orientation) were significant, $F = 3.14$, $p < .05$, explaining 9% of the variance in the interpreters' perceived competence. Only negative affectivity, however, emerged as a significant predictor, $\beta = -.23$, $p < .05$.

These results indicate that negative affectivity has a small but significant effect on interpreters' perceived competence. While this perception may or may not be borne out in objective assessments of the quality of their interpreting performance, it suggests that negative affectivity influences one's reactivity to stressors and ability to employ positive coping skills—both important factors in how adaptively students respond to the stresses inherent in learning to interpret consecutively, how much they enjoy it, and if they even continue in the program.

In a study long preceding their investigation of state-mindfulness in student interpreters, Ivars and Calatayud (2001) decided to test students' frequent post-exam claims that "I failed because I got very nervous." Fear of public speaking can trigger anxiety that interferes with performance (Gutérrez-Calvo & Miguel-Tobal, 1998). Ivars and Calatayud thus examined possible correlations between fear of public speaking, state anxiety, and consecutive interpreting performance. These variables were respectively operationalized as the 12-item Confidence in Public Speaking questionnaire (Bados, 1991), the 40-item State Anxiety Inventory (STAI, Spielberger, Jacobs, Gorsuch, Lushene, & Vagg, 1983), and the final exam in a consecutive interpreting course.

The sample consisted of 197 undergraduate students (75% female, mean age 23.4), all in their final year of translation and interpreting studies at a university in Spain. All had received 160 hours of interpreter training, half in consecutive and half in simultaneous. Few intended to become professional interpreters, but were required to take 16 units of interpreting for their degree.

Data was collected over three years (1999-2001), with teachers and teaching methods reportedly remaining the same year to year. Participants filled out the two questionnaires in the 20 minutes prior to entering the testing room for their final exam in consecutive interpreting. The exams were performed in front of the teacher and students of a newer cohort. After interpretation of a 6-8 minute speech in three segments, the same for all examinees, the student then joined the audience for the remainder of the exams. The exams were scored by the professors of record (not the researchers), on a 10-point scale, according to their usual criteria.

Statistical analyses appear to have included Pearson's correlations and also a linear regression. As hypothesized, consecutive interpreting performance showed strong negative correlations with both fear of public speaking (r = -.86) and state anxiety (r = -.73), but fear of public speaking explained only 11% of the variation in state anxiety.

These findings seem to provide strong evidence that state anxiety ("feeling nervous") really does significantly influence student performance in consecutive interpreting, especially under exam conditions, but is only slightly related to a generalized fear of public speaking. (Students not generally afraid of speaking in public might still get very nervous when it comes to consecutive interpreting, especially in a high-stakes evaluative situation.)

However, these results must be considered with caution because the statistical methods used to obtain them are under described and were interpreted very differently by the authors, who state that their reported correlation results meant there was no significant relationship between interpreting performance and either fear of public speaking or state anxiety (perhaps because the numbers were negative). Also, some confusion may have arisen in reporting Confidence in Public Speaking scores as an indicator of "fear of public speaking" (indicated by low scores on this instrument).

This very interesting study is certainly worth replicating, particularly with graduate interpreting students, virtually all of whom hope to interpret professionally. Corroboration of Ivars and Calatayud's findings would indeed show that "high levels of stress experienced by students when having to speak (interpret) in public can become one of the major obstacles in the early stages [of training]" (Ivars & Calatayud, 2001, p. 105). Such evidence would also have pedagogical implications, namely that interpreting students might greatly benefit from substantive training and practice in coping with interpreting-related fears and anxieties when they arise.

Noting that conference interpreting involves conditions commonly recognized as stress factors that require intensive concentration and lead to fatigue (a constant inflow of information, time pressures, possibility of failure at all times), Kurz (2003) decided to examine and compare the stressfulness of simultaneous interpreting for conference interpreters (experts) and for interpreting students (novices). For this small pilot study, she used pulse rate and skin conductance level (SCL) to monitor physiological changes "as an indicator of emotional and mental processes" (Kurz, 2003, p. 61).

There were two groups of volunteer participants: An "expert" group of two English/German conference interpreters, and a "novice" group of three English/German simultaneous interpreting students in a class taught by Kurz. In both cases, participants wore two velcroed electrodes on a digit of their non-dominant hand for regular pulse-rate and SCL monitoring while they were interpreting. The experts were monitored every 27 seconds over 26 minutes as they interpreted at a highly technical and fairly difficult medical conference. The novices were monitored every 26 seconds over 25.5 minutes during an ordinary class session while interpreting a text that had been made available to them in advance.

The experts and novices had significantly different average pulse rates: 75.00 and 73.75 for the conferences interpreters; 105.18, 86.90, and 100.76 for the students—on average 20 points higher for the students. Also, the conference interpreters' pulse rates were rather steady (varying within a 20-point range), while the students' pulse rates fluctuated quite a bit (by as much as 55 points). SCLs yielded no significant results.

These results pertain to simultaneous not consecutive interpreting, and cannot be generalized since the results may simply be idiosyncratic to the five participants involved. However, they do objectively show that some student interpreters can experience *more stress* in an ordinary low-stakes class session than some professional interpreters experience during a difficult interpreting assignment with higher stakes. Kurz' findings corroborate Moser-Mercer's qualitative evidence (2000) that students in a beginning simultaneous interpreting class mostly struggled the task-related stress of concentration, that is, "the ability adequately to juggle all the subskills of the task without detriment to any one of them" (Kurz, 2003, p. 64). Students learning consecutive interpreting experience similar challenges. Recall the student in the study by Arumí and Esteve who attributed having gone "blank" both to "nerves and a lack of attention and concentration when it comes to listening to the original" (Arumí & Esteve, 2006, p. 179). Furthermore, Kurz comments that "the problems facing novices are likely to give rise to feelings of insecurity, fear of failure, and heightened stress" (Kurz, 2003, p. 64).

In another study comparing expert and novice interpreters, Hild (2014) examined self-regulation, viewed broadly as including metacognitive, motivational and affective processes that control aspects of human behavior, such as "keeping…one's attention focused on a task or inhibiting irrelevant thoughts and emotions" (Hild, 2014, p. 130).

This study involved integrating and reinterpreting data from a pair of previous studies comparing experts and novices on selectivity and attention allocation in simultaneous interpreting: Hild 2007 (Study 1), and Tiselius and Jenset, 2011 (Study 2). The studies had used the same mixed methods (retrospection, interviews, and performance analysis), but in different cultural and educational settings. In her 2014 study, Hild reexamined the qualitative data from these previous studies, capturing and tabulating evidence of the forethought, performance, and self-reflective phases of self-regulation (Zimmerman, 2008).

Hild found that as they are interpreting, expert interpreters employ self-observation and emotion-regulation to optimize their performance. When self-observing, they mostly monitor their translation processes to make sure they are successfully conveying the message (41% of self-observations in Study 1 and 36% in Study 2). When the expert interpreters did evoke affective states (14% and 2% of self-observations), they generally expressed satisfaction with their performance (e.g. *that came out well*). There were no instances of negative affect such as self-dissatisfaction or frustration. Instead, when the experts realized they had made an error in their interpretation, they tended to appraise it with a positive spin (e.g. *this is omitted, but it is not essential*) so as to re-focus on the task at hand.

In contrast, the novices (students) made translation-related self-observations only 12% of the time in Study 1 and 20% in Study 2, but emotion-related self-observations 44% and 63% of the time, including many expressions of "confusion, frustration, guilt and even distress" using words such as *mixed up*, *completely put off, not feeling safe,* and *scary.* These feelings also triggered self-judgment: *I thought, how stupid I was.* As Kurz summarizes, "[T]he novices experienced difficulties in coping with the stress and in modulating the intensity of the responses evoked by their own suboptimal performance" (Kurz, 2003, p. 138).

Hild also rated each Study 1 participant comment on the PANAS scale of positive and negative affect (cf. Bontempo & Napier, 2011) then correlated these scores with the participants' simultaneous-interpreting accuracy performance scores. In a two-tailed independent *t*-test, the novices' negative affect scores were significantly higher than those of the experts, suggesting that experience "appears to modulate the intensity of negative and stressful responses occurring during task performance" (Hild, 2014, p. 140).

Hild's study highlights differences between the focus of attention, inner dialog, and emotional states of expert and novice interpreters during interpreting tasks, revealing that interpreting tasks are more cognitively complex and stressful for novices, who do not yet have in place the self-regulatory habits that seem to come with experience.

In discussing her results, Hild emphasizes that the attentional efforts and emotional experience of interpreting are both regulated by the central executive component of working memory. This means that that the cognitive and affective aspects of interpreting are not as separate and distinct as one might assume. They are intertwined: A limited pool of resources are needed to control both "cold" cognition (intellectual functioning) and "hot" cognition (emotions, desires, and impulses) (Hild, 2014; Kunda, 1999). Hild's description of how these mechanisms compete aptly describes the predicament of interpreting students: "[E]ffective regulation of emotional experience critically depends on the availability of attentional resources… [W]hen these are severely limited…emotion regulation is compromised" making it hard to suppress distracting thoughts, shift attention back from emotion-focused behavior to the interpreting task (Hild, 2014, p. 139).

Hild points out, however, that self-regulatory competence "can be enhanced through concentrated self-regulatory practice" (Hild, 2014, p. 139), which involves learning how to

"monitor, change, and coordinate" three elements (Zimmerman & Reisenberg, 1997): (a) one's covert cognitive and affective processes (what's happening inside), (b) one's overt behavior/performance (what one does with what is happening inside), and (c) environmental conditions and outcomes (for interpreters, this may mean making adjustments to better hear or see the speaker). As we will see in the next section, self-regulatory practice thus described resembles quite closely the essence of mindfulness training.

Summary

In interpreting, many errors and omissions arise from factors other than the intrinsic difficulty of the source text. Interpreting presents a cognitive management problem of executive attention. The comprehension phase of consecutive interpreting involves multiple competing attentional efforts, especially concurrent listening, analyzing, and note-taking, all of which compete for processing capacity. During reformulation, hesitations and other breakdowns in production reveal underlying difficulties in managing competing attentional demands such as self-monitoring, checking for logic, restituting the substance of the source speech from one's notes and long-term memory, and reading ahead. Interpreters cope with these competing comprehension and reformulation demands by employing capacity-saving strategies involving attentional tradeoffs that may lead to performance decrements. Extraneous factors like noise and nerves contribute to the cognitive load of interpreting tasks, especially for students. Interpreting tasks are more cognitively complex and stressful for novices, who do not yet have in place the self-regulatory habits that seem to come with experience.

Interpreting involves task stress, environmental stress and emotional stress, as interpreters cope with unexpected events and mental fatigue. The effects of such stressors are more pronounced when decoding (comprehending) or encoding (producing) a non-dominant language.

By definition, *every* interpreting task involves either decoding or encoding in one's non-dominant language. Negative affectivity influences one's reactivity to stressors and ability to employ positive coping skills. These are both important factors in how adaptively students respond to the stresses inherent in learning to interpret consecutively, how much they enjoy it, and if they even continue in the program.

The influence of state anxiety, or "nerves," on student performance in consecutive interpreting is very real, especially under exam conditions. Some student interpreters can experience *more stress* in an ordinary low-stakes class session than some professional interpreters experience in a difficult interpreting assignment with higher stakes. The high stress levels students experience when interpreting consecutively can pose a major obstacle, particularly in the early stages of training. Interpreter training itself helps improve self-regulation of attention and emotion, but only gradually.

In short, interpreting students could benefit early in their curriculum from training that builds their attentional and emotional self-regulatory competence.

Effects of Mindfulness Training

Chapter One introduced mindfulness as a basic human capacity to be aware of one's present moment experience and proposed that this capacity can be developed by practicing steading one's attention so that it that it does not wonder or wobble and purposely paying attention to what is happening in the present moment—perceptions, sensations, emotions, interactions and events as they are unfolding—without judging, but simply noticing. A quick overview of the literature suggested that such mindfulness practice improves attentional abilities such as sustained focus and concentration, awareness and perceptual discrimination, cognitive flexibility, self-observation, and efficient executive processing, and also improves affect, such as

reducing anxiety, depression, and stress.

Chapter One also pointed out that, specifically in higher education, mindfulness has been found to reduce students' distractive thoughts, enhance their sustained selective attention, and even improve academic performance, such as on the GRE, while reducing their perceived stress, expanding their sense of self-compassion, raising their mood, and prompting more positive states of mind. As shown in the previous section, these aspects of attention and emotion—or "cold" and "hot" cognition—are highly relevant to effective consecutive interpreting and to students successfully learning this skill and enjoying the challenge.

There has been an explosion of studies published on mindfulness. This section presents a selection of the empirical evidence most relevant to the proposed study regarding the effect of mindfulness on attention and stress, particularly in university and graduate students.

Mindfulness and Attention

Chapter One presented a study in which interpreting students randomly experienced eight minutes of guided focus-mediation, guided relaxation, or nothing just before their simultaneous and consecutive interpreting exams (Ivars & Calatayud, 2013). Those who experienced the focus-meditation outperformed both the relaxation and control groups on their exam scores, with small effect sizes. This is an example of testing the effects of a state-mindfulness intervention, that is, immediate effects from in-the-moment mindfulness practice.

Similarly but with a more rigorous design, Ramsburg and Youmans (2014) conducted three related experiments with university psychology students, comparing the effects of six minutes of either focus-meditation or rest just before a class lecture. The students' retention of information presented during the lecture was then measured by a post-lecture seven-question quiz. *Mood,* as measured by the Brief Mood Introspection Scale (BMIS) and the Positive and

negative affect scale (PANAS), and *current level of relaxation* as measured by the Behavioral Relaxation Scale (BRS) were also examined. Focus-meditation was operationalized as the Zen Buddhist method of closing one's eyes, sitting up straight, and counting one's breath from "one" to "ten," then starting over at "one." The practitioner also starts over at "one" any time he or she loses count. Mindfulness meditation training also typically begins with similar breath-based focus-meditation practice. The rest-condition instructions were simply to close one's eyes and rest.

The method was the same for all three experiments: At the start of class, students were invited to participate in a brief activity related to that day's lecture and randomly handed one of two versions of a paper packet that appeared identical. All students first answered the BMIS mood questionnaire printed on the cover of both versions of the packet. They were then instructed to flip their packet over and follow the instructions on the back, that is, the "meditation" or "rest" instructions depending on the version of the packet received. Since both conditions instructed students similarly to sit quietly with their eyes closed, there was no reason for them to suspect that they were engaged in different activities. After six minutes, the experimenter instructed the students to open their packets and fill out the remaining questionnaires. Class then proceeded with the day's lecture.

In Experiment 1, those assigned to the meditation condition (n = 18) performed significantly better on the post-lecture quiz, with a medium effect size (d = .64), than those assigned the rest condition (n = 17), and also reported being more relaxed. However, the groups did not differ in mood either before or after their six-minute meditation or rest. An analysis of covariance (ANCOVA) showed that relaxation did not influence quiz scores.

Experiment 2 was conducted the next semester, with different students, to address the

possibility that students in the meditation condition had performed better because the exercise itself piqued their interest in that day's lecture, which included content on stress and stress management. The procedures were the same, except for an extra question at the end of the post-lecture quiz asking students to rate how interesting that day's lecture had been. Those who meditated (n = 30) again significantly outperformed those who rested (n = 26), with a medium effect size (d = .58), yet there was no difference in their interest in the lecture, or any difference in mood or relaxation. An ANCOVA showed that none of these factors had influenced quiz performance.

Recognizing that the results of Experiments 1 and 2 could have been influenced by the relevancy of meditation to the lecture topic, Experiment 3 was conducted in the same manner but in a different course with different students during a class session in which a video-recorded lecture on the unrelated topic of testing and intelligence was played. Again those who meditated (n = 46) performed better on the quiz than those who rested (n = 48), but this time with a small effect size (d = .38), though there was no difference in mood, relaxation, or interest between the groups. Having in this way eliminated multiple plausible explanations for why those who meditated performed better than those who rested, Ramsburg and Youmans conclude that meditation may have given the students a short-term boost in their ability to self-regulate their attention and concentrate on the lecture.

This trio of experiments contributes robust evidence that even brief autonomous focus-meditation (not requiring any recording or other guidance beyond basic instructions) immediately before a task requiring sustained concentration can improve performance on that task. This finding suggests that interpreters (whether experts or students) may cognitively benefit from a few minutes of focus-meditation just before they begin to interpret. It also raises

the question whether more benefit may be derived from longer mindfulness trainings with more practice in focus-meditation. Furthermore, Ramsburg and Youmans suggest self-regulation as the mechanism that may explain the meditators' superior performance. If this is so, such focus-meditation practice may offer a simple way for student interpreters to more quickly build the kind of self-regulatory competence that characterizes expert interpreters (cf. Hild 2014; Liu, Schallert, & Carroll, 2004).

Mrazek, et al. (2013) similarly examined cognitive effects of mindfulness training in university students, but with a focus on reading comprehension, working memory capacity (WMC) and mind wandering. In this randomized controlled trial, 48 undergraduate students were randomly assigned either to a mindfulness class (n = 26) or the active control, a nutrition class (n = 22). In both cases, classes met for 45 minutes four times a week for two weeks (total of 6 hours), under the guidance of an expert in the field. Students in the meditation class were asked also to practice meditating for 10 minutes a day outside of class, and those in the nutrition class were to take time to log what they ate each day.

In the week just before and just after the respective courses, all participants were measured on three dependent variables: (a) *reading comprehension*, as measured by the verbal-reasoning section of the GRE, excluding vocabulary questions; (b) *working memory capacity* using the Operation Span Task (OSPAN), which is highly predictive of performance across a range of contexts (Unsworth, Heitz, Schrock, & Engle, 2005); and (c) *mind wandering*, measured retrospectively after the OSPAN task, and also during the GRE with eight thought-sampling probes at random intervals and a form on which participants were asked to count other instances when they realized their mind had wandered.

Analysis of variance showed that at pretest, there were no significant differences between the groups on any of these measures. At posttest, students in the mindfulness class performed significantly better on the GRE and the OSPAN test of working memory capacity than those in the nutrition class, and had significantly fewer instances of probe-caught, self-caught, and retrospectively reported mind wandering during these tasks. As indicated by follow-up *t*-tests, mindfulness significantly improved performance and reduced mind wandering across all variables. When converted to standardized scores, the GRE results for the mindfulness group corresponded to16 percentile points. Further testing showed that the improved WMC and GRE performance were mediated by mind wandering.

This study provides empirical evidence that a two-week, six-hour mindfulness program can effectively improve WMC and reading comprehension by reducing distractive thoughts. The mindfulness training in this case was similar in content to the beginning sessions of a typical 8-week MBSR program: posture, focus on the breath, awareness of sensations, and noticing naturally occurring thoughts, but bringing one's attention back to the breath and present experience whenever it wanders. The findings in this study suggest that the concentration ability strengthened by such practice does transfer to dissimilar tasks (e.g. the GRE) and that, when directed to a challenging task (such as interpreting), "it can prevent the displacement of crucial task-relevant information by distractions" (Mrazek et al., 2013, p. 5).

However, another study examining the effects of short-term mindfulness training on mind wandering and WMC task performance in university students (Morrison, et al., 2014) only partially corroborated the findings of Mrazek et al. Morrison et al. compared a mindfulness training (MT) group (n = 30) with a waitlisted control group (n = 18). The mindfulness training was offered as part of a campus-wide initiative and intended to test its feasibility. Students were

thus quasi-randomly assigned to this group based on availability in their schedule, with a minimum target MT enrollment of 30. This context explains the disparity in group size.

The MT, while modeled on MBSR, was tailored to the needs and constraints of university students. In particular, students tend to experience more stress and dysphoria (e.g. dissatisfaction or unhappiness) as a semester wears on and exams loom. One aim of this study was thus to study the effects of MT over the course of a semester. The training lasted seven weeks and was appended to a first-semester psychology course. Each week, participants in the MT group attended the 20-minute instructor led MT session (which included 5-10 minutes of practice), and two 20-minute supervised lab sessions of audio-guided practice, which alternated between a body-scan and mindful-sitting meditation. The total training thus consisted of one hour of combined instruction and practice per week, there being no other requirement.

At pretest and posttest, both MT and control participants were administered the computer-based Sustained Attention to Response Task (SART). This task involves hitting the spacebar every time a number appears on the screen, but not when it is a "3", which happens only 5% of the time. The task is purposely repetitive and boring to tempt switchover to the mind's "default" attentional network which is prone mind wandering whenever the mind is not engaged in an attention-demanding task (Goleman, 2013). Mind wandering was measured via an occasional pair of probes that would appear on screen until answered: "Where was your attention focused just before the probe?" (six response options from "on task" to "off-task") and "How aware were you of where your attention was?" (six response options from "aware" to "unaware"). Participants were also administered the same Operation Span Task (OSPAN) of working memory capacity as in the study by Mrazek et al. (2013) and a delayed-recognition with distractors test.

At posttest, the MT group had significantly higher task accuracy than controls on the SART task and reported being more "on task." Paired comparisons showed this between-group difference to be attributable to a combination of improved performance by the MT group over time, t (23) = 2.11, p = 0.046, d =.31, and much worse performance by the control group, t (17) = 2.70, p = 0.02, d =.77. However, contrary to the findings of Mrazek et al. (2013), there was no significant difference between the groups on the OSPAN or delayed-recognition with distractors test. Morrison et al. offer several plausible explanations for why MT participants improved on the SART but not the WMC measures. First, the mindfulness training included regular gentle reminders to notice if the mind had wandered and if so, to bring one's attention back to the object of focus. The MT participants may thus have similarly responded to the SART probes. The WMC tasks included no such cues. Also, the "dose" of mindfulness training in this study may have been too short to affect measurable changes in WMC. Though the training extended over seven weeks, it included only 3.5 hours of instructor-led training.

One question running through the research is whether mindfulness training is meaningfully different from relaxation training (Chiesa & Serretti, 2009). In a study with 80 Chinese university students (in China), Tang et al. (2007) compared the effects of Integrative Body-Mind Training (IBMT) and Relaxation Response training on an array of cognitive and emotional measures: various aspects of attention, including executive attention, anxiety, depression, anger, fatigue, vigor; and physiological markers of stress. The study thus closely matches the sample population and variables of interest in the present proposed study except, ostensibly, the type of meditative intervention.

Tang et al. purport that IBMT differs from mindfulness meditation in that the latter focuses on effortfully controlling one's thoughts, where as IBMT does not. This, however, is a

mischaracterization. Their description of IBMT mirrors typical descriptions of mindfulness training:

> The method stresses no effort to control thoughts, but instead a state of restful alertness that allows a high degree of awareness of body, breathing…. It stresses a balanced state of relaxation while focusing attention. (Tang et al., 2007, p. 17152)

The IBMT intervention can thus be considered reasonably comparable to mindfulness training. Though not described by Tang et al., Relaxation Response typically involves sitting quietly in a comfortable position, eyes closed, then progressively, over the course of 10-20 minutes, relaxing every muscle from the feet up to the face while breathing through the nose, and counting "one" with each exhale (Benson & Klipper, 1992).

The students were randomly assigned to the IBMT group (n = 40) or the relaxation group (n = 40). Each group received its respective training for 20 minutes a day for five days (though not specified, the days were presumably contiguous). In the week immediately preceding and following the trainings, all participants were administered the Attention Network Test (ANT, Posner & Rothbart, 2007), a standard computerized test that measures the orienting, alerting, and conflict (executive attention) networks of attention. The executive network has been linked to cognitive and emotional regulation (Fan, McCandliss, Fossella, Flombaum, & Posner, 2005). Participants also completed the Profile of Mood States (POMS), rating 65 adjectives on a five-point scale according to how they had been feeling during the last week and now they felt at the moment. The adjectives constitute 6 subscales (anger, confusion, depression, fatigue, tension-anxiety, and vigor). Lastly, participants underwent a stress challenge (mental arithmetic task) after which their cortisol levels were measured twice, once right after the stress challenge, and again after 20 minutes of IBMT or relaxation, respectively.

The only significant between-group difference on the ANT scores at posttest was for executive attention. ANOVAs showed that the groups differed significantly at posttest on the anger, depression, tension-anxiety, and vigor subscales of the POMS. Except for the "confusion" subscale, *t*-tests revealed significant pre-post mean differences on all of the POMS subscales in the IBMT group, but not in the control group. The negative moods decreased, while the positive mood (vigor) increased. The stress-challenge measure showed that cortisol levels rose in both groups, but significantly less in the IBMT group, especially after 20 minutes of recovery with IBMT.

These findings provide further evidence that mindfulness-type training improves executive attention and mood states (both of which influence performance on interpreting tasks) in a way that simple relaxation does not. Although the results to not explain the mechanisms between cognition and emotion (this is the domain of neuropsychology-focused studies, not reviewed here), they do suggest that attention and emotion regulation are interconnected, as Hild (2014) has shown when it comes to interpreting.

Many studies, like the ones reviewed above, have shown attentional improvements following mindfulness training. However, Jensen et al. (2012) point out two important plausible alternative explanations for many of these findings. First, experimental-group participants may be more motivated than control-group participants to perform well on post-intervention measures because of their own expectations or those of the experimenter. In other words, posttest tasks may present greater cognitive incentives for experimental group participants, inducing them to invest more attentional effort, which can affect outcomes. Jensen et al. cite studies in which such increased effort has improved performance on reaction time, sustained attention, and the widely used Stroop test of inhibition and selective attention. A mindfulness-related study has

demonstrated the phenomenon: In a comparison of meditators with novices (Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, 2007), one group of novices received a monetary incentive and a second did not. "This modest cognitive incentive resulted in significantly higher blood flow in almost every attention-related region of interest in the incentive controls compared with the nonincentive controls" (Jensen et al., 2012, p. 2). Second, the reported mindfulness results of many studies may be confounded by general stress reduction not unique to mindfulness interventions.

Jensen et al. thus designed a randomized controlled trial (2012) comparing four groups of mostly university students ($N = 47$, age 20-36, 60% male): an experimental group ($n = 16$) that received eight weeks of mindfulness-based stress reduction (MBSR); an active control group ($n = 16$) that received eight weeks of nonmindfulness stress reduction training (NBSR); and two control groups ($n = 16$ combined) split before the posttests, only one of which received an incentive ($n = 8$). All participants were paid for their participation: The MBSR and NBSR participants received $850, and control participants received $250. Additionally, the incentive controls (INCO) were offered an extra $50 if they could "improve" compared to their baseline (NOCO).

The MBSR intervention was a classic 8-week course with one 2.5-hour session per week, one full-day retreat in the 6th week, and an assigned 45 min/day of CD-guided meditation practice and 15 min/day of "informal" daily-life mindful activities, to be logged in a practice diary. Content focused on the body scan, sitting meditation, and hatha yoga, all with an emphasis on nonjudgmental awareness. The NMSR intervention was identical in format and homework requirements, and similar in content, but did not include training in meditation or in nonjudgmental awareness. Instead, the NMSR intervention focused on increasing body

awareness and learning strategies for relaxing when stressed. Specifically, NMSR participants received guided relaxation (e.g. "Imagine the muscles in your calves are relaxing. Feel how the lower legs are becoming heavier as they are getting more and more relaxed"). They also did circulatory training.

The pretest and posttests included multiple computer-based measures of attention involving response time (RT), and thus engaging executive attention: *vigilance* (Dual Attention to Response Task—DART), *orienting at a specific time* (Spatial and Temporal Attention Network—STAN), *selective attention and inhibition, cognitive flexibility and control* (STROOP), *sustained and selective attention* (d2 Test of Attention), and *visual attention and perception* (combiTVA). Participants also underwent saliva cortisol sampling, completed a self-report mindfulness scale (the Mindfulness Attention and Awareness Scale—MAAS) and the self-report Perceived Stress Scale (PSS).

Jensen et al. further controlled for effort effects by measuring RT *variability* on the computer-based attention tests rather than just the raw RT scores, as most studies do. Specifically, they used the coefficient of variation (*SD* of RT/mean RT) because cognitive researchers have found it to be unaffected by practice effects.

Results showed that a number of variables were uniquely affected by MBSR:

1. *Mindfulness.* Only the MBSR group significantly improved on the MAAS mindfulness scale, showing that mindfulness meditation and a nonjudgmental attitude do constitute unique features of MBSR mindfulness training not present in general stress reduction interventions.

2. *Sustained and selective attention.* On the d2 Test of Attention (see Chapter 3 for a detailed description), participants tend to flag and commit more errors in the middle section. The MBSR group had a significantly more stable error distribution than any other group, indicating greater

resilience to tiring. Also, MBSR was the only group showing a significant decrease in errors and percentage of errors to total number of items processed. Most of the errors were errors of omission, not commission, indicating sustained selective attention in the presence of distractors. Besides corroborating previous findings that experienced meditators perform better on the d2 than do novices Moore & Malinowski, 2009), these results suggest that mindfulness training may help interpreters selectively focus on main ideas and filter out incidental information—a key competency distinguishing experts from novices (Liu et al., 2004).

3. *Visual attention.* Only the MBSR group showed significant improvement in visual threshold, that is, "time required for encoding visual information into conscious, short-term memory" (Jensen et al., 2012, p. 13), and this improvement correlated significantly with increased self-reported mindfulness. This visual ability may help interpreters more quickly recognize and recall the sense of their largely symbol-based consecutive notes during the reformulation phase of consecutive interpreting, thereby freeing up attentional resources for other competing efforts. During reformulation, interpreters must read ahead in their notes to ensure a smooth delivery, while simultaneously expressing the sense of the original speech in a different language (which may be their non-dominant language).

4. *Working memory capacity.* Only the MBSR group showed significant improvement in WMC, and this improvement significantly correlated with improved mindfulness. This finding suggests that mindfulness training may improve top-down (i.e. intentional) control of attention, which is synonymous with executive functioning (Timarová, 2012).

In short, the design used in this study effectively "filtered" out attentional effort and general stress reduction and contributed "an understanding of the 'active ingredient' in MBSR" (Jensen et al., 2012, p. 2), that is, mindfulness meditation and a nonjudgmental attitude. MBSR

did also have positive effects on perceived stress (d = .61), cortisol secretion, overall vigilance, and other attention measures, but not significantly so compared to the NMBR or controls, particular those receiving an incentive. For example, only the incentive control group (INCO) improved significantly on attentional set shifting (d = 1.44). These results indicate that variables other than those enumerated above were confounded either by general stress reduction or by attentional effort as induced by an incentive. "[N]on-MBSR activities may enhance mindfulness," and "stress reduction itself generally improves attention" (Jensen et al., 2012, p. 2). This probably explains why significant differences are not always found in studies comparing mindfulness and relaxation.

In a similar vein, a recent randomized controlled trial used an active psychological control to "dismantle" any effects arising from specifically from mindfulness meditation (Crane et al., 2014; Williams et al., 2014; Williams et al., 2010). The study examined the relapse rate among 274 participants having suffered major depression, comparing Mindfulness-Based Cognitive Therapy (MBCT), Cognitive-Psycho Education (CPE), and a control group (treatment as usual). The researchers found that the aspects common to both active interventions accounted for about half of the drop in the relapse rate (Williams et al., 2014).

Mindfulness and Stress

While mainly focused on cognitive variables, several of the studies reviewed above also examined stress and related variables. Given that most empirical studies conducted on mindfulness have used Mindfulness Based Stress Reduction (MBSR) as an independent variable, it is not surprising that many studies have focus primarily on stress and related constructs, generally showing medium to large effect sizes (Eberth & Sedlmeier, 2012; Khoury et al., 2013).

Here we take a closer look at one additional study that highlights aspects of particular interest to interpreting and to the design of the proposed study.

Lin, Chang, Zemon & Midlarsky (2008) investigated the effects of Chan (Zen) meditation on musical performance anxiety and musical performance quality with students recruited from three local music conservatories via posters with sign-up sheets announcing free meditation classes. Of the 48 students who expressed interest, 29 (60%) did not participate because of scheduling conflicts and limited time availability. Participants included 19 students (age: *M* = 25.1, *SD 6.7,* 74% female): 12 pianists, two oboists, three singers and two violinists who, on average, had 13.9 years (*SD* = 5.4) of music training. They were randomly assigned to the meditation group (*n* = 9) or a wait-list control group (*n* = 10) and administered a pretest measure of trait performance anxiety. After the 8-week mindfulness intervention, all participants gave a public solo concert where their musical performance quality was assessed by two jurors blind to the research and immediately following which they completed a posttest measure of trait performance anxiety and also a measure of state performance anxiety.

Musical performance anxiety was measured with two 20-item Likert-type scales, the State Anxiety Index (e.g. "At this moment, I feel calm") and the Performance Anxiety Inventory (e.g. "I feel confident and relaxed while performing before an audience"). *Musical performance quality* was measured with the Music Performance Quality Rating Form (MPQ). The MPQ includes six ratings, five for specific aspects of quality (pitch production, rhythmic/tempo production, technical competency, expressiveness / musicianship, and tone quality) and one for overall quality. Each is to be rated on a 5-point scale (e.g. for Technical Competency a 1 = seldom performs with right notes [0-25%] or with mistakes constantly). The first five items are

used to calculate the Average Performance Quality, and the sixth constitutes a holistic assessment of Overall Performance.

Lin et al. describe the intervention, Chan (Zen) meditation, in terms virtually synonymous with definitions of mindfulness, that is practicing being "mindful of both inner mental states and outer surroundings that take place in the present moment, with a calm and non-judgmental attitude toward them" (Lin et al., 2008, p. 141). The training consisted of one 75-minute session per week for eight weeks at one of the conservatories. Each session included 15-20 minutes of meditation practice. Participants were asked to also practice meditating 20 minutes per day, preferably just before their instrumental or vocal practice session. Similar to a typical MBSR program, the later weeks of the course included standing, walking, and lying down meditation, and awareness of body and surroundings, discussion, and opportunities to ask questions. However it also included "sleeping meditation," contemplation, performance audio/visualization, and mental rehearsal. Throughout the training, the instructor emphasized that meditation is not "a magic pill" and did not substitute for musical practice. On average, participants missed 40% of the sessions and three of the nine attended only half of them. No data was collected on how much the participants practiced on their own.

Performance anxiety was higher in the meditation group at baseline, but dropped to match that of the controls post-concert. After the concert, the meditation group was experiencing less state anxiety than the control group ($d = .49$). Yet there was no significant difference in musical performance quality between the groups.

The results do, however, show interesting relationships between musical performance quality and anxiety. In each case, correlation results for Average Performance Quality and Overall Performance were similar, so only the latter are reported here. For the control group,

there was a strong negative correlation between performance quality and state anxiety (r = -.75): The more anxious they were, the worse they performed. This was also true of the meditation group, but the correlation was weak (r = -.38). For the control group, the relationship between performance quality and performance (trait) anxiety, was even stronger (r = -.81). In contrast, the relationship was positive for the meditation group (r = .72): The higher their performance anxiety, the better they performed.

These results suggest that while the meditation-group musicians were no less anxious about performing than the controls, they had learned to better regulate that anxiety to achieve lower state anxiety at the performance and channel it in a way that supported rather than undermined the quality of their musical performance. If this is true, mindfulness training similar to the Chan meditation training in this study could be very beneficial to interpreting students in helping them develop self-regulatory abilities to cope with the stress of the public performance aspects of consecutive interpreting, particularly in exam situations.

In terms of design, the study by Lin et al. (2008) indicates that the recruitment and attendance challenges I encountered in conducting Pilot 1 and Pilot 2 (see Chapter Three) are not unique. Between expression-of-interest and intervention, Lin et al. lost 60% of prospective participants to scheduling conflicts and available time; I lost 63% of prospective participants in Pilot 1, and 65% in Pilot 2. In Lin et al. (2008), average attendance rate was 40%, with three of nine participants attending just 50% of the eight sessions; in my Pilot 2, median attendance was 75% of sessions with seven of 11 participants attending 50% or more of the eight sessions. Such recruiting and attrition difficulties were thus anticipated and averted in the present study.

Summary

In this section we have seen that mindfulness training is not the same as general relaxation training and has unique effects. Evidence suggests that even short-term mindfulness training improves executive attention, concentration and vigilance. We have also seen evidence that it reduces mind wandering, and that mind-wandering mediates performance on cognitive tasks. The empirical studies reviewed also suggest that mindfulness training strengthens attentional and emotional self-regulatory abilities key to managing the cognitive demands and stress of complex tasks. Based on these findings, it can be hypothesized that mindfulness training may help student interpreters improve their consecutive interpreting performance and move toward expertise by strengthening their general attention and emotion self-regulatory abilities.

CHAPTER 3—METHODOLOGY

This chapter begins with a brief description of the procedures and findings of two Pilot studies I conducted over the course of two semesters in preparation for the present study. These help explain why I opted for the design, intervention, procedures, and instruments ultimately retained. For a more extensive reporting of these pilot studies, see Appendix A.

Pilot Studies

Pilot 1

The purposes of Pilot 1 were to (a) try out recruiting procedures, (b) see how many students would volunteer to participate and how well they would persist in a multi-week mindfulness intervention, (c) try out a specially developed 4-week extra-curricular mindfulness training, (d) collect data on how participants experienced the training and any effects for them personally, and (e) receive participant feedback and suggestions, particularly as to the length and format of the training. Though limited in scope and number of participants, Pilot 1 yielded valuable information for further calibrations of the study.

Participants in this pilot training were asked to attend two 1-hour sessions per week and practice meditating for 10+ minutes per day using the specially developed "Mindfulness Practice Guide & Journal" provided. The sessions, led by an experienced mindfulness trainer, included instruction, practice, and discussion, and covered four modules: awareness of posture and breath; awareness of body, emotions and thoughts; equanimity and flow; and opening the heart.

Volunteer participants from third-semester advanced interpreting courses in a 2-year Masters degree program were recruited by providing the professors with a scripted announcement and sign-up sheets, then emailing interested students the consent form and

inviting them to attend the training. There was a 63% drop-off: Of the 19 students who expressed interest, only seven came to the first session.

Pilot 1 showed that scheduling, continuity and duration clearly presented the biggest obstacles to regular attendance and practice. Only four participants persisted beyond the first week and attended at least half of the sessions ($M = 4.75$, range 4 - 6). All missed two or three of the training sessions, and at most practiced on their own 60% of the days. Participants also indicated that they would not have signed up for a longer and more intensive training (such as an 8-week MBSR format) even if given $25 for their participation. All of this evidence corroborated the findings of Greeson et al. (2014) that, in a graduate-school context, co-curricular mindfulness trainings are best kept to a continuous four weeks at a consistent time.

Data on level of actual practice and participant experience were collected weekly via a paper and pencil surveys completed during the training sessions. At the conclusion of the pilot intervention, a final survey was administered to solicit participant feedback and suggestions. Participants reported changes related both to attention and stress, generally experiencing greater awareness, focus, acceptance, and emotional self-regulation, and thus a sense of agency in their lives. While experiences reported may have been unique to these few students and could not necessarily be attributed to the mindfulness training, this preliminary evidence did suggest that such a multi-week mindfulness training might help students better regulate their attention and emotions by giving them the opportunity to practice and experience an evolution in their own awareness, attitudes, and behaviors over time.

Pilot 2

Building on Pilot 1, Pilot 2 was a small-scale quasi-experimental repeated-measures study designed to explore the effect of voluntary co-curricular mindfulness training (IV) on

interpretation exam performance, mindfulness, and cognitive abilities (DVs) among second-semester interpreting students. I compared mindfulness-training participants (treatment group) with their language-matched peers (control group). Specifically, I wanted to (a) try out revised recruiting procedures to increase participation, (b) assess a refined version of the 4-week co-curricular mindfulness training, and (c) try out quantitative instruments and qualitative data collection for each of my dependent variables.

I succeeded in generating a larger pool of interested students by pitching the pilot training myself, but the drop-off rate was similar to Pilot 1. The statistical sample ($N = 38$) was 87% female and spanned five language programs: Chinese (21), Japanese (6), Spanish (7), French (3), and Russian (1). Of these, 11 were in the mindfulness treatment group and 27 in the control group.

The co-curricular mindfulness intervention consisted of eight hours of mindfulness training in 1-hour lunchtime sessions twice a week over four consecutive weeks under the guidance of the same mindfulness trainer as in Pilot 1. With minor refinement, the content, progression, format and materials were also the same. As added support, a website was created to accompany the training. Better than in Pilot 1, attendance reached an overall median of 75% (six of eight sessions). Yet only a core of seven participants attended four or more sessions (median of 7). On average (median), Pilot 2 participants meditated on their own a total of seven times over the four-week course (range: 1–14) and did three "mini module" daily life exercises (range: 0–19), demonstrating a high degree of variability. Participants reported wanting to participate more but not feeling able due to other commitments.

Quantitatively, *interpretation exam performance* was measured via start-of-semester and midterm assessments by professors in the relevant interpretation courses. At pretest, professors

used their own customary scoring practices. These proved so diverse, that at posttest I asked them to use a 20-point rubric which I developed based on Wu (2010). Only one professor did. *Mindfulness* (Five Factor Mindfulness Questionnaire, FFMQ) and *cognitive abilities* (Letter Comparison Test, Pattern Comparison Test, Connections Test) were also measured before and after the 4-week mindfulness training via pencil-paper packets group-administered to all participants (treatment and control) during regular interpreting classes.

Contrary to expectation, the control group showed significantly more improvement on their interpreting exams than the treatment group. However, the interpretation scores were not reliable because of inconsistencies in the scales used. Clearly, I would need a standardized scale, quick and simple enough that professors would actually use it. Also, some professors' expectations clearly shifted from holistic impressions at pretest (did not count toward grade) to a more fine-grained evaluative assessment at posttest (midterm exams). The FFMQ results suggested that the mindfulness training helped participants become more observant of their inner experience and less reactive, possibly pointing to improvements in emotional self-regulation, which is key to staying on task and maintaining a professional demeanor when interpreting. Analyses of the Letter Comparison, Pattern Comparison and Connections tests yielded no results of interest. Qualitative data were collected via weekly online practice logs, a final survey, and a focus group. These yielded valuable insights and suggestions that would help further calibrate the main study, revealed themes to be probed, and seemed to support the hypotheses of a Cognitive Load Theory model of interpreting.

From these Pilot 2 findings, I drew multiple conclusions for the main study:

1. Even with effective recruiting procedures, approximately 40 or more interested students would likely be needed in order to obtain a target treatment-group size of at least 12 participants.

2. The surest way to reach optimal attendance and home practice would likely be to embed the 4-week mindfulness intervention in a half-semester regular credit course for which students enrolled. As Rogers (2013) similarly found in multiple iterations of a the "Koru" mindfulness course at Duke University, (a) attrition increases as the number of sessions increases; (b) four-sessions over four weeks is optimal; and (c) "students do best if they are 'required' to attend class and practice," because "college students are accustomed to being externally motivated and adapt easily to a structured learning environment" (2013, p. 77).

3. For the main study it would be important to have all professors report their interpretation exam assessments using the same simple, standardized scale for both pretests and posttests. Furthermore, interpreting exam performance should be operationalized, for both pretest and posttest, as performance on exams that count toward course grades (for example, midterms and finals). This would help ensure that the repeated measures be evaluated more similarly.

4. The 39-item FFMQ was too long. Also, the two FFMQ subscales for which results were significant in Pilot 2 contained no reversed items, whereas the other three subscales did—two of them being completely reversed and thus actually measuring a *lack* of mindfulness. It would be preferable to use shorter, mostly positively-cast scale designed to measure perceived trait mindfulness, such as the theoretically derived 12-item Cognitive and Affective Mindfulness Scale—Revised (CAMS-R).

5. While *attention* (aspects of executive functioning) remained an important dependent variable to measure, the Letter Comparison, Pattern Comparison and especially the Connections Test were too time consuming to administer and score. For the main study, I thus replaced these tests with one single test, the 14-item pencil-paper d2 Test of Attention, which similarly measures selective attention, processing speed, and concentration performance, but requires only eight minutes to administer.

6. Students come to mindfulness training with different and often multiple, interconnected motivations. Mindfulness trainings offered to graduate students may be offered in a particular context (such as interpreter training), but should not be narrowly focused on specific outcomes (e.g. better concentration, faster cognitive processing).

7. Mindfulness training did seem to help student interpreters become more aware of and regulate their own emotions and attention, experience greater equanimity and less reactivity, and become kinder toward themselves, including when they were interpreting. Some participants, however, may have been over-attributing to the mindfulness training the progress they felt they were making in their interpreting classes.

8. My Cognitive Load Theory model of interpreting for novices learning to interpret (see Figure 1 at the end of Chapter 1) did seem accurate in that it matched how Pilot 2 participants described their experience of interpreting and had predicted how several participants reported that mindfulness training had improved the quality of their experience of interpreting by helping them focus on the task at hand rather than on internal or external distractors.

Main Study

The purpose of this mixed-methods study was to explore whether short-term mindfulness training has any significant effect on the consecutive interpreting exam performance of graduate

interpreting students and whether mindfulness, stress, and aspects of attention (executive functioning) may be mediating variables. It also explored how student interpreters experience any connections between mindfulness training and interpreting.

Quantitatively, this study addressed a number of questions: Do students who receive mindfulness training perform better on consecutive interpreting exams? If so, is this difference associated with greater mindfulness, better attention, or lower perceived stress? Specifically, there were three primary research questions:

1. Is there a statistically significant difference in **interpreting exam performance** between students who do and do not receive mindfulness training?
2. Is there a statistically significant difference in **mindfulness, attention,** or **perceived stress** between students who do and do not receive mindfulness training?
3. Is there a **correlation** between a change in **mindfulness, attention,** or **perceived stress** and a change in **interpreting exam performance**?

Those students who received mindfulness training were expected to outperform those who did not and to report higher levels of mindfulness, demonstrate better attention, and indicate lower perceived stress. The data were expected to show positive correlations between mindfulness, attention and consecutive interpreting exam performance and negative correlations between these variables and perceived stress.

Qualitatively, this study also sought to describe how student interpreters experienced the mindfulness training and its effects, if any. Qualitative instruments focused on the following questions:

1. How do interpreting students experience the cognitive demands of consecutive interpreting?

2. What do interpreting students experience as stressful? How do they define stress and how does it manifest for them personally? Do they believe it affects their interpreting performance? If so, how? How do they deal with stress in interpreting situations?
3. How do students experience the Mindfulness for Interpreters course? What if any effects of the training do they experience in their lives and specifically with respect to interpreting?

This section provides a brief overview of the research design, the characteristics of the study sample, protection of human subjects, the qualifications of the researcher and mindfulness trainer, the independent and dependent variables, procedures, scoring, reliability, and data analysis.

Research Design

As represented in Figure 2, this mixed-methods study used a quasi-experimental repeated-measures design with two independent variables: (a) *group condition,* with two levels (*mindfulness training* and *no mindfulness training*), and (b) *time,* also with two levels (*before* and *after).*

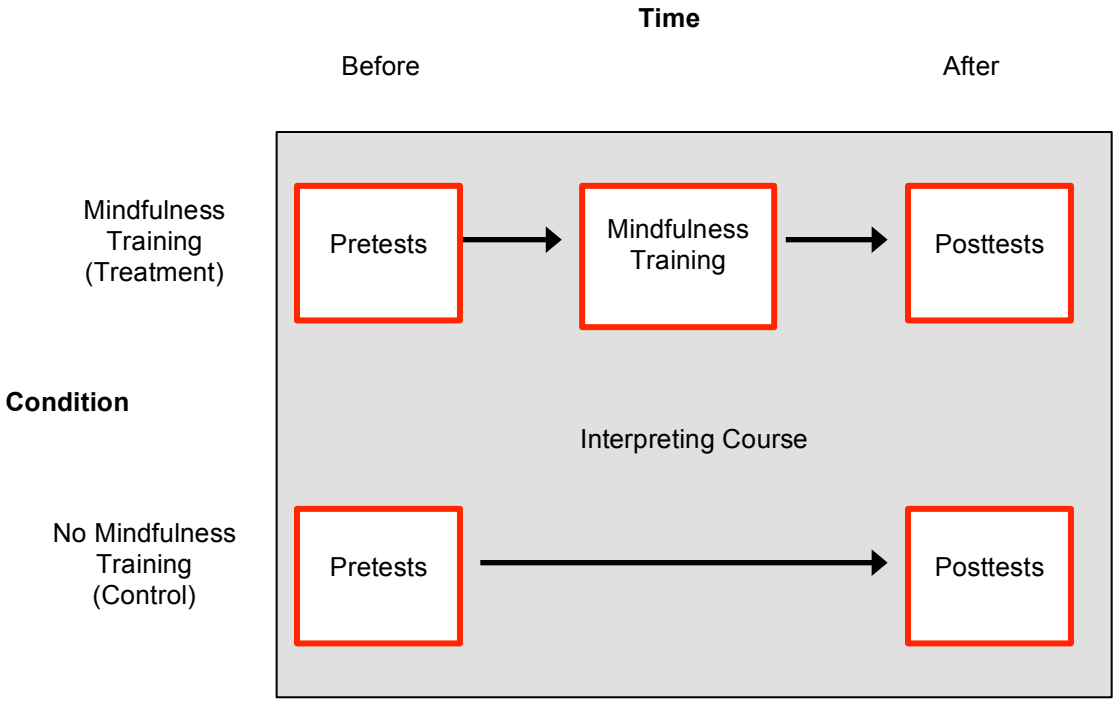

Figure 2. Quasi-experimental repeated-measures design with two conditions. All participants were concurrently enrolled in the same Introduction to Interpreting into English course for their respective languages.

For simplicity, participants in the *mindfulness training* condition will be referred to as the "treatment" or "mindfulness" group, and those in the *no mindfulness training* condition will be referred to as the "control" group. All participants in both groups were measured on four dependent variables: (a) in-class consecutive interpreting exam performance, (b) mindfulness, (c) measures of attention, and (d) perceived stress. These independent and dependent variables are described below under Variables and Measures.

The *mindfulness training* intervention consisted of a four-week training embedded a one-unit half-semester elective pass/fail course (8 weeks, 16 contact hours). The duration and format were primarily based on the findings of Greeson et al. (2014), Rogers and Maytan (Rogers & Maytan, 2012; Rogers, 2013), and on the results of my own unpublished pilot studies in Fall 2013 and Spring 2014. Qualitative data were collected from the mindfulness group through periodic online surveys, a semi-structured "final reflection" assignment, and a focus group session. These, also, are further described under the Variables and Measures section below.

For the co-curricular pilot studies, sessions were led solely by the mindfulness trainer. I myself co-led only the orientation session before the training and the focus group after it, because I wanted to minimize any motivation or social desirability bias in the results. For the main study, I opted instead for a co-instructor model of mindfulness training. I co-led and fully participated in all sessions for multiple reasons: First, as a practical matter, I was the professor of record for the regular academic course in which the training was embedded. Also, at least one of us could always be fully attending to the dynamics of the moment even when an individual or logistical matters required attention. Second, being an active interpreter and having once been a student interpreter myself, I could relate directly to and empathize with the participants' experience of learning to interpret. Third, the fact of my practicing mindfulness *with* the participants and mutually sharing my own inner experience as a fellow human being and fellow interpreter would model and embody what they were being invited to explore.

Characteristics of the Study Sample and Setting

A convenience sample of participants was recruited from among students in a two-year resident translation and interpretation graduate program in the U.S. that has intake once a year, each fall. The institution offering these Masters degree programs is accredited by the New

England Association of Schools and Colleges (NEASC) and a member of the Conférence Internationale Permanente d'Instituts Universitaires de Traducteurs et Interprètes (CUITI), an international association of university institutions with translation and interpretation programs. Since the present study was interested in reproducible educational interventions, both the intervention and measures took place in a naturalistic, regular classroom setting.

The study included all students enrolled in the first-semester Introduction to Interpretation into English course in their respective language programs. The treatment (mindfulness) group consisted of those of these students who were also concurrently enrolled in the one-unit half-semester elective course titled Mindfulness for Interpreters. Given the high number of students who enrolled, they were divided into two roughly equal sections according to the time that worked best for the participants' schedules. Other than meeting at a different time, there was no difference between the sections. The control group consisted of all other students enrolled in the language-matched Introduction to Interpretation courses who did not opt out of allowing their classroom data to be used for this research purpose. Participants who did not complete both the pretests and posttests were excluded from the statistical sample.

Given this nonrandom assignment, homogeneity was tested at baseline (age, gender, language combination, degree track, and previous experience with mindful-awareness practices such as meditation, yoga, or tai chi.

Participants in the statistical sample ($N = 67$) had a mean age of 26.9 years (range, 21-57); 12 (18%) were male and 55 (82%) were female. All participants had English as their native (A) or first foreign (B) language; some also had a second foreign language (C). Table 2 details these characteristics for the treatment (mindfulness) group, the control group, and for the sample overall. As can be seen, all of these characteristics were balanced between the groups, though

there was a slight a difference in the number of males, due to the small size of the sample. These statistics, including the disproportionate number women to men, and of native to non-native English speakers, are typical for the sample population.

Table 2

Sample Demographics by Group

Characteristic	Group		All participants ($N = 67$)
	Treatment ($n = 21$)	Control ($n = 46$)	
Age			
Mean	25.9	27.3	26.9
Median	25	25	25
Range	21-33	21-57	21-57
Missing[a]	2	6	8
Gender			
Male	2 (9.5%)	10 (22%)	12 (18%)
Female	19 (90.5%)	36 (78%)	55 (82%)
Native language			
English	11 (52%)	18 (39%)	29 (43%)
Other	10 (48%)	28 (61%)	38 (57%)
Degree track[b]			
MATI	13 (62%)	30 (65%)	43 (64%)
MACI	8 (38%)	13 (28%)	21 (31%)
Other	0	3 (7%)	3 (4%)

[a] Students who declined to fill in the "Age" field on the paper-pencil demographic form.
[b] *MATI* is the Translation and Interpretation degree. *MACI* is the Conference Interpretation degree. *Other* includes students in the Translation and the Translation Localization Management tracks.

Students are classified by program according to their other-than-English A or B language. Table 3 breaks down the sample by language program. These statistics are typical of enrollment. On the whole, the language groups were relatively well balanced between the treatment and control group, though the Chinese were somewhat underrepresented in the treatment group and

the Spanish overrepresented. Recall that enrollment in the Mindfulness for Interpreters course (treatment group) was completely voluntary.

Table 3

Sample Breakdown by Group and by Language Program[a]

	Group		
Language program	Treatment (n = 21)	Control (n = 46)	All participants (N = 67)
Chinese	5 (24%)	19 (41%)	24 (36%)
Spanish	7 (33%)	6 (15%)	13 (19%)
French	4 (19%)	6 (15%)	10 (15%)
Japanese	3 (14%)	4 (10%)	7 (10%)
Russian	2 (10%)	5 (12%)	7 (10%)
Korean	0 (0%)	4 (10%)	4 (6%)
German	0 (0%)	2 (5%)	2 (3%)

[a] Students are classified by language program according to their other-than-English A or B language.

By the start of the study in the second half of the Fall semester, participants had completed approximately seven weeks of their Introduction to Interpretation courses (A into B, B into A, and C into A, if applicable), which focus exclusively on consecutive interpreting. All participants continued their respective interpreting courses concurrently with the study.

Regarding group independence, two points should be noted. First, like all good teaching in interpreting, the Introduction to Interpreting courses do, whether explicitly or through feedback and modeling, address the importance of learning to focus one's attention, regulate stress, and manage competing stimuli. Yet instruction and practice necessarily remain primarily focused on interpreting skills and techniques. The Mindfulness for Interpreters course described below was substantively novel and different in that its sole purpose and focus was to help students strengthen their self-regulation of attention and emotion by cultivating the kind of intentional in-the-moment awareness, focus, compassion and acceptance that the term

"mindfulness" denotes. It provided a safe, non-performative space that involved no interpreting at all. Second, in the graduate program where the study was conducted, students within each language program have most if not all of their courses together in small seminar-style classes (maximum class size of 12 or 15). Additionally, they are required to practice together each week in small groups (two to four students) where they give each other peer feedback, and it is common for them socialize mainly with each other and sometimes to even be roommates. Thus, even though the study was designed for group-condition independence, it must be assumed that there were cross influences between the groups, whether through explicit sharing, implicit modeling, or even at an unconscious neurobiological level during the students' many interactions and hours together (Siegel, 2012).

Given the preliminary and exploratory nature of this study, it would be premature to claim generalizability of the results. Given the characteristics of the sample, however, the results can usefully be compared with those of similar emerging studies among students in comparable graduate schools around the globe and in other graduate and undergraduate interpreting programs, such as those specialized in medical or court interpreting and sign language interpreting. More broadly, the results will also be interesting to compare with studies focusing on other applied university and graduate programs such as at music conservatories, and in counseling psychology, law, medicine, and nursing.

Protection of Human Subjects

Protection of the human subjects in this study was ensured through Institutional Review Board (IRB) approval both by University of San Francisco and the institution where the study was conducted. As detailed in the attached consent form (see Appendix D), all prospective participants were informed of the general purpose of the study, the nature and duration of the

training, and the secure, confidential treatment of individual data, which was not shared with their professors or anyone else at the study-institution apart from a research assistant. They were also informed that their participation was completely voluntary, that they could withdraw at any time, and that participation or non-participation would have no effect on their course grades. Treatment group participants were, however, informed that to pass the Mindfulness for Interpreters course, they must participate as spelled out in the syllabus (see Appendix F). All treatment-group participants signed consent forms in the first session of the Mindfulness for Interpreters course.

Qualifications of Researcher and Trainer

As primary investigator for this study, my qualifications include being an Associate Professor who has been teaching French translation and interpretation at the graduate level since 1988. I hold an M.A. in French Translation and Interpretation and regularly work as a professional translator and interpreter myself. I have personally been practicing mindfulness and other forms of meditation since the early 1990s, attended multi-day meditation retreats and, as a participant, experienced a full standard 8-week hospital-based MBSR course. In conjunction with this research, I gave a 2011 lecture introducing the research on neuroplasticity and mindfulness titled "Mental Conditioning for Interpreters" at the Monterey Institute of International Studies, presented a poster on Pilot 1 at the 2013 annual conference of the Association for Contemplative Mind in Higher Education, presented a paper on "Mindfulness for Interpreters" at the 2015 Annual Conference of the California Healthcare Association, and presented the preliminary results of the present study at the 2015 Monterey Forum international research conference, the theme of which was Educating Translators, Interpreters and Localizers in an Evolving World. Additionally, I have written four as yet unpublished manuscripts examining the

connections between mindfulness and expertise, motivation, creativity, cognitive abilities, interpreting abilities, and interpreting pedagogy.

The 4-week mindfulness training embedded in the Mindfulness for Interpreters course, was co-developed and delivered with Marianne Rowe, MS, an experienced mindfulness trainer who regularly teaches mindfulness courses both in conjunction with her private practice as a licensed marriage and family therapist and in schools.

Rowe began her personal practice and study of meditation beginning in 1990's with direct teaching from His Holiness the Dalai Lama, Jack Kornfield, Pema Chodron, and Adyashanti. In 2005, under Daniel Siegel and Rick Hanson, she began examining neuroscience as it relates to meditation. Since 2006 she has been participating in workshops and conferences focused on contemplative education and mindfulness in schools, such as those offered by Mindful Schools, the Association for Mindfulness in Education, UCLA Extension, Mind and Life Institute, Wisdom 2.0 for Youth, Stanford University, UC San Diego, and UC Berkeley's Greater Good Science Center.

In 2006, Rowe founded the Mindful Education Project, which offers "Introduction to Mindfulness" courses to elementary, high school, college, and graduate students, faculty and staff. Over the past 10 years she has developed and taught numerous courses, classes and retreats in mindfulness and compassion. Having also thoroughly infused such approaches into her practice as a therapist, she co-presented "Integrative Mental Health" at the 2010 Contemplative Academy conference of the Association for Contemplative Mind in Higher Education. In 2016 she co-founded the Monterey Bay Meditation Studio, which offers numerous courses, classes and retreats focusing on cultivating mindfulness and compassion, as well as

consultation and program development to community agencies, schools and healthcare providers. (For a full Vita and Addendum, see Appendix E.)

We together adapted Rowe's "Introduction to Mindfulness" training format and materials for the purposes of this course. Resembling a shortened MBSR course both in progression and content, the Mindfulness for Interpreters format and materials were refined through two the pilot studies described above.

Variables and Measures

This section presents all of the variables including a restatement of each construct, its operational definition in this study, and a description of each particular measurement instrument, why it was selected, and how it is scored.

Table 4 visually presents the two independent variables: (a) *group condition,* with two levels (*treatment* and *control*), and (b) *time,* also with two levels (*before* and *after).*

Table 4

Independent Variables

Condition	Time	
	Before	After
Treatment (mindfulness training)		
Control (no mindfulness training)		

The treatment (*mindfulness*) group condition was operationalized as a one-unit half-semester elective pass/fail course (8 weeks, 16 contact hours) titled Mindfulness for Interpreters. The course included four weeks of in-class structured mindfulness training, a half-day silent retreat, additional in-class practice, readings, presentations, discussions, and individual practice outside of class. The course also incorporated collection of treatment-group data: weekly practice logs, online forums, a final written reflection, and a focus group session.

The Mindfulness for Interpreters course was open to any student within the wider institution, including second-year interpreting students who participated in the Pilot 2 training in Spring 2014 (two Pilot 2 participants enrolled). Only the data of participants who passed the course were used, and the statistical sample for quantitative analyses was limited control-matched first-semester students. Course requirements included attending all class sessions (maximum of one excused absence), completing all pretests and posttests, and submitting the online weekly practice logs and final written reflection (Greeson, 2014). The Mindfulness for Interpreters course schedule and content are further described under "Procedures" below.

All quantitative pretests and posttests were administered simultaneously to treatment- and control-group participants as well as nonparticipants (opt-outs) during regular Introduction to Interpreting into English consecutive interpreting class sessions by arrangement with the professors of the courses concerned.

The *time* independent variable was operationalized as the two times at which measurement data was collected, just before and just following the 4-week mindfulness intervention embedded in the Mindfulness for Interpreters course. For the measures of mindfulness, attention, and perceived stress, that interval was approximately six weeks. The interval between interpretation exam performance measures varied between six to eight weeks, depending upon when professors administered midterms and final exams in their respective interpreting courses.

There were four dependent variables: (a) interpreting exam performance (b) mindfulness, (c) attention, and (d) perceived stress. Table 5 summarizes these variables, the instruments used to measure them, and how they were scored. Detailed descriptions of each, including validity and reliability then follow.

Table 5

Dependent variables, measurement instruments, and scoring

Dependent Variable	Measure	Scoring
Interpreting exam performance	*ECTICE scales*	The scores (0-6) on the accuracy and delivery scales are summed for a total score of 0-12.
Mindfulness	*CAMS-R* (12-item scale)	The 12 values are summed after reversal of items 2, 6, and 7. Higher values reflect greater mindful qualities.
Attention Selective attention Processing speed Concentration Performance	*d2 Test of Attention*	Total Number of items processed for each of 14 trials (TN, 0-47; 658 total) Errors: omission ($E_{1)}$ commission (E_2) total (E), percentage (%E) Total performance (TN-E) Concentration performance (CP= Correct -] Fluctuation rate among the 14 trials (FR)
Psychological stress	*Perceived Stress Scale (PSS) (10-item scale)*	Ratings on the 10 items, from *never* (0) to *very often* (4), are summed after reversal of items 1 - 4. Higher scores indicate greater psychological stress.

Interpreting Exam Performance. Within the program where this study was conducted, first-semester interpreting courses begin with learning how to listen for meaning (as opposed to words) and how to recall that meaning and orally re-convey it in a different language. Students generally practice this by preparing and delivering short speeches to each other. At first, the speeches are interpreted just from memory. After a number of weeks, consecutive note-taking techniques are introduced to enable retention of longer, more information-dense discourse.

Exams consist of listening to and taking notes on a short live or recorded speech (3 - 4 minutes) in the source language and then, immediately upon completion, delivering that message in the target language. Depending on the language program, exams may be administered individually, with students delivering their interpretation at a podium in front of a live jury, or as a group in an interpretation lab, students being in individual soundproof booths.

For this study, *interpreting exam performance* was operationalized as scores on midterm and final exams as normally administered by professors of the Introduction to Interpretation into English courses in the seven different language programs. This operationalization provided a valid representation of the *interpreting exam performance* construct for this study because it constitutes the primary, naturalistic basis for course grades and for advancing in the interpreting curriculum. It also accounted for any variability in customary exam-administration practices that may exist among the different language programs and professors.

Professors first graded their exams as they normally do in their courses. However, these scores were not collected or used in the study since, as one might imagine, different professors have different methods of grading. So that a common set of performance indicators could be used in this study, professors were asked also to score each student using a standardized instrument, the two-part scale developed for Taiwan's national *English and Chinese Translation and Interpretation Competency Examinations (ECTICE)* under the auspices of the Taiwan Ministry of Education (Liu, 2013). (See Appendix C.)

The *ECTICE* instrument includes two scales: Accuracy and Delivery. Each scale consists of a 6-point descriptive rubric from 5 to 0. On the Accuracy scale, for instance, a 5 means "the message in the interpretation is the same as that in the original speech. It contains no errors." A 2 indicates that "the message in the interpretation is very different from that in the original

speech. It contains two or more major errors." On the Delivery scale, a 5 means "the interpretation is fully comprehensible and very coherent with few instances of hesitation, repetition, self-correction, and redundancy. It contains few inappropriate usages of grammar or terms." A 2 indicates that "the interpretation can be understood with great difficulty." On both scales, a 0 means "No interpretation is produced."

The ECTICE scoring instrument was selected for multiple reasons: It is based on the criteria most emphasized in the interpreting literature (Liu, 2013) and most widely practiced in interpreter training programs (Liu, Chang, & Wu, 2008; Wu, 2010). These criteria are described in the scale according to graduated levels of achievement. The instrument has been successfully used with approximately 1500 test-takers for the ECTICE exam since 2007 (Liu, Chang, & Wu, 2008). The ECTICE scales are quick and easy to use, yet a valid and reliable indicator of interpretation competency. ECTICE Accuracy scores correlate highly (r = .945, p = .000) with rigorous yet time-consuming proposition-based rating (Liu & Chiu, 2009; Liu, 2013). Accuracy and Delivery scores, assessed separately by different raters, were correlated to determine whether they should be considered one construct. The relationship (r = .668 for English to Chinese, and r = .743 for Chinese to English, p = .000) was not so high as to indicate a single construct, but did provide evidence of good internal consistency between the scales (Liu, 2014; Yeh & Liu, 2008, cited in Liu, 2013). Choice of this well-founded and tested scoring instrument also seems appropriate since the largest group of participants in the present study is Chinese.

It should be noted that the ECTICE scales were designed for use with texts that have been divided into smaller rating units (six to eight for a 3- or 5-minute speech) for more precise assessment of each cohesive segment constituting an idea. Also, raters for this national exam receive four to five hours of training (Liu, 2013). Such time and effort were not feasible to

expect of professors voluntarily collaborating in the present study. The ECTICE scales were thus used as a holistic Accuracy and Delivery measures of each interpretation overall. The objective was to enable professors in different language programs to characterize and rate *interpreting exam performance* for each of their students in a meaningful and standardized, yet quick and easy way (two checkmarks per student).

Professors typically audio record exams and collect students' notes. They were asked to do so systematically such that these raw data would available for further research and in case scoring questions arose.

Mindfulness. In the psychological literature, mindfulness is typically described as paying attention to one's present moment experience on purpose and without judgment (Kabat-Zinn, 1994). As defined and operationalized by Bishop et al. (2004), mindfulness involves two components: (a) "self-regulation of attention so that it is maintained on immediate experience" and (b) adopting an orientation of "curiosity, openness and acceptance" toward that present-moment experience. Although neuropsychologists are exploring and measuring mindfulness through brain imaging techniques such as fMRI, self-report instruments remain the primary measurement method in clinical and educational settings (Sauer et al., 2013). As of 2013, there were eight validated mindfulness scales available in English (Bergomi, Tschacher, & Kupper, 2013; Sauer et al., 2013), each of which emphasizes different aspects of the construct, depending on the purpose and intended use of the scale.

The Cognitive and Affective Mindfulness Scale—Revised (CAMS-R) scale (see Appendix D) was selected for this study for several reasons. It was designed to measure perceived trait mindfulness, with a focus on perceived awareness, attention, present-focus, and acceptance/non-judgment of thoughts and feelings (Bergomi et al., 2013; Feldman, Hayes,

Kumar, Greeson, & Laurenceau, 2007; Sauer et al., 2013). These are the themes most evoked by students who participated in my 2013-2014 pilot studies, suggesting that they may be most the most directly relevant to student interpreters and interpreting exam performance. Also, the CAMS-R (12-items) is quick to administer—a key consideration given that the pre- and posttest instruments would be administered during regular interpreting classes, taking instruction time away from students and professors.

The CAMS-R scale has been validated and has acceptable internal consistency (.74-.85) for a brief scale aimed at measuring a broad construct. This means that, while capturing different theorized aspects of mindfulness, all of the items on the scale measure this same construct (DeVellis, 2012). In a validation study with 212 ethnically diverse college students, (Feldman et al., 2007), the CAMS-R scale showed good convergent validity with the Freiburg Mindfulness Inventory (FMI, Buchheld, Grossman, & Walach, 2002) and the Mindful Attention Awareness Scale (MAAS, Brown & Ryan, 2003), as well as measures of well-being, emotion-regulation and distress (negative correlation). It also showed good discriminant validity compared with more analytical responses to problems, such as problem analysis and plan rehearsal. These findings have been replicated with other samples, including college students (Berman & Block-Lerner, 2005). Use of the CAMS-R for the present study also provides interesting replication data in that it is the scale used by Greeson et al. (2014) with a similar intervention and sample population of graduate and professional students.

Attention. Attention refers to "a basic set of mechanisms that underlie our awareness of the world and the voluntary regulation of our thoughts and feelings" (Posner & Rothbart, 2007, p. 6). More specifically, attention is defined as "a psychological mechanism responsible for filtering and prioritizing information and allocating internal resources so as to adapt to external

demands" (Ivars & Calatayud, 2013, p. 341). Interpreting requires that these executive mechanisms of attentional control be voluntarily mobilized (Gile, 2009; Timarová, 2012). Both theoretical propositions and empirical evidence suggest that mindfulness training improves individuals' ability to do so (Chambers et al., 2008; Chan & Woollacott, 2007; Jha, Stanley, & Baime, 2010; MacLean et al., 2010; Moore & Malinowski, 2009; Valentine & Sweet, 1999; van den Hurk, Janssen, Giommi, Barendregt, & Gielen, 2010; Zeidan et al., 2010). This study thus aimed to assess whether mindfulness training improves such executive attention in student interpreters, and whether any such change correlates with changes in interpreting exam performance.

The study focused on selective attention, mental concentration, and processing speed as measured by the d2 Test of Attention, which operationalizes the combined "attention and concentration" construct as "a performance-oriented, continuous and focusing selection of stimuli" (Brickenkamp & Zillmer, 1998, p. 3). A type of timed cancellation test, the d2 Test of Attention consists of 14 lines of 47 characters each. The characters are *d*s and *p*s, each with one or two "dashes" (straight apostrophe-like tick marks) above and/or below the letter for a total of one to four dashes (see Appendix D). For each of the 14 trials, participants are given 20 seconds to scan and cross out all *d*s on that line that have two dashes total.

Because it is psychometrically sound and easy to use, the d2 Test of Attention (originally in German) has become the most used measures of attentional assessment in Europe, constantly refined over more than 50 years, and translated into English, French, Portuguese, and Danish. The English version has been normed and validated in the United States (Ross, 2005). The test is highly reliable, with multiple studies showing an internal consistency of $r > .90$, including with samples of U.S. college students and children (Brickenkamp & Zillmer, 1998). The test is

also stable. A study of 110 college students, for example, showed a test-retest stability of r =.87 for total number of items processed (TN) and r =.75 for total performance (TN-E) after six months and four months, respectively (Brickenkamp & Zillmer, 1998). The d2 test has been cross-validated for construct validity with a sample of 506 U.S. college students who were administered multiple tests of attention and concentration, including tests commonly seen in the interpreting literature, such as the Stroop Color Word Test.

This particular test presents multiple advantages, given the purposes and constraints of this study. It specifically measures executive-function constructs of interest in interpreting, allowing for distinct measures of concentration, processing speed, and total selective-attention performance. When 28 sign language interpreters were administered a battery of six cognitive, motor, attention, and personality tests, only the d2 test significantly distinguished interpreters of different credentialing levels (Seal, 2004).

The test has also been used to evaluate relaxation, concentration, mindfulness, and other training techniques (Jensen et al., 2012; Moore & Malinowski, 2009; Siersch, 1984, 1986). In particular, studies have found d2 to be sensitive to changes in selective attention following mindfulness training (Moore & Malinowski, 2009), even when controlling for incentive-induced attentional effort and stress reduction not related to mindfulness (Jensen et al., 2011).

The d2 test is also practical. Whereas most tests of attention and cognitive processing speed are computer based, d2 is available in a one-page pencil-paper format that requires only eight minutes to complete, including instructions. It can thus be administered quickly and easily in the students' natural classroom setting.

Psychological stress. Psychological stress is operationalized as the state that occurs when individuals perceive that they cannot adequately cope with the demands being made on

them or with threats to their wellbeing (Lazarus, 1966). It was measured using the 10-point *Perceived Stress Scale* (PSS) designed to "tap how unpredictable, uncontrollable, and overloading respondents find their lives" (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988, p. 1323). This scale offered particular construct validity for this study given that these same adjectives have been used in the research literature to explain why interpreting can be stressful (Riccardi et al., 1996).

The PSS-10 asks respondents to indicate on a 5-point scale (from very often to never) how often in the past month they have felt, for example, that they were "on top of things," "nervous and stressed," or that that things were outside their control (see Appendix D). National *e*Nation polls in 2006 and 2009 using the PSS-10 each showed a Chronbach's α internal reliability of .91 (Cohen & Janicki-Deverts, 2012). A 2006 exploratory factor analysis study on the PSS-10 with 281 students at three different universities revealed a two-factor structure (Perceived Helplessness and Perceived Self-efficacy) and good convergent and divergent validity, leading the authors to conclude that the PSS-10 is "a valid and reliable instrument for assessment of perceived stress in college students" (Roberti, Harrington, & Storch, 2006, p. 135). In their study of a 4-week mindfulness intervention with graduate and professional students, Greeson et al. (2014) found using the PSS-10 to have a Cronbach's α of .83 at both pretest and posttest. Using the PSS-10 for the proposed study had the advantage of also replicating this aspect of the Greeson study.

Procedures

As depicted in Figure 3 and detailed below, the mindfulness intervention was embedded in the Mindfulness for Interpreters course, as was qualitative data collection. Pretest and posttest

quantitative measures were administered to all participants without distinction (treatment and control) in their regular interpreting classes.

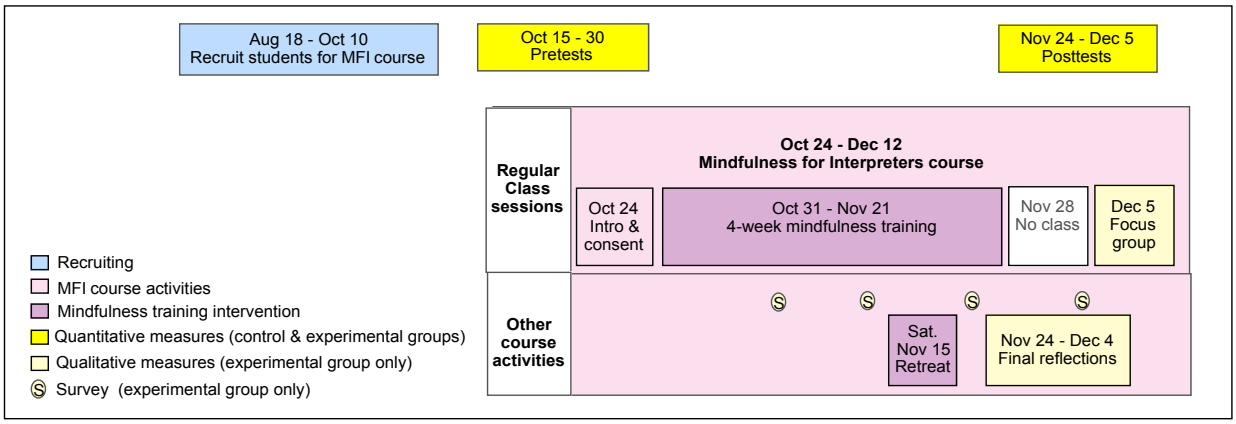

Figure 3. Time line of activities

Recruiting. Incoming students were recruited for the Mindfulness for Interpreters course (treatment group) during the August orientation week by means of two general pitches, and collection of interest contact cards. A follow-up pitch was made via email in early October (administrative add/drop date for second-half-of-semester courses was October 31).

Pretests. Pretests took place in the last half of October by arrangement with the professors of every Introduction to Interpretation into English course in each of the seven language programs. A 20-minute in-class testing period was scheduled for administration of a testing packet that included a demographic profile, consent/opt-out form, the CAMS-R mindfulness scale, the d-2 Test of Attention, and the Perceived Stress Scale (see Appendix D). Additionally, professors were asked to administer their midterm exams before October 31 (start of mindfulness intervention) and to complete the ECTICE scales for each student, based on his or her midterm-exam interpreting performance.

Mindfulness for Interpreters course. The 8-week Mindfulness for Interpreters (MFI) course included seven weekly 2-hour class sessions on Fridays 12:00 – 2:00 p.m., from October

24 through December 12. There was no class on November 28, which fell during the Thanksgiving break.

During the first class session, students were introduced to the definition and benefits of mindfulness and experienced a short meditation (Bringing Awareness to Breath). They were then given an overview of the course, received their own Mindfulness Practice Journal and Guide, learned about the purpose of this research related to the course, and completed the treatment-group consent form (see Appendix F). The session ended with a guided meditation on Personal Motivations for Mindfulness Practice (Body, Heart, Mind), with the assignment to capture these reflections in their Practice Journal and in the Log 1 online survey.

Mindfulness training (IV). Within the MFI course, students then received four consecutive weeks of structured mindfulness training (the experimental intervention) under the joint guidance of an experienced mindfulness trainer and myself (see Qualifications of Researcher and Trainer above, and Appendix E): one two-hour class session per week and, toward the end of the training, a half-day off-campus silent retreat in a serene, wooded environment at a nearby retreat center, for a total of 12 hours of mindfulness training. Table 6 summarizes the focus of the four in-class training sessions and the retreat. A detailed description of each is provided in Appendix F.

Table 6

Mindfulness Training intervention

Session	Content
1	Beginning with Awareness of Posture and Breath
2	Mindfulness of Sensations: Body, Emotions, and Thoughts
3	Equanimity and Flow
Retreat	Cultivating Awareness
4	Opening the Heart: Cultivating Compassion and Loving-kindness

The class sessions took place in a room with modular furnishings that allowed for students to sit in a circle with myself and the mindfulness trainer, either on chairs or meditation cushions. The sessions included instruction, practice, and discussion as follows:

- an opening meditation (5 – 10 minutes),
- discussion time for sharing experiences of the practice and for asking questions,
- introduction to a particular aspect of mindfulness,
- 20-30 minutes of related mindfulness practice (primarily sitting meditation),
- homework and personal home-practice instructions and check-in
- closing meditation and poem

Throughout the 4-week training, students were asked to meditate for 10+ minutes and do a 5-minute "mini module" daily life exercise each day on their own. For this home practice, they were each given a Mindfulness Practice Guide and Journal (see Appendix F) that provided simple daily instructions and a place to note down what they were experiencing with respect to meditation, interpreting, and life in general. They were also texted a brief encouraging reminder twice a week (e.g. "Let It Breathe: Mindfully breathing in, *Self as I am*; breathing out, *Things as*

they are. 3 times. Notice the sensations."). Homework also included short readings related to that week's theme, participation in an online discussion forum about the readings, and completion of a brief online log of their practice and experience during that week.

During the Saturday half-day silent retreat (10 a.m. – 2 p.m.), participants had the opportunity to experience being in a peaceful environment with each other for an extended time, without talking. Only I and the trainer used our voices to guide participants through various mindfulness practices, including several longer meditation sessions, mindful walking, mindful eating (lunch), relational awareness practice, and gentle movement. This silent-retreat experience was debriefed at the final in-class session the following week.

Comparison with MBSR and Koru courses. Many empirical studies of the effects of mindfulness training use as the intervention the 8-week Mindfulness-Based Stress Reduction (MBSR) course originally developed by Kabat-Zinn at the Stress Reduction Center of the University of Massachusetts Medical Center. The 4-week Koru course developed by Rogers and Maytan at Duke University may become another frequently-used mindfulness intervention for university students. Teacher training and certification are available for both of these courses, which have each thus been manualized. As further discussed below, neither course was used for the present study either because of the infeasible time commitment (MBSR) or because of the focus of the skills taught (Koru). To facilitate analysis across similar studies, Table 7 compares the general structure of the MFI, MBSR, and Koru courses in mindfulness.

Table 7

Comparison of the MFI, MBSR and Koru courses in mindfulness

Course	Target participants	Duration and Context	Sessions	Home Practice	Skills Taught
MFI	Graduate students in interpreting	4 weeks; embedded in a half-semester elective course in the academic curriculum	Four 2-hour group sessions One 4-hour silent retreat (12 hours)	10+ min meditation; 5 min daily life exercise	Mindfulness meditation[a]
MBSR	General adult population	8 weeks; generally offered through medical, wellness, or counseling services	Eight 2.5 - 3.5-hour group sessions One 7.5-hour silent retreat (27.5 - 35.5 hours)	45+ min meditation 5-10 min daily life exercise	Mindfulness Meditation[a]
Koru	General higher-ed student population	4 weeks; generally offered through university wellness programs	Four 75-minute group sessions (5 hours)	10+ min meditation 5 min daily life exercise	Stress-management: Belly breathing Dynamic breathing Guided imagery Mindfulness meditation[a]

Notes: MFI = Mindfulness for Interpreters; MBSR = Mindfulness-based Stress Reduction. Koru = Maori word referring to balanced stability and growth as in the unfurling fern frond (Rogers & Maytan, 2012)

[a] Broadly including various types of formal meditation: body scan, sitting, walking, movement (e.g. yoga)

While the MFI training resembles Koru in target participants, duration, and home-practice requirements, it is more similar in content to MBSR. All three courses introduce mindfulness and mindfulness meditation in much the same way, as an "approach to health, self-care, and self-regulation" (Santorelli, 2014, p. 8), by helping individuals cultivate a quality of present-moment awareness and attention that calms the mind, relaxes the body, and enables one to concentrate and see more clearly (Santorelli, 2014). All three courses also highlight learning

about stress, including the neurophysiology of stress, positive and negative effects of stress, and shifting one's habitual resistance or reactivity to stress. In terms of skills taught, however, Koru seems to focus primarily on specific mind-body skills, that is, "stress management tools," students can employ to experience immediate relief from overwhelming anxiety or stress (Rogers & Maytan, 2012).

Like in MBSR courses, the MFI sessions all centered on instruction, discussion and guided meditations in foundations of mindfulness practice: awareness of physical sensations (senses, body posture, body scan, mindful eating, mindful walking); focused awareness of breath and the physiological and mental effects of mindful breathing; awareness of thoughts and emotions and observing them non-judgmentally as passing mental events; open awareness; equanimity, acceptance and non-reactivity; compassion and loving-kindness toward self and others; connecting with our common humanity. Rather than for a general adult population, however, the MFI course was developed specifically for graduate interpreting students. The overarching focus was thus on tending to the wellbeing of these students, many of whom were experiencing the physical and mental manifestations of emotional "pain" such as stress, negative self-judgment, and performance anxiety, and struggling to strengthen their attentional skills. The MFI course especially addressed the psychological cycle connecting bodily sensations, thoughts and emotions, and emphasized self-compassion, acceptance, and equanimity. It also incorporated mindful relating, bringing qualities of acceptance, presence, compassion and kindness to interpersonal interactions, both personal and professional, for a greater sense of connection. Interpreting is a relational practice. Pilots 1 and 2 and certain professional accounts (Magalhães, 2013) seemed to suggest that mindfully connecting with those for whom one is interpreting, as well as with self, might improve the quality both of the student interpreter's

performance and own experience of interpreting. The weekly readings consisted of short articles rather than *Wherever You Go There You Are* (Kabat-Zinn, 1994), although this and other introductory books on mindfulness were suggested.

Data collection. Qualitative and tracking data were collected throughout the four-week intervention via activities that also encourage reflective learning. Participants were asked to complete a 5-minute online practice-log each Friday before class, reporting their personal practice and experience during that week. During the two weeks following completion of the training, they submitted a Final Reflection that served as written interview. The last session of the Mindfulness for Interpreters course consisted of an opening 5- to 10-minute meditation and a recorded focus-group session that further probed, through interactive conversation among the participants, the qualitative research questions of interest in this study: "What does **stress** mean to you? How do you experience it?" (Question repeated for the words **attention (**or lack of it**),** and **mindfulness**). "What is the most important thing mindfulness has done (or you hope it will do) for you?" (See Appendix F for all mindfulness-group data collection instruments and protocols; Appendix G for the focus-group transcripts.) This final session also provided an opportunity to ensure that all data had been collected, and suggest additional resources and ways to continue practicing, and have participants fill out a Video Use and Follow-up Consent form (see Appendix F) indicating whether and under what conditions they consented to use of their image in any multimedia reporting of this research and if they would be willing to be contacted in the future for follow-up longitudinal studies.

Posttests. Posttests took place in the last weeks of the semester by arrangement with the professors of every Introduction to Interpretation into English course in the different language programs. A 15-minute in-class testing period was scheduled for administration of the CAMS-

R, d-2, and PSS. Professors were asked to complete the ECTICE scales for each student, based on his or her final-exam interpreting performance.

CHAPTER 4—RESULTS

The purpose of this study was to explore what can be done to help interpreting students strengthen their general attentional skills and emotional stability under stress in order to build the basic interpreting proficiency required to graduate and begin working professionally. It explored mindfulness training as a possible pedagogical intervention that may help interpreting students self-regulate their attention and emotions.

Mindfulness training was operationalized as a 4-week, 12-hour training embedded in a half-semester Mindfulness for Interpreters elective course that consisted of 7 sessions including a 4-hour offsite retreat. Most students attended every session ($M = 6.2$, $SD = 0.95$). During the core 28 days of mindfulness training, the students were asked to practice meditating for 10 minutes every day. The expected maximum number of home practice meditations was 23 (days between class sessions). On average the students practiced about every other day, but there was fairly wide variation in frequency of practice ($M = 12.8$, $SD = 7.27$). The efficacy of the training was measured through pre- and posttest measures of consecutive interpreting exam performance (course midterm and final exam).

Cognitive Load Theory suggests that attentional abilities and perceived stress may be mediating variables that help explain any relationship between mindfulness and consecutive interpreting exam performance. Measures of mindfulness (CAMS-R), attention (d2 Test of Attention), and perceived stress (PSS-10) were thus also measured before and after the intervention and correlated with each other and with consecutive interpreting exam performance to identify possible relationships.

Qualitative data was concurrently collected from the mindfulness group throughout the intervention to capture the students' own subjective experience of the challenges of learning to

interpret, of the mindfulness training, and of any perceived effects of the training for them personally. The data consist of comments offered in their weekly online logs, a Final Reflection assignment each student submitted in response to open-ended prompts, and the video and transcript of the post-training focus group conducted during the last session of the Mindfulness for Interpreters course. (See Appendix F for instruments used; Appendix G for the focus-group transcripts.) These qualitative data were then triangulated with the quantitative data for purposes of cross-validation and explanation.

First I present the quantitative results relative to each research question. Given the small size of the mindfulness group ($n = 20$), these results are largely descriptive with an emphasis on the practical effect of the mindfulness intervention as measured by Cohen's *d*, which can be compared across samples of different sizes and across different studies. Statistical significance is reported using Welch's two-tailed independent-samples *t*-tests, these results having been confirmed using the nonparametric Wilcoxon Rank Sum Test with continuity correction (Wilcoxon, 1945). Welch's *t*-test yields the same results as the Student's *t*-test when sample sizes and variances are equal, yet performs better when they are not, as occurs in in this study (Field et al., 2012; Moser & Stevens, 1992; Ruxton, 2006). The statistical sample includes only those students for whom complete, valid data were available on all measures. (For descriptive statistics characterizing the sample, please refer back to Chapter 3.) I then present the qualitative evidence corresponding to each research question, highlighting how the students' own subjective experience compared with and might help explain the quantitative results.

Quantitative Results

Research Question 1

Do students who receive mindfulness training perform better on consecutive interpreting exams? The first research question investigated whether there was a statistically significant difference in consecutive-interpreting-exam difference scores pretest (midterm exam) to posttest (final exam) between first-semester students who did and did not receive mindfulness training. For simplicity in reporting I will always refer to the treatment group that received the mindfulness training as the "mindfulness group" and to students who did not receive the mindfulness training as the "control group."

Course professors, blind to who was in the mindfulness or control group, holistically assessed consecutive interpreting exam performance using the 6-point (5 high—0 low) Accuracy and Delivery scales used for the *English and Chinese Translation and Interpretation Competency Examinations (ECTICE)* (Liu, 2013). Table 8 summarizes group differences in the students' Accuracy and Delivery interpretation performance pretest to posttest.

Table 8

Group Differences in Interpretation Accuracy and Delivery Pretest to Posttest

Interpretation Performance	Mindfulness Training (Treatment) n=20		No Mindfulness Training (Control) n=44		
	M	*SD*	*M*	*SD*	Cohen's *d*
Accuracy					
Pretest	3.70	0.73	3.69	0.76	
Posttest	3.80	1.06	3.54	0.76	
Difference scores	0.10	1.12	−0.15	0.93	.24
Cohen's *d*	.11		−.20		
Delivery					
Pretest	3.95	0.94	3.95	0.69	
Posttest	4.10	0.85	3.82	0.66	
Difference Scores	0.15	1.04	−0.14	0.69	.33
Cohen's *d*	.17		−.19		

Levene's test showed the variance in interpretation performance to be homogeneous between the mindfulness ($n = 20$) and control group ($n = 44$) at baseline both for Accuracy $F(1,62) = 0.60$, *ns* and Delivery $F(1, 62) = 1.34$, *ns*. Change in interpreting performance from pretest to posttest was measured by subtracting the post-score from the pre-score for each individual to obtain a difference score. The *t*-tests on these difference scores showed no statistically significant difference between the mindfulness and control group either for Accuracy, $t(31.46) = -0.86$, $p > .05$, 95% CI [−0.83, 0.34], or Delivery, $t(26.97) = -1.12$, $p > .05$, 95% CI [−0.81, 0.24].

Let us now take a closer look at the practical effects of the mindfulness training as reported in Table 8. At left are the two aspects of interpreting performance on which the students were measured: Accuracy and Delivery. The next two columns show how the students in the mindfulness and control group respectively performed on average at pretest and posttest. The mean difference scores were obtained by subtracting the pretest scores from the posttest

scores. The Cohen's *d* in each column was obtained by subtracting that group's pretest mean from its posttest mean, and dividing by the standard deviations pooled. These within-group effect sizes make it possible to compare, in standard deviation units, how far each group's posttest mean is from its pretest mean: The mindfulness (treatment) group improved its interpreting performance both for Accuracy (d =.11) and Delivery (d =.17), while the control group performed worse on both Accuracy (d = −.20) and Delivery (d = −.19).

Similar to the within-group effect sizes, the Cohen's *d* results in the far right column provide an overall cumulative measure of the practical effect of the mindfulness-training intervention when comparing the average interpreting performance difference-score of the mindfulness group to that of the control group. Cohen's *d* effect sizes are generally interpreted as follows: ≥ .20 small but meaningful; ≥ .50 medium; and ≥ .80 large. Here we see that there seems to be a small but meaningful effect size favoring the group that received mindfulness training, both for Accuracy (d = .24) and Delivery (d = .33).

Research Question 2

Do students who receive mindfulness training report greater mindfulness and lower perceived stress and demonstrate better attention? This second research question investigated whether there was a statistically significant difference in mindfulness, perceived stress, or attention between students who did and did not receive the mindfulness training.

Before and after the 4-week mindfulness training, a test packet was administered to all participants (without distinction of group condition) in their regular interpreting classes. The packet included the 14-item Cognitive and Affective Mindfulness Scale—Revised (CAMS-R), the 10-item Perceived Stress Scale (PSS-10), and the d-2 Test of Attention. The results of each of these measures are reported below.

Mindfulness. Table 9 summarizes group differences in the students' CAMS-R self-reported mindfulness pretest to posttest. Levene's test showed variance in mindfulness to be homogeneous between the mindfulness (n = 20) and control group (n = 44) at baseline, $F(1,62) = 0.16$, *ns*. Contrary to expectation, students who received the mindfulness training did not report significantly higher levels of mindfulness at posttest than those who did not receive mindfulness training, $t(27.27) = -0.16$, $p > .05$, 95% CI [−3.10, 2.66]. In fact, both groups showed very little change in mindfulness on average.

Table 9

Group Differences in Mindfulness (CAMS-R) Pretest to Posttest

	Mindfulness Training (Treatment) n=20		No Mindfulness Training (Control) n=44		
	M	*SD*	*M*	*SD*	Cohen's *d*
CAMS-R					
Pretest	33.12	6.41	33.17	6.59	
Posttest	34.15	4.70	33.98	5.58	
Difference scores	1.03	5.71	0.81	3.88	.05
Cohen's *d*	.17		.13		

Perceived Stress. Table 10 presents group differences in the students' PSS-10 self-reported perceived stress pretest to posttest. Levene's test showed variance in perceived stress to be homogeneous between the mindfulness (n = 20) and control group (n = 44) at baseline, $F(1,62) = 0.33$, *ns*. There was no significant pretest-to-posttest difference in perceived stress between the mindfulness and control group, $t(29.44) = 0.03$, $p > .05$, 95% CI [−3.79, 3.89]. Whereas students who received the mindfulness training were expected to report lower perceived stress than those who did not, both groups experienced a similar small but meaningful drop in perceived stress from pretest to posttest (d = −.27 and −.26, respectively).

Table 10

Group Differences in Perceived Stress (PSS-10) Pretest to Posttest

	Mindfulness Training (Treatment) n=20		No Mindfulness Training (Control) n=44		
	M	*SD*	*M*	*SD*	Cohen's *d*
PSS-10					
Pretest	18.45	9.25	18.11	8.19	
Posttest	16.40	5.83	16.11	6.88	
Difference scores	−2.05	7.47	−2.00	5.69	.01
Cohen's *d*	−.27		−.26		

High-scoring and low-scoring students were also compared across the groups to examine any changes in perceived stress within these subgroups. In the mindfulness group, five of the students who scored high on the PSS (25 or above), showed a notable drop of 9 to 16 points (M = 12) in perceived stress at posttest and one showed no change. In the control group, two high-scoring students registered a similar drop, three showed almost no change, and one had a steep 23-point drop in perceived stress from pretest to posttest. Among students in the mindfulness group who scored low on the PSS (15 or below) at pretest, five showed a moderate 5- to 13-point increase in perceived stress at posttest and three showed little to no change. Among the 19 low-scoring students in the control group, four also showed a moderate increase of 6-10 points, but all others varied little (≤ 4 points) from their pretest score.

Attention. Multiple aspects of attention that are of interest to the task of interpreting were measured using the d2 Test of attention (see Chapter 3 for a full description):

- *Attentional allocation and processing speed* indicated by the total number (TN) of items processed.

- *Attentional and inhibitory control,* calculated by subtracting the total number of errors from the total number of items processed (TN-E).
- *Concentration performance* (CP), calculated by subtracting errors of commission from the number of correctly crossed out relevant items.
- *Attentional stability and consistency* as indicated by the fluctuation rate (FR) between the minimum and maximum number of items processed among each of the 14 trials.

Table 11 summarizes group differences in the students' d2 performance on these various aspects of attention pretest to posttest. Relative to norming data, the group averages all fall within the Average (50 – 75 percentile rank) to Above Average (75 – 90 percentile rank) categories compared to a sample of 506 U.S. college students (Brickenkamp & Zillmer, 1998).

Table 11

Group Differences in Aspects of Attention (d2 Test of Attention) Pretest to Posttest

Aspect of Attention	Mindfulness Training (Treatment) n=20		No Mindfulness Training (Control) n=44		
	M	*SD*	*M*	*SD*	Cohen's *d*
Attentional Allocation & Processing Speed (TN)					
Pretest	526.70	93.10	535.40	75.92	
Posttest	562.00	80.12	581.10	70.68	
Difference scores	35.30	39.06	45.70	34.26	.28
Cohen's *d*	.41		.62		
Attentional & Inhibitory Control (TN-E)					
Pretest	505.90	89.19	509.40	75.74	
Posttest	545.40	78.53	559.6	70.81	
Difference Scores	39.50	39.05	50.20	30.43	.31
Cohen's *d*	.47		.68		
Concentration Performance (CP)					
Pretest	226.90	49.42	230.20	38.54	
Posttest	246.80	41.69	256.90	37.61	
Difference Scores	19.90	22.36	26.64	17.82	.33
Cohen's *d*	.44		.70		
Attentional Stability & Consistency (FR)					
Pretest	9.95	3.07	12.05	5.62	
Posttest	11.30	5.28	9.81	6.21	
Difference Scores	1.35	4.53	−2.23	6.49	.64*
Cohen's *d*	.31		-.38		

* $p \leq .05$

Levene's test showed the variance in each of these aspects of attention to be homogeneous between the mindfulness and control group at baseline. There was no significant pretest-to-posttest difference between the mindfulness and control group on any aspect of attention except fluctuation rate (FR), $t(51.24) = -2.54$, $p = 0.01$, 95% CI [−6.41, −0.75]. As

seen by the within-group Cohen's *d* results, both groups improved pretest to posttest on all measures of attention, except on Attentional Stability and Consistency for the treatment group. (Remember, the lower the fluctuation rate, the better the result.) These results suggest that the interpretation training all students received in their regular courses between the midterm and final exams of the first semester had a small to medium beneficial effect on their attentional abilities. Contrary to expectation, students who did *not* receive any mindfulness training improved more than those who did, the effect size of this between-group difference being medium for Attentional Stability and Consistency (FR) and small for all measures.

Research Question 3

Are differences in interpreting performance associated with greater mindfulness, better attention, or lower perceived stress? And what are the relationships among mindfulness, attention, and stress? The third research question explored whether there were any correlations among changes in mindfulness, attention, perceived stress and consecutive interpreting exam performance (Accuracy and Delivery).

Tables 12-1 and 12-2 below present the pretest-to-posttest difference-score correlations among all measures for the mindfulness group and the control group, respectively. Since the score distributions on a number of these measures were not normal, Spearman's *rho* was used to calculate the intercorrelations among these nonparametric data (Ferguson, 2009; Field, Miles & Field, 2012). Spearman's *rho* correlations are generally interpreted as follows: ≥ .20 weak, ≥ .40 moderate, ≥ .60 strong, ≥ .80 very strong (Field et al., 2012). Significant results of interest are highlighted in grey. These do not include the significant correlations among the TN, TN-E and CP measures of attention, which were very strong because of their interdependence. The data were expected to show positive correlations between the Accuracy and Delivery measures

of consecutive interpreting exam performance, mindfulness, and attention and negative correlations between these variables and perceived stress.

Table 12-1

Treatment Group Difference-Score Intercorrelations on Measures of Interpretation Performance, Perceived Stress, Mindfulness, and Attention by Group Condition

					d2 Test of Attention			
Measure	ACC	DEL	PSS	CAMS	TN	TN-E	CP	FR
ACC	—							
DEL	.51*	—						
PSS	.10	.32	—					
CAMS	.01	.03	−.61*	—				
TN	−.08	−.02	.04	−.34	—			
TN-E	−.13	−.06	−.02	−.22	.94*	—		
CP	−.01	−.01	.06	−.36	.97*	.91*	—	
FR	−.24	−.05	.20	−.26	.08	.00	.04	—

Notes. Spearman's *rho* intercorrelations, n = 20, * significant ($p < .05$).
ACC = accuracy; DEL = delivery; PSS = perceived Stress; CAMS = mindfulness; TN = total number; TN-E = total number minus errors; CP = concentration performance; FR = fluctuation rate.

Table 12-2

Control Group Difference-Score Intercorrelations on Measures of Interpretation Performance, Perceived Stress, Mindfulness, and Attention by Group Condition

					d2 Test of Attention			
Measure	ACC	DEL	PSS	CAMS	TN	TN-E	CP	FR
ACC	—							
DEL	.38*	—						
PSS	−.11	−.08	—					
CAMS	.06	−.04	−.49*	—				
TN	.04	−.04	−.14	.13	—			
TN-E	.07	−.01	−.20	.24	.91*	—		
CP	−.03	−.11	−.01	.13	.93*	.82*	—	
FR	−.08	.11	.03	−.26	−.21	−.30*	−.19	—

Notes. Spearman's *rho* intercorrelations, n = 44, * significant ($p < .05$).
ACC = accuracy; DEL = delivery; PSS = perceived Stress; CAMS = mindfulness; TN = total number; TN-E = total number minus errors; CP = concentration performance; FR = fluctuation rate.

Accuracy and delivery. There was a significant positive relationship between the Accuracy (ACC) and Delivery (DEL) difference scores for both groups. The strength of this association was moderate (.51) for the mindfulness group, and weak (.38) for the control group, providing further evidence that these two aspects of consecutive interpreting performance are related yet distinct.

Mindfulness and stress. As expected, there was a significant inverse relationship between the Mindfulness (CAMS) and Perceived Stress (PSS) difference scores for both groups: As Mindfulness increases, Perceived Stress decreases. The strength of this inverse association was strong (−.61) for the treatment group, and moderate (−.49) for the control group.

Interpreting performance, mindfulness and stress. Contrary to expectation, difference scores showed no relationship between change in Accuracy or Delivery and change in Mindfulness for either group from pretest to posttest. Similarly, difference scores showed no significant relationship between change in Accuracy or Delivery and change in Perceived Stress for either group from pretest to posttest. However, there does appear to be a weak positive association (.32) between Delivery and Perceived Stress for the mindfulness group, suggesting that these students' interpretation delivery improved over time even though their perceived stress also rose.

Attention, mindfulness and stress. The difference score correlations show no significant relationship for either group between change in aspects of Attention (TN, TN-E, CP, FR) and change in Mindfulness (CAMS). Similarly, there was little to no relationship for either group between Attention and Perceived Stress.

Interpreting performance and attention. As seen in the difference-score correlations above (Tables 12-1 and 12-2), there was very little relationship between changes in the various

measures of Attention and changes in Accuracy or Delivery for either group condition. However, a number of significant relationships and suggested trends do appear in the correlations at pretest (Tables 13-1 and 13-2) and posttest (Tables 14-1 and 14-2).

Table 13-1

Treatment Group Intercorrelations for Pretest Scores on Measures of Interpretation Performance, Perceived Stress, Mindfulness, and Attention by Group Condition

					d2 Test of Attention			
Measure	ACC	DEL	PSS	CAMS	TN	TN-E	CP	FR
ACC	—							
DEL	.42	—						
PSS	−.06	−.19	—					
CAMS	.14	.28	−.56*	—				
TN	.05	−.04	−.16	−.12	—			
TN-E	.16	.02	−.09	−.25	.94*	—		
CP	.05	−.02	−.18	−.11	1.00*	.95*	—	
FR	−.16	−.15	−.03	.16	−.45*	−.55*	−.45*	—

Notes. Spearman's *rho* intercorrelations, n = 20, * significant ($p < .05$).
ACC = accuracy; DEL = delivery; PSS = perceived Stress; CAMS = mindfulness; TN = total number; TN-E = total number minus errors; CP = concentration performance; FR = fluctuation rate.

Table 13-2

Control Group Intercorrelations for Pretest Scores on Measures of Interpretation Performance, Perceived Stress, Mindfulness, and Attention by Group Condition

					d2 Test of Attention			
Measure	ACC	DEL	PSS	CAMS	TN	TN-E	CP	FR
ACC	—							
DEL	.38*	—						
PSS	−.21	−.01	—					
CAMS	.19	.05	−.82*	—				
TN	.32*	.14	−.11	.15	—			
TN-E	.41*	.20	−.16	.21	.93*	—		
CP	.30*	.10	−.09	.14	.99*	.93*	—	
FR	−.32*	−.03	.27	−.29	−.40*	−.49 *	−.37*	—

Notes. Spearman's *rho* intercorrelations, n = 44, * significant ($p < .05$).
ACC = accuracy; DEL = delivery; PSS = perceived Stress; CAMS = mindfulness; TN = total number; TN-E = total number minus errors; CP = concentration performance; FR = fluctuation rate.

Table 14-1

Treatment Group Intercorrelations for Posttest Scores on Measures of Interpretation Performance, Perceived Stress, Mindfulness, and Attention by Group Condition

					d2 Test of Attention			
Measure	ACC	DEL	PSS	CAMS	TN	TN-E	CP	FR
ACC	—							
DEL	.43	—						
PSS	−.14	−.15	—					
CAMS	.11	.02	−.51*	—				
TN	.42	.20	−.26	.04	—			
TN-E	.24	.26	−.20	−.09	.92*	—		
CP	.41	.20	−.25	.03	1.00*	.92*	—	
FR	−.30	−.15	−.30	.05	−.57*	−.52*	−.57*	—

Notes. Spearman's *rho* intercorrelations, n = 20, * significant ($p < .05$).
ACC = accuracy; DEL = delivery; PSS = perceived Stress; CAMS = mindfulness; TN = total number; TN-E = total number minus errors; CP = concentration performance; FR = fluctuation rate.

Table 14-2

Control Group Intercorrelations for Posttest Scores on Measures of Interpretation Performance, Perceived Stress, Mindfulness, and Attention by Group Condition

					d2 Test of Attention			
Measure	ACC	DEL	PSS	CAMS	TN	TN-E	CP	FR
ACC	—							
DEL	.26	—						
PSS	−.20	−.01	—					
CAMS	.02	−.08	−.49*	—				
TN	.29	.06	−.05	.08	—			
TN-E	.34*	.20	−.11	.03	.91*	—		
CP	.30*	.03	−.06	.08	.99*	.90*	—	
FR	.00	−.10	.09	−.34*	−.65*	−.65*	−.63*	—

Notes. Spearman's *rho* intercorrelations, n = 44, * significant ($p < .05$).
ACC = accuracy; DEL = delivery; PSS = perceived Stress; CAMS = mindfulness; TN = total number; TN-E = total number minus errors; CP = concentration performance; FR = fluctuation rate.

It will be recalled that TN measures attentional allocation and processing speed; TN-E measures attentional and inhibitory control; and CP measures concentration performance. Both TN-E and CP are considered measures of overall performance. As expected, there were positive relationships between each of these three aspects of executive attention and interpretation accuracy. For the mindfulness group, the strength of these associations rose from being almost non-existent at pretest to weak or moderate at posttest. For the control group, they were also weak to moderate and all significant except for TN at posttest.

Executive attention and attentional stability. Almost all of the correlations at pretest (Tables 13-1 and 13-2) and posttest (Tables 14-1 and 14-2) suggest moderate to strong inverse associations between attention allocation and processing speed (TN), attentional and inhibitory control (TN-E) and concentration (CP) on the one hand, and fluctuation rate (FR) on the other. These associations were all statistically significant for the control group, and rose to significance at posttest for the mindfulness group.

Though likely influenced by some degree of interdependence, these results suggest a practical and significant relationship between the first three aspects of executive function and the ability to maintain attentional stability and consistency over an extended attention-demanding task such as the 4'40" d2 Test of Attention. This appears to have been true for the control group but not for the mindfulness group: Higher TN, TN-E and CP scores at posttest were accompanied by a drop in fluctuation rate (FR) for the control group but an increase for the treatment group.

Attentional stability and mindfulness. The posttest correlation tables (Tables 14-1 and 14-2) also suggest a possible relationship between mindfulness and attentional stability. At posttest, a weak but significant inverse relationship (−.34) emerged for the control group

between attentional stability (FR) and mindfulness (CAMS). In other words, those students who reported greater dispositional mindfulness (without any mindfulness training) were more consistent (had less fluctuation) in their performance across the 14 trials of the d2 Test of Attention. Contrary to expectation, however, there was no statistical relationship between mindfulness and attentional stability for the mindfulness group.

Qualitative Results

Recall that qualitative data were collected from students in the mindfulness group only, in the context of the Mindfulness for Interpreters course. These consisted of a) responses to short weekly online surveys (motivations for taking the course; frequency of practice and experience of life in general, of meditating, and of interpreting during the preceding week); b) a written Final Reflection based on open-ended prompts, and c) the transcript of a focus-group session at the end of the course. The Final Reflection served as a written interview. Two students opted to submit their Final Reflection orally, as an audio file, which was then transcribed. The purpose of the in-class focus group (one for each section of the class) was to further probe the participants' experience regarding stress, attention, and mindfulness through interactive conversation amongst them. (The full qualitative instruments can be found in Appendix F; the focus group transcripts, in Appendix G.) All of the data were compiled as a "Qualitative Data Book" for analysis.

An inductive approach was used for analysis. Themes and codes were gradually identified and categorized first through marginal notes made during multiple readings of the data. Relevant data were then entered into a separate analysis table for each research question, making it possible to sort and analyze the data from multiple vantage points (e.g. by student, confirming or disconfirming response, theme). This process yielded a reduced, definitive set of codes combined with short representative quotations from the data. The entire Qualitative Data Book was then again reviewed and systematically coded so as to consider all data relevant to each research question.

Each of the sections below begins with a brief review of the quantitative results as a frame for considering the corresponding qualitative evidence. For a synopsis of the qualitative analyses and results overall, see Figure 9 at the end of this chapter.

Research Question 1

Do students who receive mindfulness training perform better on consecutive interpreting exams?

As we have seen, difference scores on consecutive interpreting exam performance showed a small effect size in favor of the mindfulness group compared to the control group both for Accuracy (d = .24) and Delivery (d = .33). Whereas the control-group exam scores decreased on average from pretest to posttest, those of the mindfulness- group improved both for Accuracy (d =.11) and Delivery (d =.17). As to individual changes in interpreting performance over time for students in the mindfulness group, these students' individual total scores (Accuracy + Delivery) show that, overall, nine scored higher, four scored the same, and seven scored lower on the final exam than on the midterm.

The qualitative data help explain these quantitative results. Figure 4 presents the themes that emerged regarding this first research question were categorized as follows:

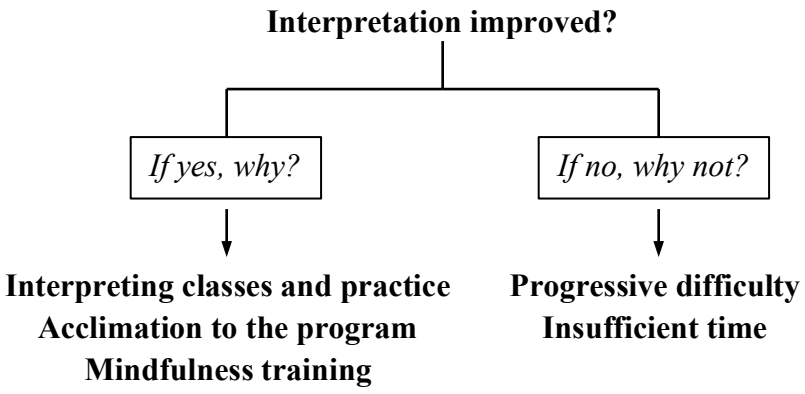

Figure 4. Perceived changes in interpreting performance and attributed reasons

In response to the Final Reflection question, *"In your own subjective experience, how has your overall interpreting performance evolved over the past month? Do you feel it has*

improved? Declined? Stayed about the same? Why do you think that is?" sixteen of the twenty mindfulness-group students in the statistical sample subjectively felt that their interpreting had improved (even if only a little), and four thought it had stayed about the same. In half of the cases, the students' subjective impressions matched the changes in their interpreting exam scores: Those who felt they had improved scored higher; those who felt they hadn't, did not. Of the other half of cases, a couple students who had detected no improvement actually scored better on the final than they had on the midterm, and those who felt they had definitely or perhaps improved scored either the same (4 students) or slightly lower (6 students) on the final. In other words, students' perceived improvements did not necessarily manifest in higher final exam scores.

Whether or not mindfulness-group students felt that their overall interpreting performance had improved, they all cited various evolutions in their abilities and in their experience of interpreting over the 4-week span of the intervention in the second half of their first semester of interpreter training. Students in the mindfulness group attributed perceived improvements to several factors: their interpreting classes and practice; having acclimated to their student life and the program; and the mindfulness training. For those who did not perceive much improvement, the most common reasons cited included progressive difficulty of the materials and skills introduced in their interpreting courses, uncertainty about how to evaluate their own progress, and an insufficient lapse of time. The following paragraphs present the students' reported changes in their interpreting abilities and experience in terms of these attributions.

Interpreting classes and practice. The students reported feeling more "competent," "in control," and "efficient" when interpreting, primarily thanks to the approaches, techniques,

knowledge, and vocabulary they were learning in their interpreting classes, and in interpreting practicing sessions with each other. "I am really better than I was at the beginning of the semester, I have learned so many techniques" commented one. Some of those who perceived improvements mentioned feeling more confident and having greater trust in their abilities than even a couple of weeks earlier. Several students cited interpreting practice as a key factor. One observed that her improvement was "above all due to the continuous practice," while another lamented that she had not improved much because she was "still not practicing enough" due to poor time management skills.

Specifically, several students noted development of their attentional abilities. They were much better at active listening, able to remain "alert and aware," "pick up on ideas," analyze what they were hearing," and "focus on meaning rather than words." As one student put it: "I have tried to internalize the idea that interpreting is about conveying a message and not getting caught up on words. I feel my performance has improved because I am able to listen to a speech and follow the logic, something that did not come easy to me before." But several students reported continuing difficulties in this regard: "I do still have days where I have trouble following the speaker's train of thought, catching/understanding all the details of a speech."

Just before the start of this study, interpreting professors had introduced note-taking techniques mid-semester, after weeks of having students interpret just from memory alone. The students described note taking as adding a whole new level of attentional multitasking that was taking some getting used to: "When we were not taking notes yet…I was able to visualize better, to concentrate better." Another student observed that "actively listening to the speaker and jotting down notes is what is most taxing…it's difficult to keep up." But through practice, many felt they were learning to "balance note taking and listening." They were "less rushed" and

"better able to do it," and their notes were becoming "more organized." The students noted that they had also begun attending to other factors beyond accurately conveying the sense of the discourse. These included aspects of presentation, such as speed, word choice, and intonation.

Acclimation. Students cited acclimation to the program and cumulative interpreting experience as contributing to improvements in their performance. The more they interpreted in class and in practice sessions with each other, the more comfortable the students became, because they knew what to expect ("Now I know what to expect during interpretation, what I am doing.") and what to expect of themselves:

> "When I just started, I was so scared of failing and not giving a good interpretation. I was actually terrified. And now I've seen other people, and I see that we each have our strengths and weaknesses….We are all here to learn, and this is a great feeling."

Many students emphasized that this cumulative experience and exposure had helped them let go of perfection, with comments such as, "I am less nervous and less apprehensive about not being perfect." Part of this letting go was realizing that mastery would take time: "The most important thing I've learned so far is that it all takes time," wrote one student, and "It *is* after all our first semester; we can't all be perfect after 15 weeks of learning a new skill," commented another.

Mindfulness training. Many students felt that skills and attitudes they were learning in mindfulness training had "definitely" or "perhaps" helped improved their interpreting performance. These included greater awareness of their own mental activity and emotions through purposeful noticing, an ability to shift and refocus their attention; and, an ability to calm their own nerves and focus on the task at hand by breathing and adopting an attitude of

acceptance. In short, students were applying their mindfulness training to interpreting. In most cases, the students did not attribute perceived improvements exclusively to their interpreter training and practice or to their mindfulness training, but to a combination of the two. "I think my interpreting experience has improved over the last month, probably mostly from practice with my classmates, but my focus improvement is probably due to my mindfulness training," surmised one student. Another noticed changes in her attitude: "I don't see any clear changes in my interpretation performance, though I feel more relaxed and patient with myself while performing."

Data on the students' perceived connections between mindfulness and interpreting will be presented in depth below, under Research Question 3.

Progressive difficulty and insufficient time. Several students explained that they could not really see their own improvements because "work progresses too fast to feel evolution" and "speeches and material become harder and more complex from week to week." Another student noted that she might be building her interpreting skill, but still felt like she "didn't know anything" because the material kept getting more difficult. This steep learning curve left one student feeling, "I do not know how to evaluate my skill."

A number of students who thought their interpreting performance had "stayed about the same" or "perhaps improved a little bit" concluded that it was simply too "early to tell." No student thought his or her skills had deteriorated, or expressed a sense of defeat. The students had simply realized that it was going to take time. "I believe that it's going to take more than a month to see real results," wrote one, and "I think the more I practice and persevere, the more improvement I'll see in the long run," predicted another.

In sum, the qualitative data reveal that students could see aspects of their interpreting

performance improve as they acclimated to the program, but were finding it challenging to maintain their performance as the difficulty of course material and skills quickly increased. Whether or not they scored better on the final exam than on the midterm, their skills were indeed consolidating. They were becoming more proficient interpreters, primarily as a function of their interpreter training and practice, but also because of how their *experience of interpreting* was changing with the awareness, self-regulation, and attitude of acceptance they were developing through their mindfulness training.

Research Question 2

Do students who receive mindfulness training demonstrate or report greater mindfulness, less perceived stress, or better attention?

Students in the mindfulness group made many statements about mindfulness, stress, and attention and richly described how they were experiencing these evolve over the course of the study. The themes and subthemes that emerged were categorized in response to the three parts of this research question: Were the students in the mindfulness group experiencing greater mindfulness, less stress, or better attention?

Greater Mindfulness. As we have seen, quantitative results indicated students in the mindfulness group and control group showed a similar slight increase in mindfulness pretest to posttest as measured by the Cognitive and Affective Mindfulness Scale, Revised (CAMS-R), there being no significant difference between the groups. The qualitative data, however, tell a different story. In their Final Reflections, all but two of the students who completed the mindfulness course reported noticing changes in themselves that indicate greater mindfulness. In fact, the aspects of trait mindfulness that the CAMS-R is designed to measure— present-focus, awareness, attention, and acceptance/non-judgment of thoughts and feelings—emerged as key

themes in the qualitative data, but in a more fine-grained way, yielding 11 mindfulness-related subthemes. I combined these into the six categories summarized in Figure 5 and presented below. As also seen in Figure 4, students who did not experience greater mindfulness said this was because they did not practice due to various fears or discomforts. These disconfirming cases are presented last.

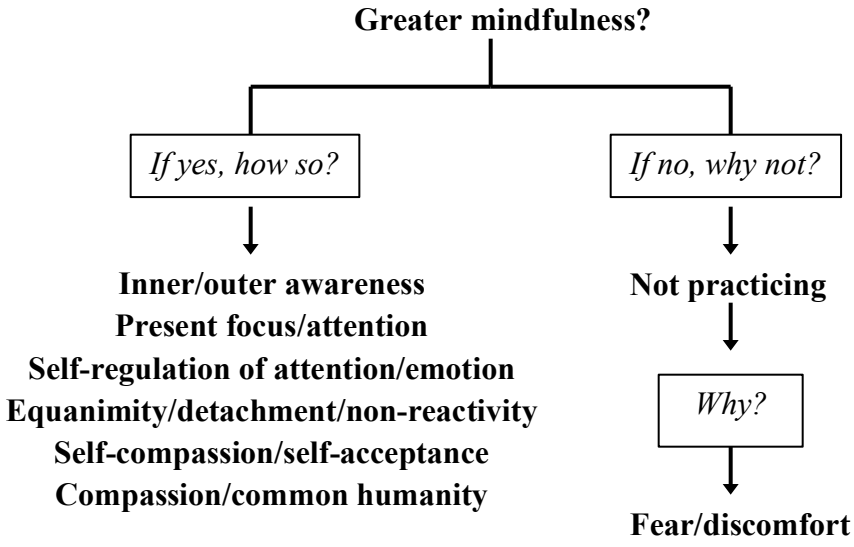

Figure 5. Perceived changes in mindfulness and attributed reasons.

Inner and outer awareness. Virtually all of the students reported a keener awareness of their internal physical and mental experience. Many mentioned becoming more aware of their own breathing and of physical reactions to stress and of tension residing in their jaw, neck, shoulders, back, or stomach. They also said they were more aware of their thoughts and of where their attention was. Some said that such awareness really opened their eyes to things they had been avoiding. One student reported being able to "tap into vast yet subtle shifts in attention," and another became aware that she "used to waste time unconsciously being worried and nervous." The students had also become more aware of their "own emotions" and "reactions to external forces": "I know myself better, can sense my feelings." "I've become aware of when

I'm *about to be* stressed." As one student explained: "I'm better at observing myself, like if I sigh a lot, it's a sign I'm feeling stressed."

Students also described various effects of this growing inner awareness: "I was able to find the "center" of my being again in my busy student life." "I [now] direct attention back inside to my internal self to take care of it." "When I pay more attention to my inner world…I have a better relationship with other people." As one student related: "My mind is getting in the habit of reminding me to pay more attention to my body, my reactions, and emotions."

Many of the students also report experiencing a new level of outer awareness, becoming more aware of their surroundings and "*really* seeing or hearing things": "I notice a lot more." "I notice people around me, the color of the sky." Instead of just being "on autopilot," they were becoming more aware of how they "act or talk to others" and remembering to look around themselves more often.

Present focus and attention. The students reported understanding "what it means to *live in the moment*" rather divorced from where they were. They found they were more able to be "fully immersed in the situation," "able to stay focused on what's happening right here right now," "concentrate on what I'm doing in the moment," and "focus on the job at hand." They also expressed an intentionally in this regard: "I think more about what I'm doing as I'm doing it." "I have learned to come back to what's happening right now." "I am active, not passive in the moment." As one student summed it up:

> "I feel like before starting mindfulness, I had more "blank spots" in my every day life where I was living my life, but my mind was elsewhere, preoccupied with something else. Now, I can actively remember more of what happened and how

I felt about events in my life because I was actually 'tuned in' instead of 'mindless.'"

The students noticed many other changes in their quality of attention over the four weeks of the mindfulness training. In general, they had a "clearer mind," were "more alert," their brain "not as out of control," and their senses "much sharper." "When I pay attention to one thing, I find I'm becoming more attentive to other things, too," noted one student. "In the last couple of weeks I started to pay attention to the sounds or noise that I make."

The students also reported being "more focused" and able to sustain their attention, even when it came to "things hard to concentrate on before." They found that they could "focus a little more" on the tasks they had to do, started focusing "on one thing at a time," and were "really able to concentrate now." In the words of one student: "I feel more relaxed and can really just absorb everything like a sponge." Many said they had become aware of mind wandering, that is, when their attention strayed.

Self-regulation of attention and emotion. In addition to noticing the quality of their attention changing with mindfulness practice, the students also discovered their own *agency,* that they could actively regulate their own attention: "I can now check in with myself and with awareness much more frequently." They noted becoming more aware of when they weren't focusing and "better at bringing my focus back when I get distracted/it wanders." They found they could "choose one thing to focus or concentrate on," better "reign in" their thoughts, "release errant thoughts," and "quiet" their mind. They also found they were better able to tune out external and internal distractions. One noted she was now "able to maintain focus despite outside noises" and another said, "I can focus on the things I want to focus on, instead of being distracted by stress or frustration or whatever."

Many students described becoming able to regulate their attention by focusing on their breath: "I am able to take a deep breath, pause, and be aware." As one student explained:

> "When I realize my attention is far away from what's actually happening, I just breathe, look at the sky, or think about my foot…or some part of my body. That brings me back into the moment and then I can restart what I was working on or where my attention was supposed to be."

Students in the mindfulness group reported a new ability regulate their own emotions and "more easily find a calm, stable state of mind." As one student related: "I able to calm myself down in several situations and not cry, which is new." They were finding they could calm themselves through pausing, awareness, breathing, and acceptance. Pausing enabled them to become aware, and "reset": "It changes my perspective," explained one student. Awareness also had a calming effect: "Once I turn on my senses to feel the surroundings, my stress reduces." "I can identify when I need to reign in my thoughts as way to calm down." Breathing was the most often cited tangible way that students calmed themselves, often in combination with practicing acceptance: "I take very deep breaths before practice or class and tell myself I am still learning, just do my best." "I take note of what's happening inside me, acknowledge it, then, with my breath, let it go." As one student summed it up: "Breathing grounds me."

Equanimity, detachment and non-reactivity. A number of the students were finding they were able to "more easily accept things as they are," what they couldn't "change or control," and "just let it be." They also noted a "change in perspective," "being ok with what happens, even if it doesn't go my way" and not seeing things as "good or bad." "Equanimity has been a true eye-opener for me, helping me deal with people and situations," reported one student. A foreign student distressed at having lost her passport a few weeks before the start of the

mindfulness training recounted how realizing that "worries and stress can't help at all" and being "able to just let it be" was "like a present at the right time." It helped her find "peace my mind" during the long wait until the problem was solved.

A number of the students described a new objective detachment, saying they were able to "distance myself from what my mind is doing," to "respond, not react," be "emotionally invested but not emotionally drained," and acknowledge a problem but "consciously chose not to fall victim to it." As one student put it: "I am not the worries or the bad things which have happened." Another noted that as she "let tumultuous thoughts and preoccupations come and go" she felt more "in control and at peace" with herself.

Several students described how such detachment had changed their perspective on things. They could "maintain an objective point of view," had "a growing feeling that bad things are not as terrible as I often tend to think," and when an irritation arose, could more often see that it was "a very small thing, not a huge thing." In the words of one student, mindfulness "lets me step out and away from myself. I can kind of see myself from a third-party standpoint and give myself a break from all the craziness, the stress I have going on."

Self-compassion and self-acceptance. The data most strikingly revealed that the students were becoming more accepting and compassionate toward themselves. These high-achieving emerging adults (mean age 25) reported feeling "more at ease" with how they felt; "more accepting" of those feelings, "especially stress"; "feeling very accepting" of their own faults; not having a "constant struggle" with their feelings anymore"; being more "patient," "calm," "forgiving," "positive," "kind," and "compassionate" toward themselves, able to "just notice things with loving-kindness**"** and not be "too hard" but more "gentle" toward themselves.

A central aspect of such acceptance was learning to be less self-critical. They were better able to accept their feelings "without judgment" and have "fewer self-critical, self-depreciating thoughts." For some, this was just a glimmer: "I can now be almost non-judgmental toward myself."

The students reported several effects of this change in attitude: "I am better able to let go of personal fears of not measuring up, of messing up, and let go of thoughts like 'What if I screw up?'" "I can now do things more naturally and not with lots of pressure or stress that I used to give myself." And, "For the first time in my life, consciously appreciated myself as I am (without analyzing or criticizing)."

Compassion and common humanity. A number of students mentioned that, similarly, they found they were able to "empathize more with other people," and "observe others without judging." This in turn led to an "experience of compassion towards others," a desire to "understand non-judgmentally why some people act, react or respond in a certain way," and "just a nice feeling of friendship and joy." Some students also described developing a greater sense of their common humanity. "I've come to regard other people as creatures similar to myself, with similar feelings, as mortals who make mistakes like myself," explained one. Another described her realization that "there's so much more" going on outside her "own little bubble," that "all these other things are happening, like stars exploding in the universe right now."

Disconfirming cases. Two students reported not experiencing greater mindfulness. One female student had always had an "itchy feeling" she could benefit from meditation and had started formal meditation training a couple of times before, but always "ducked out before the experience had time to really hit home." She enrolled in the Mindfulness for Interpreters course

because she "sensed that interpretation required an intense sort of attention and 'being present'," and wanted to get her "head around the idea or experience of 'being present'."

This time she did complete the course but "rarely practiced mindfulness outside of class and therefore [had] not noticed a lot of changes" in herself. The idea of sitting and meditation was "always accompanied by the nagging thought that I could be more productive (at least in the short run) by doing other things," she explained. As she reflected further, she had this insight:

> Maybe my view of stress as energizing rather than blocking played a role in my somewhat strict non-practicing of mindfulness at home. Maybe I don't want to let go of this busy 'do-this-then-that' idea of efficiency, fueled by stress? What would happen if I just… *was*? Maybe it's about basic survival, a fear that I would lose that special something that's always helped me succeed if I were to learn another way of being…

Nevertheless, whenever she received one of the twice-weekly mindfulness reminder text-messages sent to students in the course she "did pause and breathe, taking note" of little things around her. "Those breathers were definitely refreshing and I'm convinced that if I could only get out of the 'be most productive now' mindset, I'd be able to allow myself to accrue more benefits from mindfulness," she affirmed.

One male student who described himself as already interested in "self-reflection and understanding" and "physical awareness" through yoga to "reduce stress" took the course to accompany his "affection for awareness techniques." Yet he felt "overwhelmed by the amount of practice that was expected" (10 minutes a day) and could "not make time." However, he then disclosed that he was reluctant to allow himself such time for fear of falling into his "tendency to overthink" stressors he was facing: "My coping strategy mainly was/is to keep myself busy."

He also "did not feel comfortable" practicing at home because of his roommate situation. Overall, "the feeling of being obliged to sit and be mindful was causing a sort of refusing attitude in me," he explained. In contrast, he "enjoyed the common sessions very much." Reflecting on this difference, he concluded: "I may have been afraid of being mindful without the security of the circle of other participants around me." Although he did not *feel* more mindful, certain comments he offered suggest otherwise. He thought that maybe the mindfulness classes did help him "put things into perspective" (detachment), noted that "small, meaningless things can get big in my mind and distract me a lot" (awareness), and "felt very sorry" that he was averse to meditating on his own but "had to accept it as it was" (acceptance).

Less Stress. Contrary to expectation, students in the mindfulness group did not on average report any greater pretest-to-posttest decrease in perceived stress on the PSS-10 than did the control group ($d = -.27$ and $-.26$, respectively). Stress-related themes that emerged from the qualitative data, as outlined in Figure 6, help explain these quantitative results.

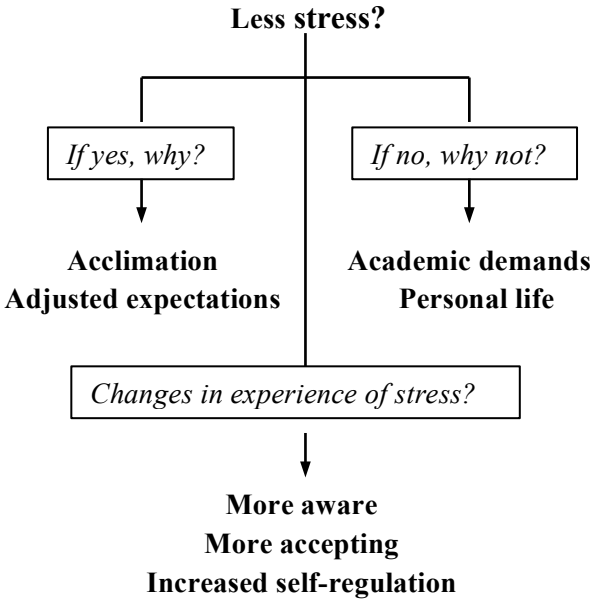

Figure 6. Perceived changes in stress and attributed reasons.

The weekly logs of the mindfulness-group students document prevailing school-related stressors that their control-group peers would presumably also be concurrently experiencing. Students mostly characterized Week 1, just after midterms, as "stressful" (whether "particularly" or "a little") because it was "busy" and "hectic" with "lots of assignments" to complete. Most described Week 2 as "very stressful (worst yet)" or "rough." The students were "extremely busy" with "long to-do lists," their "lives so fast-paced" that it was "hard to consciously take a moment to pause." Week 3 was similarly "hectic" and "extremely busy." At this point students were experiencing "more stress than usual" as finals approached, some "getting sick" or reporting "burnout from school." During Week 4, which came just before Thanksgiving break and only a few weeks from the end of the semester, students reported "a lot of stress" over upcoming finals and "feeling very tired mentally." There were exceptions, of course. For example, one student described Week 2 as "relatively calm," so she was "not too stressed out," and another reported just "a bit of stress and anxiety" in "healthy doses." By Week 4 some "felt more at ease" because the workload had "dropped off." Also, a few students were dealing with substantial "emotional," "financial," "family," and other stressors in their personal lives.

In short, during this second half of the semester that coincided with the mindfulness training, students generally felt very stressed (challenged) by an increasingly demanding academic workload and by looming end-of-semester assessments. Yet, as seen above, they were also feeling progressively at ease as they acclimated to the program and knew better what to expect in their classes and of themselves. As one student explained, "just having a few more weeks of experience" was part of what had helped her get "a little better" at "handling the stress." This latter trend seems, on the whole, to have counter-balanced and slightly outweighed

the mounting academic demands, and may explain why, on average, students in both the mindfulness and control groups showed a slight decrease in perceived stress on the PSS from pretest to posttest.

As presented earlier, however, a more fine-grained analysis of the PSS results revealed certain trends in individual differences. In the control group, both the most highly and least stressed students tended, with few exceptions, to showed little change in perceived stress pretest to posttest. By comparison, the most highly stressed students in the mindfulness group tended to show notably lower PSS scores at posttest, while the least stressed students showed either little change or somewhat higher perceived stress. The qualitative data suggest that these changes may in part be attributable to students in the mindfulness group gradually becoming more aware of their own stress, relating to it differently, and intentionally regulating their response to stress.

Students in the mindfulness group described how mindfulness practice was making them more *aware* of their own stress: "My awareness of the stress, and of my body's reaction to it, is more developed, which makes sense: If you're actively trying to pay more attention, you'll notice more!" "I have noticed changes in noticing nervousness," echoed another student. More concretely, one student related that every time she practiced mindfulness it felt like the first time that day that she had relaxed her body and mind: "I hadn't even noticed that my body was so tense," she remarked. Thus, some students in the mindfulness group may have registered increased levels of perceived stress on the PSS not because they were more stressed, but simply because they were becoming more aware of their internal responses to stress.

Students in the mindfulness group also described changes in how they were *relating* to stress. First, they were becoming more objective and detached, realizing that "things are not as terrible as they seem" and "world will not end if don't finish all my work on time or make

mistakes when interpreting in class." As one student recounted, "I have been able to stop in stressful moments and realize this doesn't have to be a bad moment." Second, they were becoming more accepting, coming to understand stress as a "natural reaction" to challenging situations, and they were practicing being non-reactive, or "letting it be." As a result, they noticed their "level of anxiousness has been declining," were feeling "more relaxed and more confident" in themselves "even in stressful situations," and "better at coping with stress." One student described herself as "feeling surprisingly calm, even when things go wrong or somebody lets me down. I just accept what's happened."

Lastly, students in the mindfulness group had begun actively *regulating* their own responses to stress. They described, for example, doing "mindfulness exercises before stressful tasks," trying to "take breaths" when feeling "anxious or nervous" or "stressed and annoyed at someone," and learning to "cut the loop of keeping thinking about whatever is bothering me" and "keep certain bad feelings (anger, disappointment, sadness) from spiraling into unbearable feelings." Such responses to stress helped "clear my mind and calm down my emotions" or "not let things get to me like they might have otherwise." Here is one student's account:

> "I haven't had one of those freak-out days in a while. That's definitely a positive, but I am still self-conscious about my interpreting and translations. I think that is normal for everyone though. I am doing a better job at stopping and taking very deep breaths when I feel overwhelmed and it helps me step back and reorganize everything in my head and just go with the flow."

In sum, the qualitative data suggest that students in the mindfulness group were not experiencing any less stress than the students in the control group, but were beginning to feel small qualitative changes as they practiced responding mindfully to their own stress. They

described this gradual evolution with phrases like "easier for me to relax when I feel really anxious," "a little more lightness," "more calm," "more positive than I felt 2 to 3 weeks ago," " a little more at ease and at peace (like when I got to class late)," "stressed, but coping a little better," "enjoying what I am doing to a greater extent than before," and "finally in a place where I did not have to fear or be scared about what would happen." As described under Research Question 3 below, students particularly noticed such changes in themselves under the stressful conditions of interpreting.

Better attention. Recall that at posttest the mindfulness and control groups both performed better on the d2 Test of Attention, which measures attentional allocation and processing speed; attentional and inhibitory control; concentration performance; and attentional stability and consistency. The qualitative data corroborate these attentional improvements among the mindfulness group. Contrary to expectation, however, students in the control group improved more on this speeded test than did those in in the mindfulness group (medium versus small effect sizes). As shown in Figure 7, the qualitative data suggest possible explanations for why students in the mindfulness group were outperformed by the control group, particularly when it came to attentional stability and consistency.

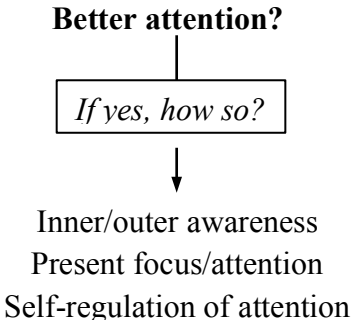

Figure 7. Perceived changes in attention and attributed reasons.

As seen above (cf. **Greater mindfulness**), students in the mindfulness group were noticing improvements in their attentional abilities, particularly increased inner and outer awareness, alertness, focus, and self-regulation—being able to notice when they were distracted and purposely bring their attention back to the task at hand. These changes, however, did not give them a differential advantage over the control group when it came to the speeded and repetitive visual discrimination required for d2 Test of Attention. One possible explanation is that students in the mindfulness group had become more aware of and active in regulating their attention as they performed this task. Put differently, perhaps they were approaching the d2 task less mechanically. Recall the changes they had been noticing in themselves: "I am active, not passive in the moment." "I think more about what I'm doing as I'm doing it." "When I pay attention to one thing, I find I'm becoming more attentive to other things, too." "I can focus on the things I want to focus on..." "When I realize my attention is far away from what's actually happening, I just breathe … or think about…some part of my body. That brings me back into the moment and then I can restart what I was working on or where my attention was supposed to be." Such meta-awareness and intentional self-regulation would require at least flickers of time and attentional capacity likely to result in slower processing speeds and greater fluctuation.

Research Question 3

Are differences in interpreting performance associated with greater mindfulness, better attention, or lower perceived stress? And what are the relationships among mindfulness, attention, and stress?

The qualitative data clearly describe students' experience of the connections among mindfulness, stress, attention and interpreting performance. The following sections compare these accounts with the corresponding quantitative correlations. First I present connections

students experienced among mindfulness, stress, and attention in general, and then specifically as those connections relate to interpreting as represented in Figure 8 below:

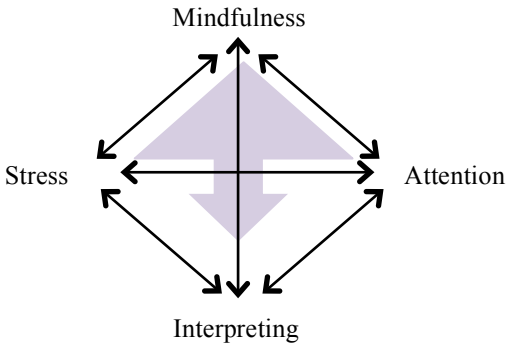

Figure 8. Perceived interactions among mindfulness, stress, attention, and interpreting.

Mindfulness and stress. Recall that for both the mindfulness and control group, perceived stress (PSS) decreased as mindfulness (CAMS-R) increased, this inverse association being strong for the mindfulness group (−.61), and moderate for the control group (−.49). The qualitative data strongly corroborate this inverse relationship. Students were discovering that "focusing on the sounds and tempo" of their breath was "a new source of relaxation." When dealing with "stressful things," taking small breaks in the day to "mindfully breathe" helped them "reorient" to a certain "calm and relaxation." When they felt "frustrated," they would "take a moment to breathe and release that tension/energy," were getting better at "letting it be" instead of "worrying" about how busy they were, and could identify when they needed to "reign in" their thoughts "as a way to calm down in high pressure situations."

One student who sometimes woke with a feeling of "panic" found that "meditating," "labeling that feeling" and reminding herself that "the panic was just the coming and going of some nervous energy," "calmed" her, helping her find her "anchor," and "calm the energy." Another student was experiencing "greater awareness, especially when negative feelings emerge[d]." She described the interrelationship between mindfulness and stress this way:

> "I've been thinking a lot about my breath and what happens to it and to my body (contractions) when these [negative] feelings are present. I've also been practicing bringing myself back into the present moment by focusing on my body. This is especially helpful when I am feeling overwhelmed, stressed, or just getting ahead of myself."

Mindfulness and attention. The difference-score correlations showed no significant relationship for either group between changes in aspects of attention as measured by the d2 Test of Attention and changes in mindfulness as measured by the CAMS-R. Yet as we have seen, students in the mindfulness group were experiencing notable attentional changes in themselves (e.g. more "aware," "alert," "focused," and able to notice and "re-focus" when their mind had wandered). They attribute these changes to practicing being more mindful—paying attention on purpose to what was happening the present moment, without judgment, particularly by means of pausing, breathing, and adopting an attitude of acceptance and self-compassion (cf. Qualitative results, Research Question 2, Greater mindfulness).

Stress and attention. Similarly, there was little to no relationship for either group between the quantitative measures of attention and perceived stress**,** yet the students experienced them as being closely interrelated. In fact references to stress and attention often appeared in the qualitative data juxtaposed as a pair: "I feel like the stress of this semester is consuming me. I have a hard time focusing." "I have a lot of problems focusing and getting work done. I have been going through an emotional roller coaster…dealing with a lot of stress."

It should be noted that the students often expressed mindfulness, stress, and attention as all being intertwined. As one student said: "Deep breathing and finding the inner balance

[mindfulness] have also been a great help in calming me down [stress] and helping me focus [attention]."

Relationships among mindfulness, stress, attention and interpreting. Recall that, contrary to expectation, difference scores showed no relationship between change in interpreting performance and change in mindfulness, stress, or attention for either group from pretest to posttest. Yet students in the mindfulness group reported experiencing notable connections among mindfulness, stress, attention, and the quality of their interpreting—even in cases where these perceived interactions did not correlate with measurable changes in interpreting performance.

Many students commented on the "stressful" nature of interpreting, and how mindfulness helped them manage that stress. As one student commented, "The performance anxiety of consecutive interpreting isn't always easy to handle…especially when you're in a room of people who understand both languages and thus know when you mess up." In such circumstances, some students found it hard to "not be overly critical" of their own performance, and noticed that "nervousness increased stumbling" and "scattered" their attention. But, in addition to feeling gradually "more competent in interpreting," they were also practicing calming their nerves by pausing, breathing, taking emotional distance, and being less judgmental toward themselves. When they would "begin to feel nervous, they would "just observe, acknowledge it, try to breath, and think about it with kindness and not judgment." Before heading to the podium, they would "take a deep breath" and think, "just relax and do your best." And if they "got stuck on a word and have to pause during the interpretation," they would "take another deep breath and quickly refocus on the task." As a result, many felt "less nervous," "stopped worrying so much," were "more relaxed and patient" with themselves, and "calmer" both when listening to the

source speech (even when interpreting a "hard speech" or "a bit behind" in note-taking), and during delivery of their interpretation. "Meditation has definitely helped me keep my composure and just do what I can," related one student.

For students who mentioned final exams, these changes in relationship to stress held true during those exams. "Waiting for my turn to take a test, as soon as I noticed I was feeling nervous, I started to meditate and quickly felt so much better," recounted one student. Another described realizing she had done everything she could do, so "instead of stressing out right before the exam" she "just sat down on a bench, took a few breaths and enjoyed the scenery." "I think that helped just getting through that final, knowing it's worth a lot but not being stressed about it," she reported. A Spanish-native student said she was "not so nervous" and "guessed" she had done "better in the finals than on the midterms" especially into English (which was her "main issue"). She affirmed that mindfulness helped her to "be more gentle" with herself and "just accept" her mistakes. All of these students did in fact earn higher scores on their into-English final than on the midterm, sometimes substantially so. But many students qualified their remarks about stress, describing themselves, for example, as only "a bit" less nervous, or "still quite nervous but more under control." One student (who distinguished stress from "being flustered") said, "I still get flustered when I know I'm missing details from a talk."

Students found that responding to their stress in a mindful way also improved their attention when interpreting. They "stopped being worried so much or thinking about other things constantly" and were "able to focus on the task, and just that" instead of "being carried away by nervousness or other distractions." They also found that "a clearer and calmer mind" helped them "quickly shift" their attention, better "balance note-taking and listening," and "totally immerse" themselves in what the speaker was saying, becoming "so focused that the

information that's important just comes straight into you." In short, there was greater sense of being in control: "I know what I am talking about and what I'm going to talk about."

One student described the interactions among stress, attention, mindfulness, and interpreting this way:

> "In the past, sometimes when I was very nervous during interpreting, my mind would stop working. And my attention shifted to the horrible consequence of my bad performance. Now, as soon as such circumstance occurs, I tell myself to focus on the present and on my breath. My nervousness eases in this way, and I can work out the difficulties more quickly."

Another student recounted:

> "Now I am much more capable of keeping my nerves in check and maintaining a peaceful state of mind as I do my interpreting, which helps in beginning to draw me out of my preoccupation with my own performance and give more of my attention to communicating with my listeners. Practicing mindfulness has definitely helped in that respect."

In summary, students experienced clear and direct relationships among mindfulness, stress, attention, and their interpreting performance, even in cases where no such correlation emerged among the quantitative measures of these variables. The qualitative data show compelling connections between students' *subjective experience* of interrelated changes in mindfulness, stress, and attention, and interpreting performance, and *objective improvement* in performance on interpreting exams.

Summary

The qualitative data described above were collected both for cross-validation comparison with quantitative results and for insights that might help explain the combined quantitative and qualitative results of this study and point to practical pedagogical implications. The qualitative data were thus analyzed according to the same three research questions that framed the design and measures used for the quasi-experimental side of this study. Figure 9 provides a synopsis of those research questions and the further probes and results that emerged from the qualitative data.

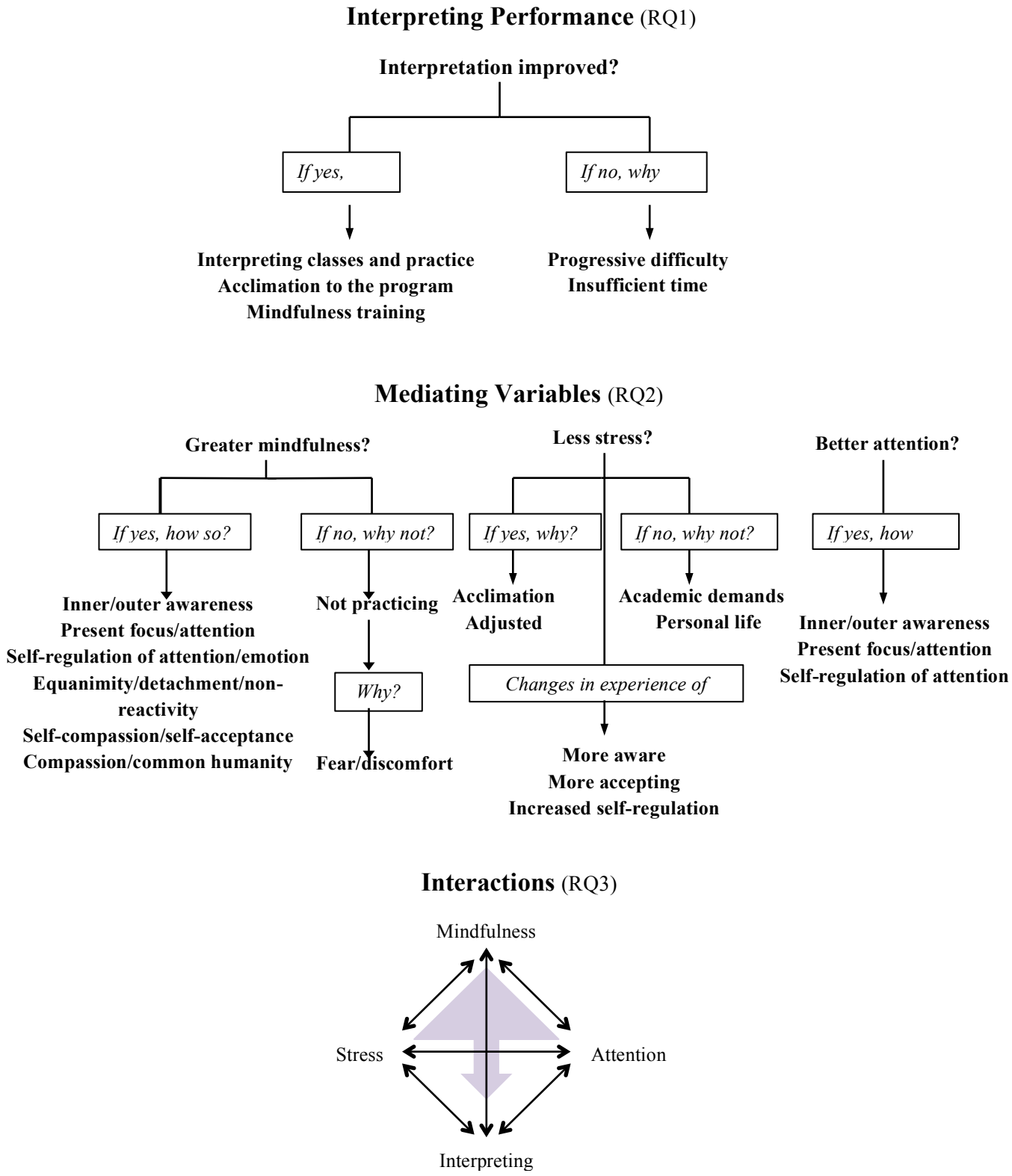

Figure 9. Overview of qualitative analysis and results

CHAPTER 5—CONCLUSIONS

The purpose of this quasi-experimental mixed-methods study was to explore short-term mindfulness training as a pedagogical intervention that may help interpreting students improve their interpreting performance by strengthening their attentional abilities and emotional stability under stress. Within the theoretical framework of Cognitive Load Theory, the study examined whether students who received mindfulness training performed better on consecutive interpreting exams, showed greater mindfulness, lower perceived stress, or better attention, and what the relationships were among these possible mediating variables and interpreting performance.

Summary of the Study

This study focused on the consecutive interpreting experience and performance of all first-semester students enrolled in a two-year graduate program in translation and interpreting for Chinese, French, German, Japanese, Korean, Russian, or Spanish. The only difference between the control group (n = 44) and the mindfulness group (n = 20) was the mindfulness training, operationalized as a 4-week, 12-hour training embedded in a specially developed half-semester Mindfulness for Interpreters elective course. Existing, validated scales were used to quantitatively measure interpreting performance (ECTICE rating instrument), mindfulness (CAMS-R), perceived stress (PSS-10), and aspects of executive attention (d2 Test of Attention) before and after the mindfulness training. Qualitative data collected from the mindfulness group throughout the study were analyzed for insights into and cross-validation of the quantitative results.

Comparison of pretest-to-posttest changes in interpreting performance between the mindfulness group and control group showed a small effect-size difference favoring the mindfulness group both for Accuracy (d = .24) and Delivery (d = .33). On average, students in

the mindfulness group scored higher on their into-English consecutive interpreting final exam than on their midterm, while students in the control group scored lower. Mindfulness-group students who subjectively did not perceive much improvement in their interpreting performance said this was because of the progressive difficulty materials and skills introduced in their interpreting courses, feeling unable to evaluate their own progress, and it being just too soon to see real progress. Those who did perceive improvements attributed those changes mainly to skills developed through their interpreting courses and practice, but also to having acclimated to student life and the program, and to the mindfulness training. They credited mindfulness practice with helping them become more aware of their own mental activity, better focus on the task at hand, refocus when they became distracted, and balance their attention (e.g. between listening and note-taking). They also described struggling somewhat less with nervousness as they became kinder toward themselves, more intent on just doing their best, less attached to the outcome of their performance, and discovered that they could calm themselves simply by pausing and breathing.

Students in the mindfulness group and control group showed a similar slight increase in mindfulness pretest to posttest, there being no significant difference between the groups. This overall slight increase in mindfulness as measured by the CAMS-R resulted in part from generally higher self-ratings on items such as "It is easy for me to concentrate on what I am doing," this upward shift likely reflecting attentional effects of their interpretation training. Experiences related by students in the mindfulness group clearly describe increases in many other facets of mindfulness as well: inner and outer awareness, present-focus and attention, self-regulation of attention and emotion, equanimity, detachment, non-reactivity, self-compassion, self-acceptance, a sense of common humanity, and compassion for others.

On average, students in both the mindfulness and control group showed a slight decrease in perceived stress over the second half of their first semester of interpreter training. Similar to the observations of Morrison et al. (2014), these interpreting students felt "stressed" by an increasingly demanding academic workload and looming final exams, as well as by matters in their personal lives. Yet they were generally more at ease because they had acclimated to the program and realized that it would take far more than a semester to become a competent interpreter: They now knew what was expected of them and what they could realistically expect of themselves at that juncture. Meanwhile, students in the mindfulness group were also becoming more aware and accepting of their own physical and mental responses to stress and discovering the calming effects of pausing and breathing.

The d2 Test of Attention showed that students entered the program with average to above-average attentional abilities. Both the mindfulness and control group scored higher at posttest than at pretest after just five to six weeks of additional interpreter training. Contrary to expectation, the control group improved more on the d2 measures than did the mindfulness group. Thus, in contrast to the findings of Jensen et al. (2012) and Moore & Malinowski (2009), the present study did not provide any evidence of mindfulness training improving executive attention (e.g. sustained and selective attention) as measured by the d2 Test of Attention. This may simply have been because the 4-week mindfulness intervention in the present study was too short for such changes to manifest. The treatment group in Jensen et al. completed a full 8-week MBSR course, which calls for 45 minutes of daily home practice. In Moore & Malinowski, the meditator group (compared with a meditation-naive control group) consisted of individuals recruited from a Buddhist meditation center who had completed at least a 6-week introductory meditation course.

Recall, however, that the mindfulness group in the present study improved more than the control group on their interpretation exam performance, possibly suggesting differential attentional improvements relevant to interpreting but undetected by the speeded d2 task. Students in the mindfulness group identified those beneficial changes as including greater inner and outer awareness, alertness, focus, and self-regulation of attention, that is, being better able to notice when they were distracted and purposely bring their attention back to the task at hand.

Like previous studies (Eberth & Sedlmeier, 2012; Jensen et al., 2012; Khoury et al., 2013), the correlational data showed a significant inverse relationship between mindfulness and perceived stress for both the mindfulness group (strong) and control group (moderate). The qualitative data strongly corroborated this inverse relationship and pointed to mechanisms that may explain it: As they practiced mindfulness, the students found that they became more aware of their own stress responses, more accepting of those responses as a natural energy surge in response to a challenging situation, more compassionate toward their own suffering, and better able to calm and channel that stress-energy through mindful breathing. In fact, for a number of students, nascent self-compassion and self-acceptance appear to have been the key to these shifts: "For the first time in my life, I consciously appreciated myself as I am (without analyzing or criticizing)."

Contrary to expectation, the quantitative data showed little to no relationship between mindfulness and attention; stress and attention; or any of these variables and interpreting performance. Yet students in the mindfulness group reported strong relationships among all of these variables. They found that as they practiced mindfulness they became more alert and focused on the present moment or task at hand; they also gained a greater sense of calm, which in turn cleared their mind, enhancing their awareness and depth of attention. Students

particularly noticed these interactions when they were interpreting, including at exams. They still felt nervous, yet found that responding to their stress in a mindful way (pausing, breathing, taking emotional distance, being less judgmental toward themselves) improved their attention. As they worried less, they became more "immersed" in what the speaker was saying and able to "work out the difficulties."

Limitations

A few general limitations to this study should be borne in mind. Although larger than in many studies in interpreting research, the statistical sample was still small ($N = 64$). The treatment group consisted of the 20 students who *chose* to enroll in the Mindfulness for Interpreters course. Complete independence was not possible to maintain between the treatment group and the control group, given their regular interaction within the academic program. Also, the intentionally short mindfulness training embedded in that course may simply have been too short for more differential results to appear. In short, the small sample and short duration of the intervention (12 hours over four weeks) make it hard to know whether the general lack of statistical significance was due to one or both of these factors or to inefficacy of the mindfulness training. This threat to validity was considerably mitigated by examining between- and within-group practical significance using Cohen's *d,* and by triangulating the quantitative results with qualitative data collected from the mindfulness group throughout the study: Burgeoning effects undetected through statistical or practical significance testing clearly emerged in the qualitative data. This mixed-methods approach could be usefully strengthened in future studies by also collecting qualitative data from the control group.

Self-selection

Being self-selected, the mindfulness group was inherently subject to selection bias and

potentially susceptible to motivation effects, confirmation bias, placebo effects, and social desirability bias. Students who stayed enrolled in the Mindfulness for Interpreters course did so because they wanted to be there and believed that learning to be more mindful might help them in ways they desired, for example, feel less stressed, overcome anxieties or negative emotions, and enhance their ability to focus, balance, and sustain their attention when interpreting. These motivations may have influenced outcomes. Given motivation and intention are widely recognized as fundamental both to learning in general and to mindfulness practice in particular, students in the mindfulness group were in fact encouraged at the outset of the training to reflect on their motivations. Considering the findings of Jensen et al. (2012), who specifically controlled for the influence of motivating incentives on purported effects of mindfulness, it is unlikely that participants' personal motivations led to major confirmation or placebo effects in the present study. Additionally, a randomized controlled trial with an active psychological control was recently conducted in England (Crane et al., 2014). The purpose of the study was to "dismantle" any effects arising from specifically from mindfulness meditation. With 274 participants having suffered from major depression, it compared Mindfulness-Based Cognitive Therapy (MBCT), Cognitive-Psycho Education (CPE), and a control group (treatment as usual) (Crane et al., 2014; Williams et al., 2014; Williams et al., 2010). The only difference between the 8-week MBCT and CPE interventions was that the latter did not include meditation practice or focus on experiencing in the present moment. The researchers found that amount of home practice and outcomes (principally, time until relapse) were independent of how "plausible" participants felt their treatment was, that is, their "level of belief in, or preference for, their treatment, i.e. how logical it seems, how credible, and how much they feel it is likely to work in their particular case" (Crane et al., 2014, p. 18). The researchers also found that the common

aspects of both interventions accounted for about half of the drop in the relapse rate, but that MBCT was more effective, particularly for the most vulnerable participants who had experienced childhood traumas (Williams et al., 2014). These findings suggest two points: First, there is much to be gained simply from regularly attending a supportive group in which one gains new friends, can share experience, and learn about managing difficult states like depression or stress. Second, practicing mindfulness meditation specifically does seem to explain at least a portion of benefits observed.

It is also possible that students in the mindfulness group exaggerated their posttest responses on the self-report scales and in their qualitative responses for the social desirability of appearing more mindful or out of wanting to support this research. But this does not appear to be the case. Many students carefully qualified their responses saying, for example, that "maybe" mindfulness had something to do with feeling like their interpreting performance was improving, they were "not sure" if they noticed any difference or ability to focus, or were "maybe only a little less anxious." Such responses suggest that the students were responding honestly, even cautiously.

When comparing perceived stress results across mindfulness studies using repeated measures, it should be noted that the present study differs from other studies in one fairly unique regard: The interpreting program in which the students were enrolled is purposefully more challenging over time. The bar is continuously raised so that, by the end of two short years, successful graduates are ready to work professionally along side seasoned colleagues. This means that, at posttest, all of the students in the study were objectively being subjected to more intense environmental stressors (academic demands) than at pretest. In contrast, in most other

studies using repeated measures of perceived stress, external stressors are presumably more or less constant.

Incomplete independence of groups

This study was designed for clear independence of the treatment and control groups according to the two levels of the independent variable: *mindfulness training* and *no mindfulness training*. However, as noted in Chapter Three (cf. Characteristics of the Study Sample and Setting), it was not possible (nor, from a pedagogical standpoint, desirable) to avoid certain similarities and cross-influences between the groups. In their interpreting courses, all of the participants were, through interpreting practice and feedback, learning to focus their attention, cope with stress, and manage competing stimuli. There thus may have been some overlap with themes and skills addressed in the Mindfulness for Interpreters course. Also, outside of the MFI course, all participants across groups necessarily had on-going close interaction with each other, at least within their own language program. They had many if not all of their translation and interpreting classes together, were required by their interpretation professors to practice together in small groups outside of class, often socialized and developed friendships with each other, and in some cases even roomed together. It must thus be assumed that participants in the treatment group likely shared with their control-group peers some of what they were learning and experiencing regarding mindfulness, and that there were cross-influences, whether conscious or not. These interactions might help explain why the between-group effect sizes in this study were generally small.

Holistic use of the ECTICE scales

Another limitation concerns the *English and Chinese Translation and Interpretation Competency Exam* (ECTICE) rating instrument used to measure interpreting performance. As

described in Chapter Three, this instrument was selected because it had been well validated, was quick and simple to use, and would enable meaningful and standardized naturalistic assessment of interpreting performance by seven different professors in their respective courses involving seven different source languages and texts. Given these practical constraints, professors were asked to use the ECTICE scales holistically for a single overall assessment of Accuracy and Delivery, even though the scales had been designed for discrete assessment of each cohesive idea-segment within a text of about 300 to 350 words, those 6-8 scores then being totaled for an overall score. Such fine-grained assessment was impracticable because it would have required assessment training and undue time and effort by professors voluntarily participating in the study.

Such adapted holistic use of the ECTICE rating instrument meant a loss of validity and discrimination in several regards. Validation of the ECTICE rating instrument rested not just on the scales themselves, but on the three-fold rating mechanism used: (a) each exam text was divided into rating-unit segments; (b) major and minor errors for that text were defined before test-takers were rated; (c) Accuracy and Delivery were rated separately, preferably by different raters (M. Liu, personal communication, April 18, 2016).

No assessment using any kind of simple, holistic scoring instrument completed by one rater without instrument training and without prior identification of major and minor errors can compare. The fact seems to remain, however, that this is essentially how most professors actually grade in practice in the classroom. Liu, Chang and Wu (2008) found that, in training contexts, raters (interpreting experts) rely heavily on their holistic judgment. In fact the one Taiwanese training program that, at that time, reported having adopted the ECTICE grading mechanism had done so only partially, and was using the scales holistically (to assess

interpretation of a whole text, not discrete segments) as in the present study (M. Liu, personal communication, April 17, 2016). Thus, if authentic, naturalistic classroom assessments are to be used as data, it appears that a quick, holistic scale is indeed needed so that all professors involved in a study will actually use it. Only if all raters us the same scale is any kind of standardized comparison possible.

Yet such adapted holistic use of the ECTICE scales results in truncation, and thus more loss of discrimination: When the scales are used as designed, an interpreter might well score a 0 or a 1 on a particular segment of the exam text because he or she omitted, completely misconstrued, or incomprehensibly expressed that particular idea within the text. When the scales were used holistically in the present study, no student interpreter scored less than a 2 for their performance overall, either for Accuracy (message very different from original speech), or Delivery (interpretation understood with great difficulty).

To rectify such truncation, I have thus developed a proposed two-scale instrument, modeled on the ECTICE rating scales, that may provide better discrimination when a quick and easy holistic assessment is needed in studies such as this one. As seen in Figure 10 below, there are two main differences from the ECTICE rating instrument. First, the proposed holistic instrument still consists of two 5-point scales, but they range from 1-6 rather than 0-5, because everyone who takes an interpreting exam will presumably attempt to interpret at least some portion of the original speech. In rare cases of no-shows or speechlessness, a note to that effect could be made on the scoring sheet.

The Accuracy Scale

Level	Description
6	The message in the interpretation is the same as that in the original speech. It contains no errors.
5	The message in the interpretation is nearly the same as that in the original speech. It contains one or two minor errors.
4	The message in the interpretation is similar to that in the original speech. It contains one major error *or* several minor errors.
3	The message in the interpretation is somewhat different from that in the original speech. It contains one major error *and* several minor errors.
2	The message is different from that in the original speech. It contains two major errors and several minor errors.
1	The message in the interpretation is very different from that in the original speech. It contains more than two major errors and many minor errors.

The Delivery Scale

Level	Description
6	The interpretation is fully comprehensible and very coherent with no instances of hesitation, repetition, self-correction or redundancy. It contains no inappropriate usages of grammar or terms.
5	The interpretation is fully comprehensible and very coherent with almost no instances of hesitation, repetition, self-correction or redundancy. It may contain a few inappropriate usages of grammar or terms.
4	The interpretation is mostly comprehensible and coherent with a few instances of hesitation, repetition, self-correction or redundancy. It contains some inappropriate usages of grammar or terms.
3	The interpretation is generally comprehensible but not very coherent. It contains multiple instances if hesitation, repetition, self-correction or redundancy and multiple inappropriate usages of grammar or terms.
2	The interpretation is at times incomprehensible and lacks coherence. It contains many instances if hesitation, repetition, self-correction or redundancy and many inappropriate usages of grammar or terms.
1	The interpretation is mostly incomprehensible and very incoherent due to hesitation, repetition, self-correction or redundancy and inappropriate usages of grammar or terms.

Figure 10. Proposed holistic scales modeled on the scales used for Taiwan's English and Chinese Translation and Interpretation Competency Examinations (ECTICE)

Second, I have modified each descriptor so that there is a clearer stepped gradation from one level to the next. For example, the ECTICE Accuracy scale progresses with the following qualifiers about the interpretation, relative to the original speech: *same as (5), similar to (4), slightly different from (3), very different from (2), completely different from (1),* and *no interpretation (0)*. Here, holistic scorers may find *similar to* and *slightly different from* to be virtually synonymous. They may also wish for an intermediate score between *slightly different from* and *very different from.*

Additionally, it is unlikely that any interpretation, overall, will be *completely* different from the original speech. In the proposed holistic scale, the descriptors have thus become *same as (6), nearly the same as (5), similar to (4), somewhat different from (3), different from (2),* and *very different from (1)*. A correspondingly gradated definition for each of the six qualifiers has been articulated to provide six meaningfully distinguishable scoring options. These range from *no errors (6)* to *more than two major errors and many minor errors (1).*

Similarly, the ECTICE scale for Delivery included *cannot be understood at all (1),* and *no interpretation is produced (0),* neither of which is really useable in holistic assessment. Additionally, scorers may have difficulty distinguishing between *few instances of hesitation… (5)* and *some instances (4)*. They may also wish for an intermediate score between *some instances of hesitation… (4)* and *many instances (3).* In contrast, the proposed holistic scale for Delivery ranges from *fully comprehensible (6)* to *mostly incomprehensible (1)* with correspondingly gradated definitions.

It should be remembered that this proposed ECTICE-based holistic instrument has yet to be tried out so that it might be refined and eventually validated. I am making it available here and in Appendix B so that other instructors, examiners and researchers can use it (either as an

informal tool when a quick holistic assessment is needed, or along side their usual assessment methods) and thus provide experience-based suggestions for refinements.

Conclusions

Mindfulness is about cultivating a particular quality of in-the-moment awareness, that quality being one of compassionate, non-judgmental acceptance of what one is experiencing, both internally and externally. Based on Cognitive Load Theory, I theorized that mindfulness training and practice would help interpreting students strengthen their attentional and emotional self-regulatory competence, thereby reducing the extraneous load they experienced when interpreting; this in turn would improve their performance, their learning, and their experience of interpreting.

This study provides initial, tentative evidence in support of such far-transfer (learning being applied in tasks that do not resemble the original training activities). Short-term yet substantive and sustained mindfulness training and practice over multiple weeks, outside of regular interpreting courses, did appear to measurably improve the performance of graduate interpreting students on consecutive interpreting exams compared to controls. The primary determinants of interpreting students' success remain factors like language proficiency, verbal fluency, and the extent to which they acquire the skills taught in their regular interpreting courses. This study does, however, seem to suggest mindfulness training and practice can help them optimize their learning and interpreting performance in multiple, interconnected ways.

First, practicing mindfulness seems to help students become more aware of their own mental activity and better able to regulate their own attention: focus on the task at hand, refocus when they became distracted, and balance the many competing cognitive efforts involved in consecutive interpreting.

Second, as hypothesized within the framework of CLT, students' interpreting performance did seem to improve as they learned, through mindfulness practice, to recognize and let go of their own unproductive responses to stress. Mindfulness practice also seemed to help students optimize their learning by cultivating an open attitude of equanimity and acceptance and a stronger internal locus of control. Confirming the findings of Ivars and Calatayud (2001), the present study provides evidence that students do struggle with high levels of stress and that the associated nerves and anxiety can undermine their interpreting performance. As students in the mindfulness group practiced self-acceptance, self-compassion, and objective detachment from their external achievements and internal thoughts and emotions, they found themselves being kinder and less critical toward themselves, and less affected by whatever performance anxiety they may be experiencing. They reported becoming increasingly able to just pause and notice it, recognize those nerves as a physiological surge of energy to meet a challenge, feel compassion for their own emotional suffering, and calm themselves through mindful breathing. Students reported that such compassionate self-regulation of emotion cleared their mind and heightened their focus, enabling them to "immerse" themselves in what the speaker was saying, even enjoy the challenge of the interpreting task, and more quickly let it go when they did make a mistake or miss something that was said. In short, they became more fully engaged in the learning process.

In combination, these abilities to self-regulate their own attention and emotion was beginning to give students in the mindfulness group a greater sense of agency and control, even in the unpredictable situation that consecutive interpreting presents—not knowing what someone is going to say and if you will understand it, be able to note it quickly and clearly enough, remember it, and effectively express it in the target language, all under the public scrutiny of

your peers during class or a of jury of professors at exams. This study suggests that such development of an internal locus of control is an important interpreting skill and that, paradoxically, mindfulness practice promotes this development through learning to accept things, and oneself, as they are.

This brings us to the question of state versus trait mindfulness. Previous studies such as that of Ramsburg and Youmans (2014) with undergraduate psychology students and Ivars and Calatayud (2013) with undergraduate interpreting students have shown that a few minutes of breath-focused meditation just before a task, such as listening to a lecture or taking an interpreting exam, can improve performance. Mindfulness-group participants in the present study reported similar experiences. Yet there is one key difference: Ramsburg and Youmans provided written breath-meditation instructions to be followed; Ivars and Calatayud had participants listen to a recording of guiding instructions; participants in the present study intentionally focused on their breath all on their own as a way to calm and focus themselves, especially just before walking into an interpreting exam. This means that those who did so had discovered their own agency, an internal locus of control in regulating their own mental and emotional states. They did not need anyone else to guide, instruct, or remind them. They just did it, at will, on their own. They had sufficiently practiced mindfulness that it was becoming a *trait*, a way of being, that they could drop into anytime, anywhere, even in stressful situations.

These findings and conclusions echo those of several previous studies. They provide further evidence of Kurz' (2003) finding that, in contrast with experienced interpreters, interpreting students have difficulty coping with the stress and frustration of their own suboptimal performance and tend to react with self-judgment, which only worsens their performance. Bontempo and Napier (2011) found negative affectivity to be a significant

predictor of perceived competence. The present study suggests that mindfulness may provide one means to reduce negative affectivity and thereby increase perceived competence (if only by increments), which supports the kind of resilience needed to learn a performative skill as challenging as interpreting. Hild (2014) concluded that the attentional efforts (cold cognition) and emotional experience (hot cognition) of interpreting are intertwined and compete for limited attentional resources all regulated by the central executive function of working memory. She suggested that self-regulatory competence "can be enhanced through concentrated self-regulatory practice" (Hild, 2014, p. 139), which largely involves becoming aware of "what's happening inside" and "what one does with what is happening inside." Both the present study and Lin et al. (2008) illustrate and corroborate Hild's proposition. Recall that in Lin et al., meditation training did not reduce the performance anxiety of concert musicians, but helped them accept what they were experiencing and channel that energy such that it did not undermine their performance. Similarly, Tang et al. (2007) found that executive attention and mood-states are connected, and that mindfulness-type training improves both (in a way that simple relaxation does not).

Additionally, this study offers several interesting ancillary insights into the relationship between interpreting and attention. With just a 5- to 6-week interval between pretest and posttest, students in both the mindfulness and control groups improved on various measures of executive attention—attentional allocation and processing speed, inhibitory control, and concentration performance. This result corroborates previous findings about the central role of executive attention in interpreting (Timarová, 2012). In other words, interpreter training is, itself, a form of attentional training, measurably improving basic attentional performance, in this case on a speeded visual-perception task. In fact, d2 Test of Attention norming data showed that,

despite selective entrance aptitude testing, students in the sample entered their graduate interpreting program with just average to above-average attentional abilities. These abilities need to be developed, and the interpreting curriculum itself appears to do so effectively for most students.

Conversely, however, performance on tasks such as the d2 Test of Attention does not necessarily correlate with interpreting performance. Contrary to expectation, the control group outperformed the mindfulness group on the d2, particularly when it came to attentional stability, yet the mindfulness group outperformed the control group on their consecutive interpretation final exams, which served as the posttest. This finding may indicate that (a) speeded attention tests based on visual perception do not adequately capture the kind of attention needed for the higher-level processing of meaning and intention involved in the pragmatics of interpreting, and (b) interpreting performance does not depend just on one's innate executive function abilities. It appears to depend also on one's conscious and "choiceful" self-regulation of attention during actual interpretation of meaningful communication. The present study suggests that such self-regulation of attention can be learned through mindfulness meditation as a deliberate practice.

Implications

Theoretical Implications

As this study has shown, Cognitive Load Theory provides a useful extension of Gile's Effort Model of interpreting in that it accounts for the whole experience of students learning to interpret, not just the cognitive efforts required to perform interpreting tasks. As represented in Figure 11, those efforts constitute the *intrinsic load* of interpreting, that is, processing essential to understanding and conveying the message. Meanwhile, however, a substantial portion of students' total processing capacity is occupied by *germane load,* that is, processing essential to

learning. Such effortful learning includes acquiring and automating declarative knowledge such as domain-specific concepts and vocabulary, and interpreting skills such as note-taking. These two loads alone often saturate or exceed students' total processing capacity, leaving them feeling taxed or frustrated. As the qualitative data in this study have shown, students also grapple mightily with *extraneous load*—processing capacity hijacked by internal and external distractors that do not contribute to comprehending and conveying the speaker's message. Such distractors, like self-judgment, nerves, fear of failure, or momentary fixation on other things happening in the room, leave less processing capacity available for the efforts of interpreting and learning to interpret. Only a model of interpreting that accounts for all of these loads on students' total processing capacity then invites research and pedagogical approaches that address these loads as, for example, the present study has explored mindfulness training as a means to help students minimize their own extraneous load.

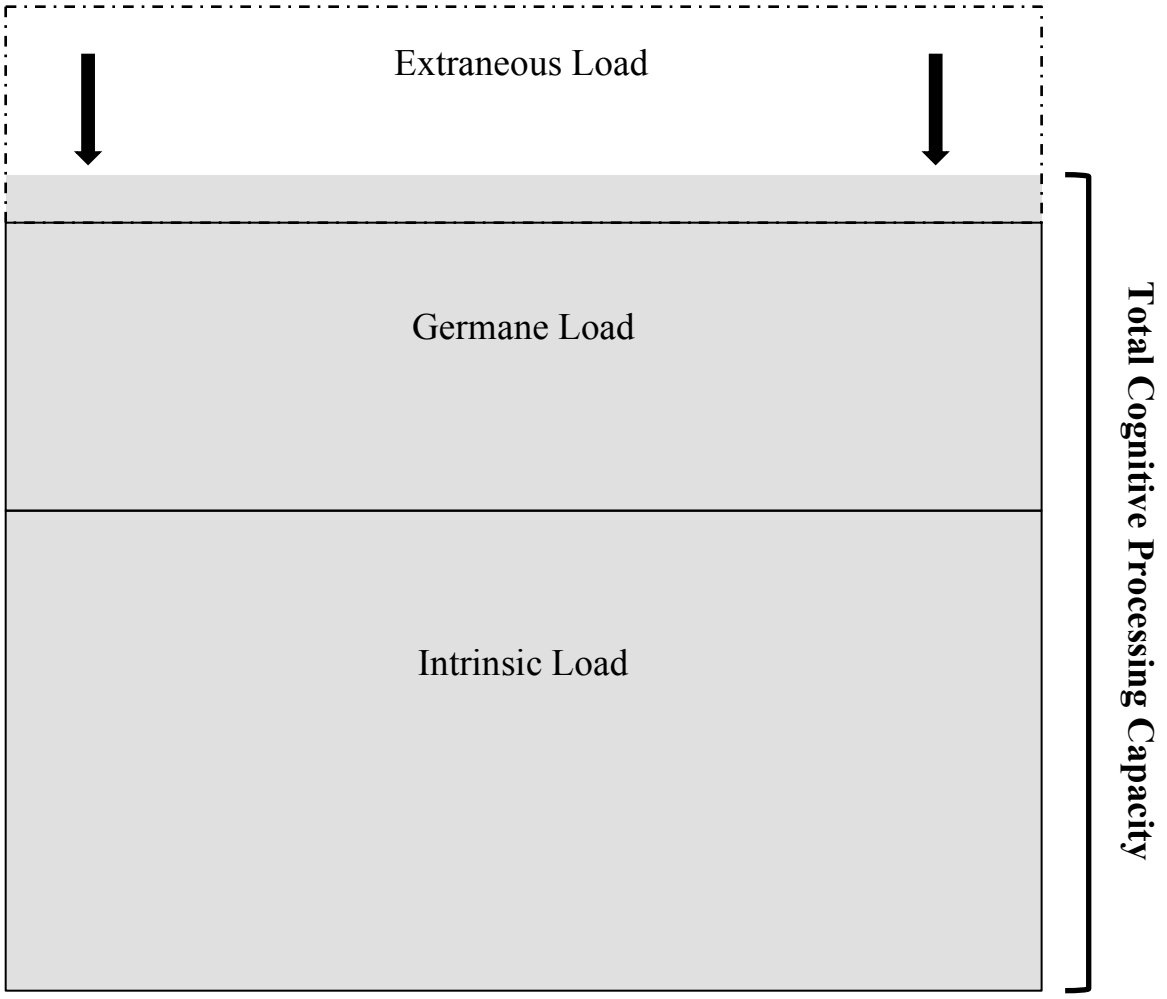

Figure 11. Cognitive Load Theory model of interpreting (novices). **Intrinsic Load** refers to processing essential to understanding and conveying the message. **Germane Load** is processing needed to acquire and automate content knowledge and interpreting skills. **Extraneous Load** includes any internal and external distractors that do not contribute to comprehending and conveying the speaker's message. Cognitive overload results when the sum of these three loads exceeds one's total cognitive processing capacity.

As illustrated in Figure 12, the results of this study can be represented as a theoretical model of the mechanisms by which mindfulness can reduce the cognitive load of interpreting and learning to interpret, by reducing extraneous load. These mechanisms include shifts in attitude (detachment, self-acceptance and self-compassion) and stronger self-regulatory skills (notice, breathe, refocus).

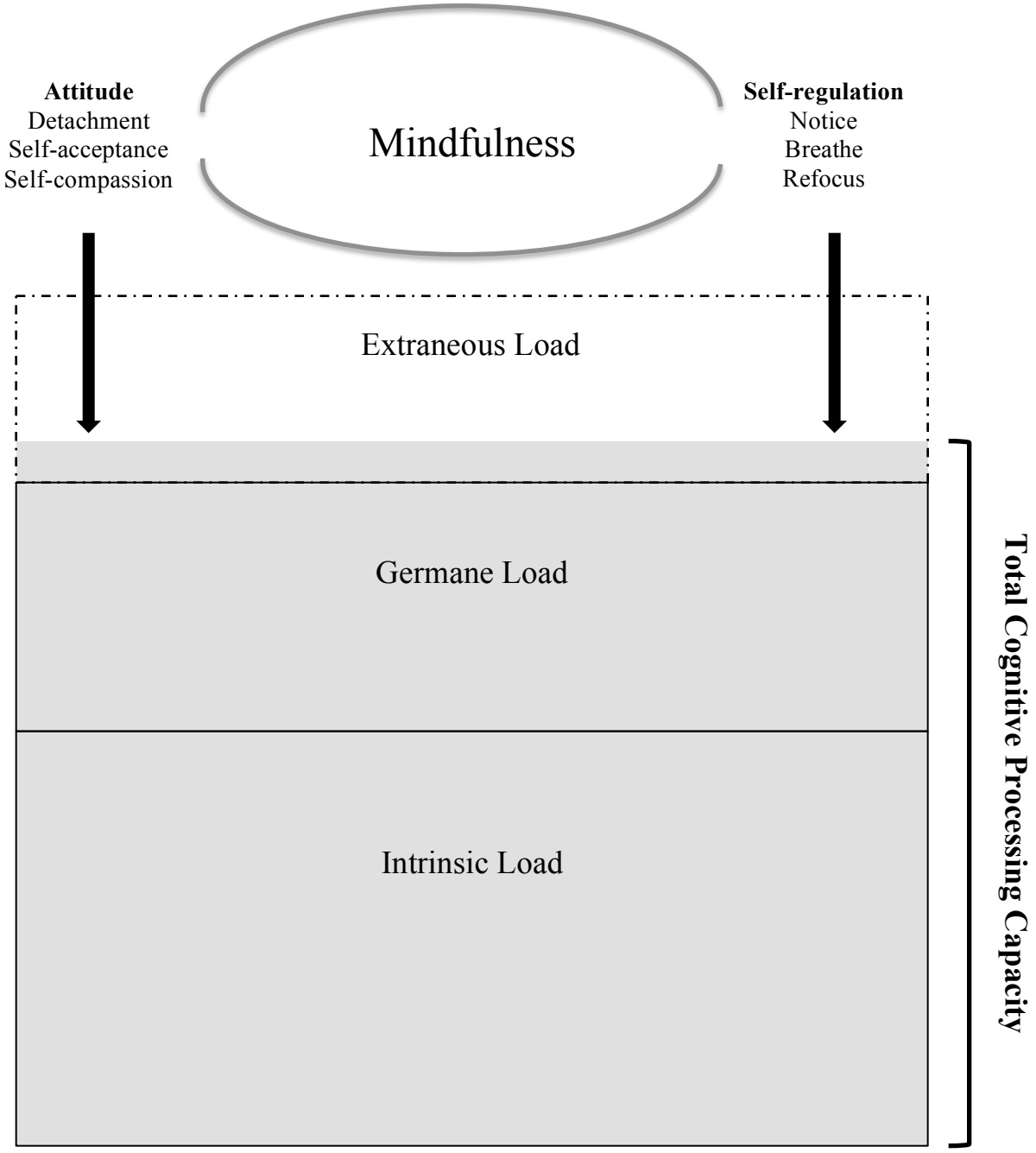

Figure 12. Mechanisms of mindfulness in a Cognitive Load Theory model of interpreting (novices).

This study also has theoretical implications for Cognitive Load Theory itself. Recall that CLT was originally conceptualized as an instructional theory that could provide guiding principles for the design of instructional materials. Within that framework, any extraneous load due to poorly designed instructional materials (as experienced by the learner) is fixed. The learner can decrease the total cognitive demand of learning the material only through learning strategies and self-regulatory skills considered part of germane load.

Applying CLT to learning performative skills, especially an unpredictable and cognitively demanding one like interpreting, requires a shift in these CLT constructs. Here, Germane Load is fixed, and Extraneous Load is variable. This is because, with performative skills, the learning is in the *doing* of it, and because distractors arise not from preexisting materials but from whatever is happening *in the moment* as the task is being performed. The most insidious distractors tend to be internal (e.g. self-criticism, fear, wandering thoughts, nerves) rather than external. How much or how little attention such distractors divert from the task at hand depends on how effectively the learner-performer is able to regulate his or her own attention and emotions.

Let's take learning to interpret as an example. Interpreting almost always involves learning (Germane Load) that has to be done in the moment, while actively interpreting. When someone suddenly starts talking about something unfamiliar, the interpreter has to make sense of the new material (build schema) and also learn and immediately use new terminology, all "on the fly." Student interpreters, who typically know little about many of the topics they have to interpret, are very busy building schema *as they are performing*. Likewise, they are also practicing (learning) interpreting techniques, such as note-taking, *as they perform.* For any particular interpreting task, both Germane and Intrinsic load are thus fixed: Nothing can be done

about the intrinsic difficulty of the task or how much on-the-fly learning is required, for a particular individual, to perform it. These loads are what they are, depending the extent of one's existing task-relevant schema and skills at that moment in time. (Note that both Germane and Intrinsic load *can* be greatly reduced through effective preparation in advance of the interpreting task.) In contrast, Extraneous Load varies depending on what is happening in the moment and, most importantly, *what the interpreter does with it*. Remember that Extraneous load refers to everything that does not contribute to comprehending and conveying the speaker's message, including any learning that has to happen along the way. If a student interpreter misses an idea as the speaker is talking, becomes anxious about the omission, begins thinking *I'm no good at this…I should have been listening better… I'm going to look stupid when I get up to interpret in front of my classmates…Will I ever get the hang of this*…he will likely miss the next several ideas as well, and his note-taking might degenerate into disjointed scribbles that mirror his internal feeling of defeat. If instead, upon realizing *Oh, I missed something,* that same interpreter simply accepted his lapse, drew a circle in his notes to mark the hole, and intentionally refocused with curiosity on what the speaker was communicating, the omission would be minimal, and he might even piece together and subsequently weave back in what it was that he had missed.

This adapted application of Cognitive Load Theory to learning performative skills is particularly interesting because it provides a simple framework within which to explore intersections with other domains of cognitive psychology such as expertise studies and human performance as they relate not just to interpreting but to other disciplines that are performative in nature, such as nursing, counseling, teaching, the performing arts, and trial lawyering.

Research Implications

This study has implications for future research directions, particularly in the fields of interpreting studies, mindfulness and expertise studies. Here I would like to highlight a few I consider to have the greatest potential value for advancing knowledge, particularly as it relates to teaching and pedagogy.

For interpreting research, the present study raises a number questions: How reliable are the findings of this study, and do they generalize to interpreting students in other programs? Do students from certain cultures or backgrounds experience more stress, greater attentional challenges, or greater benefits from mindfulness training? Will the apparent effects of mindfulness training identified in these first-semester graduate students persist for them throughout the program and once they are interpreting professionally? Does it make a difference if they have continued to practice mindfulness or not? How might the findings of this study benefit professional interpreters? Each of these questions points to a rich direction for future research that call for replication studies with different populations and longitudinal follow-up case studies of students as they progress toward graduation and undertake professional work.

The above questions and research directions are equally valuable for mindfulness research, but merit broadening to other applied disciplines such as teaching, counseling, the performing arts, law, nursing and medicine. There is a growing body of empirical mindfulness studies among graduate and professional populations, but few replicate prior studies or follow up on participants to assess whether reported outcomes persist. Such research would help identify common any outcomes and lasting effects of mindfulness training that generalize across disciplines. For example, one surprise of the present study was the central role that self-compassion seemed to play in the self-regulatory effects participants experienced. Just how

central *is* self-compassion to the construct of mindfulness and to the well-being and success of graduate students?

Methodological Implications

This study illustrates the value of a mixed-methods approach. Here, the mindfulness training was too short for much clear quantitative evidence of its effects on or connections with students' interpreting performance, attentional abilities or perceived stress to emerge. Indeed, authors like Grossman and Van Dam emphasize the "very gradual nature of cultivation of mindfulness" (Grossman & Van Dam, 2011, p. 225). But the qualitative data compellingly showed that students in the mindfulness group were experiencing important shifts in all of these areas. Mixed methods can thus help avoid drawing false conclusions from quantitative *or* qualitative data taken in isolation. For example, in this study, the quantitative data made it appear that students did not become more mindfulness with mindfulness training, but the qualitative data clearly told a different story. This discrepancy led to the insight that students in the mindfulness group may have considered themselves less mindful at posttest because they were now more often noticing when they were "on autopilot" or distracted—that is, because they were being more mindful. A similar discrepancy in the quantitative and qualitative results on perceived stress prompted a more fine-grained analysis that revealed important differences. While there was little change in perceived stress among students in the control group, there was a split in the mindfulness group: highly stressed students experienced a decrease in perceived stress while minimally stressed students showed an increase in stress, probably not because they were *actually* more stressed, but more perceptive of and attuned to their own stress responses. In this way, mixed methods can help tease out exactly what is happening.

This study also shows the value of calculating and reporting practical significance, that is,

effect sizes, such as Cohen's *d*. Whereas few statistically significant results emerged, probably in large part due to the small sample size and short duration of the intervention, effect size calculations revealed otherwise obscured phenomena. Practical significance is also important to report in any future replication or comparison studies examining whether the results of the present study are generalizable, because Cohen's *d* can be compared across samples of different sizes and across different studies.

Pedagogical Implications

The pedagogical implications of this study can be divided into two categories: implications for interpreter training and implications for mindfulness training in higher education, particularly at the graduate-school level.

Implications for interpreter training. The primary implication of this study for interpreter training is that interpreting should not be taught as a purely cognitive skill but in a way that recognizes (a) the complex interplay between the task and the internal attentional and affective state of the interpreter attempting to perform it, and (b) the additive Intrinsic, Germane and Extraneous loads that compete for and can cumulatively exceed students' processing capacity. Second, compassionate self-regulation of attention and emotion appear to be important skills for minimizing the cognitive load of interpreting and learning to interpret by reducing Extraneous Load. These skills can be acquired but, just like any skill, only through regular and sustained practice (Hild, 2014). This study suggests that, given the limited classroom hours available even for learning and gaining proficiency in interpreting techniques and necessary domain knowledge, such self-regulation might best be learned and sufficiently practiced in a separate, dedicated course. Third, since self-acceptance, self-compassion and a certain equanimity and detachment appear to be important elements of such self-regulation for

interpreting students, an integrated, holistic approach such as mindfulness training is recommended. Such a course, however, should not be required, but remain elective, so that students come to it with adequate motivation and openness when it is right for them. Mindfulness meditation is not for everyone, and compassionate self-regulation and mindful awareness can certainly be cultivated through other practices. Fourth, and in parallel, short mindfulness-based exercises can be seamlessly incorporated into regular interpreting class sessions in a way that fosters self-regulatory habits (e.g. breathing). Also, professors can, along with Gile's Effort Model (1995, 1997, 2009), introduce students to the Cognitive Load Theory model of interpreting as a framework for understanding the different cognitive demands involved in interpreting, and minimizing those loads. An experiment with just such a tiered approach is currently being conducted at Brown University medical school (Kerr, 2016). All students receive a Tier 1 "low dose" of mindfulness-based mini trainings in daily-life tools for stepping back from distressing experiences, while self-selected Tier 2 students receive a "high dose" of more intensive mindfulness training enabling them to remain present to moments of distress.

Implications for mindfulness training in higher education. This study and the pilot studies leading up to it seem to provide further evidence that a 4-week curricular format (as opposed to an 8-week MBSR format or co-curricular offerings) may be most effective for busy graduate students. A short-term training of 12 hours over four weeks, framed within a half-semester or one-quarter academic course appears to provide most students with enough of a foundational, lived experience and understanding of mindfulness that, if they so choose, they can continue to the practice on their own or with others, and with such continued practice, gradually cultivate a mindful way of being. What is lost in duration is gained in compliance (attendance and home practice) and an energizing sense of concentrated momentum that leaves some

participants wishing for more. A second-level course can be offered for those desiring further training.

In this study, the qualitative data in particular seem to indicate that compassion cultivation (beginning with oneself) may be more central to the mechanisms of mindfulness than often presented in various mindfulness interventions and psychological research. For this reason, in iterations of the Mindfulness for Interpreters course subsequent to this study, we have increased our emphasis on self-compassion and now also administer the Self-compassion Scale (Neff, 2003; Raes, Pommier, Neff, & Van Gucht, 2011).

This study also suggests that in-person group trainings may be more effective than individualized or online options. Several participants noted how beneficial it was for them to be with other students in this way, outside of their regular courses, to hear that others were stressed and struggling also, and to enjoy each other's support and the community of practice that resulted. "I may have been afraid of being mindful without the security of the circle of other participants around me," confessed one participant. As shown in the "dismantling" randomized control trial with 274 participants having suffered from depression (Williams et al., 2014), approximately half of the measured benefit of the Mindfulness Based Cognitive Therapy derived from the support, understanding, and friendships of the group setting.

Summary

This study provides initial, exploratory evidence that mindfulness training and practice may help interpreting students strengthen their attentional and emotional self-regulatory competence, thereby reducing the extraneous load they experienced when interpreting, and in turn improving their performance, their learning, and their experience of interpreting. Qualitative data suggest that the mechanisms of mindfulness include greater present-focus

awareness, self-compassion, acceptance, and self-regulation of attention and emotion. Sustained mindfulness training and practice over multiple weeks within the supportive context of a group appears to begin to cultivate trait mindfulness to an extent that some interpreting students experience a greater sense of agency, or internal locus of control, when it comes to regulating their own attention and emotions when engaged in interpreting tasks. Such self-regulation appears to be an important interpreting skill and condition for effectively learning to interpret. Cognitive Load Theory, as adapted to the learning of performative skills like interpreting, provides a useful model that accounts for the whole experience of students learning to interpret, not just the cognitive efforts involved.

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APPENDIX A

Pilot Studies 1 and 2

Pilot 1

The purposes of Pilot 1 were to (a) try out recruitment procedures, (b) see how many students would volunteer to participate and how well they would persist in a multi-week mindfulness intervention, (c) try out a 4-week extra-curricular mindfulness training, (d) collect data on how participants experienced the training and any effects for them personally, and (e) receive participant feedback and suggestions, particularly as to the length and format of the training, and whether receiving compensation would influence their persistence. Inclusion criteria included current enrollment in a 3rd-semester simultaneous or consecutive interpreting course.

Procedure

In the week preceding the start of the pilot mindfulness training, professors of the courses listed above were asked to read a scripted announcement and pass around a sign-up sheet for participation in the pilot study. Potentially interested students were emailed the consent form and invited to attend the training. Of the 19 students who expressed interest, seven came to the first session.

Participants were asked to attend four weeks of training under the guidance of an experienced mindfulness trainer and meditate 10+ minutes on their own each day using the "Mindfulness Practice Guide & Journal" they were provided. There were two sessions per week for a total of 10 hours. These include instruction, practice, and discussion and covered four modules: awareness of posture and breath; awareness of body, emotions and thoughts; equanimity and flow; and opening the heart. To minimize any bias in the data, I myself did not attend these sessions.

While the training was designed to take place over four consecutive weeks, scheduling

constraints caused it to extend over six (42 days), with significant gaps between some of the sessions. Data on level of actual practice and participant experience were collected weekly via a paper and pencil surveys completed during the training sessions. At the conclusion of the pilot intervention, a final survey was administered to solicit participant feedback and suggestions.

Results and Conclusions

Four of the seven volunteers who came to the first session, four persisted beyond the first week and attended at least half of the sessions ($M = 4.75$, range 4 - 6). Three participants completed the final survey. Though limited in scope and number of participants, Pilot 1 yielded valuable preliminary results and substantial information useful for further calibrations of the study.

Effects of the training intervention. Spontaneous comments on the surveys indicated that over the course of the mindfulness training participants experienced changes related both to attention and stress. Regarding attention, they became more aware of their present-moment experience, noticing and paying attention to their thoughts, emotions, and physical sensations. In different ways, they became better able to focus their attention, notice when it drifted, and bring it back, including when interpreting. Sometimes such refocusing increasingly seemed to happen "naturally" or "with less effort," suggesting that it was developing as a trait. Some individuals also noticed that they were better able to shift their attention intentionally or process information as they were engaged in interpreting tasks, organizing it into chunks and "connecting the dots."

Regarding stress, these students reported experiences of calm and tranquility. But perhaps more importantly, they all seemed to become generally more aware of when and how they experienced stress. They noticed when their mind was racing, or when they were worrying or annoyed, and were becoming able to "let it be." They also experienced a sense of

"groundedness" or connecting with the "authentic self" and became less judgmental of themselves and others. One student felt more able to deal with "accidents or emergencies," that is, with the unpredictable. When engaged in interpreting tasks, these students sometimes remembered to breathe as a way of re-focusing or of calming their nerves, and one experienced a more effortless flow. In short, these students generally seemed to gain a greater sense of control, acceptance, and emotional self-regulation. This suggested a better ability to cope with demands being made on them or threats to their wellbeing, and thus less psychological stress (Lazarus, 1966). Some evidence, however, pointed to a possible increase in stress. One participant said it was "bad" that his being more tuned into his emotions made them more intense.

The experiences reported, however, may have been unique to these few students and could not necessarily be attributed to the mindfulness training. For instance, being better able to process information in chunks, see the connection between ideas, and re-focus one's attention when interpreting may primarily have been an outgrowth of the students' ongoing interpretation training, not their mindfulness practice. However, this preliminary evidence did suggest that mindfulness training might improve attention and reduce stress in student interpreters, and that it was worth researching these relationships and whether any such changes affect interpreting performance.

Recruitment. About half the pool of potential participants expressed interest in participating, but a critical 63% drop-off occurred between those who signed up and those who showed for the first training session. Procedural issues may have accounted for this low participation. For Pilot 2, I thus planned to pitch the training opportunity myself, take care to avoid a time gap between the announcement and start of training, and simply invite interested students to a first session rather than send them the formal consent form in advance as I had in

Pilot 1. (Some students had likely felt daunted by the form, or simply set it aside and forgotten about it.)

Training duration and format. Asked how likely they would have been to sign up for and complete a longer and more intensive, 8-week training if given if $25 for their participation, the respondents generally said they would not have signed up. They explained that 30 hours over 8 weeks would "require a lot more motivation" and "change the nature of this course," and that money would not influence their participation.

Pilot 1 showed that time (commitment, scheduling, continuity) clearly presented the biggest obstacle for student interpreters interested in receiving mindfulness training as a co-curricular activity. The four who persisted beyond the first week all missed two or three of the training sessions, and at most practiced on their own 60% of the days. Based on this confirmatory evidence of the findings in Greeson et al. (2014), I concluded that, in a graduate school context, a co-curricular training that followed the 8-week MBSR format would be too long. Even four weeks would be ambitious, but still worth attempting with a view to helping students develop trait mindfulness through sustained, supported practice. Only in a multi-week training do participants have the opportunity to experience an evolution in their own awareness, attitudes, and behaviors over time, which they may then want to continue to cultivate. Thus a 4-week intervention was retained.

Sessions scheduled anytime during the day or early evening (8 a.m. – 8 p.m.) had to compete with classes and other campus activities, even during lunchtime "dead" hours when there are no classes but many special lectures and other events. Given the difficulties of time commitment and scheduling, it became clear that every effort must be made to keep the timing of the training sessions short, consistent, and contained—without any gaps as occurred in Pilot 1.

Training materials and support. In Pilot 1, two primary types of support were provided: a specially-developed *Mindfulness Practice Guide and Journal* and drop-in meditation sessions also open to the wider campus community. Based on Pilot 1, I began considering additional types of support for future interventions (a dedicated website, readings, online surveys, and short text messages).

Pilot 2

Conducted in Spring 2014, Pilot 2 was a mixed-methods, quasi-experimental repeated-measures study. Its purpose was to explore the effect of mindfulness training (IV) on interpretation exam performance, mindfulness, and cognitive abilities (DVs) with graduate interpreting students. Specifically, I wanted to (a) try out revised recruiting procedures to increase participation, (a) assess adherence to and student experience of a revised 4-week extra-curricular mindfulness training, and especially (b) try out quantitative instruments for each of my dependent variables and qualitative data collection via online surveys, interviews, and a focus group.

The treatment group consisted of all students enrolled in an Intermediate Consecutive Interpretation into English course who volunteered to participate in the mindfulness training. The control group consisted of all other students (minus two opt-outs) in the Intermediate Consecutive Interpretation into English courses in which the treatment-group participants were enrolled in their respective languages. All participants in both groups were measured on the three dependent variables as described below.

Interpretation exam performance was operationalized as grades on start-of-semester assessments (pretest) and mid-semester midterms (posttest) as administered by professors in the relevant Intermediate Consecutive Interpretation into English courses and scored according to

their own customary grading scale. The raw scores, where necessary, were then converted a 100-point scale.

Mindfulness was measured using the 39-item Five Factor Mindfulness Questionnaire (FFMQ, Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), which takes approximately 10 minutes to complete. The FFMQ includes five subscales: describing, awareness, nonjudging, observing, and nonreactivity. Each subscale of seven or eight items is summed separately after reverse scoring of those items meant to capture a lack of mindfulness.

Cognitive abilities. Various cognitive abilities identified in the literature as relevant to interpreting, mindfulness, or both were measured to try out the procedures and enable preliminary correlational analyses and between- and within-group effects. Abilities of interest included (a) working memory executive functions (cognitive processing speed, cognitive control, task and attention switching, updating, resistance to interference and to automatic response, and dual tasking), (b) working memory storage functions (verbal memory, visiospatial memory), and (c) fluid intelligence (abstract reasoning).

The measurement instruments for this pilot were selected based on several criteria: (a) validated and commonly used in cognitive psychology, (b) used in prior empirical studies in the interpreting or mindfulness literature, (c) publicly available in a pencil/paper format, and (d) quick and easy to administer. The instruments administered were:

1. Letter Comparison Test (cognitive processing speed—orthographic patterns)
2. Pattern Comparison Test (cognitive processing speed—abstract visual figures)
3. Connections Test (psychomotor speed, cognitive control, task switching)

Procedures

Pilot 2 participants were again recruited from among students in same graduate program in translation and interpreting, this time from among 2nd-semester students enrolled in an Intermediate Consecutive Interpretation into English course. (One Pilot 1 participant also participated in Pilot 2.)

I recruited participants by personally pitching the study at a late-November event attended by nearly all first-semester interpreting students. In all, 31 students expressed interest in participating in the mindfulness training. Of these, 11 (29%) showed up at the orientation session and participated in the treatment-group mindfulness training.

Forty-two students participated in the study. After removal participants who did not fit the inclusion criterion or for whom not all data could be collected, the statistical sample ($N = 38$) was 87% female and 8% male, and spanned five language programs: Chinese (21), Japanese (6), Spanish (7), French (3), and Russian (1). Of these 11 were in the mindfulness treatment group and 27 were in the control group.

The pretests were scheduled by arrangement with the respective professors of the Intermediate Consecutive Interpretation into-English courses. Pencil-paper pretests packets were group-administered to all participants (treatment and control) during class over a two-week period at the start of the semester. The packet, which took 30 minutes to administer, included a demographic profile, consent/opt-out form, the FFMQ mindfulness scale, Perceived Stress Scale, Letter Comparison Test, Pattern Comparison Test, and Connections Test.

As of late 2013, professors in the relevant languages who would be teaching Intermediate Consecutive Interpretation into English in Spring 2014 concurrent with Pilot 2 were asked to administer a baseline interpreting assessment at the beginning of the semester that was roughly equivalent to their planned midterm, and all were willing to do so. Scores on start-of-semester

interpreting assessments were requested from the professors during the pretest period. One of the four complied. It took most of the semester and many gentle reminders to receive the others.

As these pretest interpreting scoring sheets were received, it became clear that they would be difficult to standardize: One professor used a holistic letter-grade scale from A to B- (considered failing), another used a 5-point scale for three categories that were then averaged, a third used an 85-point scale with multiple subcategories, and the last used a 100-point scale for a percentage grade. I thus developed a 20-point standard rubric to try out on the midterm (posttest) assessments (see Appendix A). The rubric was based on customary practices within the graduate program and criteria identified in the dissertation by Shao-Chuan Wu (2010).

The co-curricular mindfulness intervention consisted of eight hours of mindfulness training in 1-hour lunchtime sessions twice a week over four consecutive weeks under the guidance of the same mindfulness trainer as in Pilot 1. The content, progression and format and materials were also the same. A website on the online learning platform used for most courses at the study institution was created to accompany the training. Here, participants could find the week-to-week schedule and content, related readings, links to the meditation apps, additional resources, and links to the weekly online practice logs participants were asked to complete. Participation was defined as having signed the consent form and attended at least one session.

For the posttests, the pretest packet (minus the demographic profile) was again administered to all participants (treatment and control) in their regular interpretation classes. During this same period, I asked the professors to send me their midterm scores, if at all possible using the 20-point rubric I had developed. Only one professor used the rubric provided; however, all of the midterm assessments were either on a 100-point scale, or one that could be interpreted as or equated with a 20-point scale so that they could be standardized by a multiplier.

Results

Interpreting exam performance. Contrary to expectation, the control group showed significantly more improvement on their interpreting exams than the treatment group. In other words, students who had no mindfulness training scored better on their midterms, on average, compared to their start-of-semester pretests, while students who participated in the mindfulness training showed no difference on average. Specifically, two students in the mindfulness group received substantially better scores on their midterm, four did much worse, and five received grades that were the same or very similar to their interpretation pretest.

These results seemed to suggest that the mindfulness training had more of a negative than a positive effect on interpreting exam performance. However, there were several plausible alternative explanations. First, the interpretation scores themselves were not very reliable because the scales used by the professors were not consistent and, though equated, were not necessarily equal. While this problem could be remedied if professors were all willing to use a simple, standardized scale, a more substantive issue seemed to have been that some professors' expectations shifted from pretest to posttest. This was most evident in the Spanish group. The professor's start-of-semester assessment was captured by check-marking (on a 5-point numerical scale) holistic impressions of what were simply described as Content, Language, Presentation, and Strategies. At midterm, this same professor used a more fine-grained and evaluative rubric. All three of the 2nd-semester students in the mindfulness group whose scores dropped by 10% or more were in the Spanish group. Such a shift in professors' expectations was understandable: The start-of-semester assessments were for formative purposes (or administered only because I had requested it) and did not "count" toward course grades, whereas the midterms did. Another plausible explanation for the interpreting exam performance results was that students who were

struggling and seeking ways to improve may have been more likely to volunteer for the mindfulness training. The homogeneity in interpreting performance between the treatment and control groups at pretest, however, did not support this explanation. Finally, it could have been that the core mindfulness-group participants who attended more regularly generally did better on their midterms, while those with spotty performance performed worse. This possibility was thus explored. Correlational analyses showed no relationship between mindfulness-training attendance and the interpretation difference-scores, r (9) = 0.11, p = 0.72 [CI = 95]. A difference in attendance thus did not help explain why, compared to their interpreting pretests, some mindfulness participants scored higher on their midterms and others scored lower.

Mindfulness. The mean difference between the treatment and control group was not significant for the *describing*, *awareness*, and *nonjudging* subscales of the FFMQ. However, students who received mindfulness training improved significantly more on both the *observing* and *nonreactivity* subscales than those who did not.

These results were interesting because they provided evidence that the training did have an impact on the students' mental state. Specifically, the data suggested that the mindfulness training helped these students become more observant of their sensations, perceptions, thoughts, and feelings, for example how their emotions affected their thoughts and behavior. Such observing is "generally recognized as the core aspect of mindfulness" (Bergomi et al., 2013, p. 197). The training also appeared to have helped them become less reactive to their inner experience, becoming more able, for example, to watch their feelings without getting lost in them. Such observing and nonreactivity can be theorized to underpin emotional self-regulation, which is key to staying on task and maintaining a professional demeanor when interpreting.

Cognitive abilities. Analyses of the Letter Comparison, Pattern Comparison and Connections tests yielded no results of interest.

Qualitative data. The Pilot 2 qualitative data collected via weekly online practice logs, a final survey, and a focus group yielded valuable insights and suggestions that would help further calibrate the main study, revealed themes to be probed, and supported the hypotheses of a Cognitive Load Theory model of interpreting.

Motivations. I learned that students had a range of motivations for participating in the mindfulness training. Some were simply curious about mindfulness, several wanted ways of dealing with the stress they were experiencing in their personal or academic life, others wanted to be less judgmental, recover from a recent relationship break-up, or feel more at ease with themselves. About half of them hoped that mindfulness might help them improve their interpreting performance by honing their attention, enabling them to better handle the stress, or helping them break habits that "ended up undermining" their performance, such as holding their breath or "engaging in negative self-talk."

Effects experienced. Participants related a number of different changes in themselves that they attributed to the mindfulness training. They were noticing how "focusing on breathing" could calm them in times of stress or help them clear their mind before sleeping. Several particularly noted that they had become "less reactive" or more "detached" or "distant" from their emotional responses to situations. Participants also described experiencing greater inner and outer awareness, such as greater "sensitivity to all the tiny feelings," how they were affected by their external environment, awareness of their own physical sensations and "mental activity," and insights into their "inner workings." They were also finding that they could regulate their own attention. A participant who "worried a lot about the future" found that she was now more

focused on the present moment. Several mentioned that the were more aware of where their attention was, could "catch [their] mind drifting," and bring their attention "back to the present task."

A number of the participants were also experiencing such effects when they were interpreting. A participant who described herself as "often high strung and nervous" said that now, before interpreting, she worried less about how she would do and as a result "each interpreting experience is much better." Another, who used to "constantly think about" and feel "down" about mistakes he had made, found himself getting "less stuck" on what he had "done wrong." Several were noticing the importance of being able to "concentrate on one thing," and bring back their attention when it wandered. As one participant put it, this "particularly helped in interpreting where I was able to focus more easily on the speaker and not let my mind wander to things like what I was writing or what I had missed."

Evidence supporting my Cognitive Load Theory model of novices learning to interpret. Pilot 2 participants were asked if this type of mindfulness training should be included in interpreting curricula and, if so, in what way. Their responses yielded surprising confirmatory evidence of the cognitive loads student interpreters experience and how mindfulness training might help:

> I realized while working as an in-house interpreter several years ago that any time I was devoting any part of my attention to the voice in my head saying, "I can't do this," "I'm messing up," "They're going to think I don't know what I'm doing," etc., that was the amount of attention that I was not devoting to the speaker's input or my output. I also realized that I interpreted better when I was slightly fatigued because…I did not have the attention resources to devote to that negative inner voice, so the whole of what attention

> resources were left went to the actual task at hand… [With] this type of training…students could perhaps learn how to better allocate their attention resources when interpreting without necessarily having to go to the trial-and-error process that I did when already working.

Several participants also suggested that mindfulness training at a regular time each week would be most advantageous to interpreting students "in the early stages of their training" such as in the first semester, after they became familiar with "what interpreting entails." As one participant explained: "For me, interpreting class at [institution] was the first time that I had ever used my brain the way we're required to use it for interpreting—i.e. listening, processing information, taking notes or speaking at the same time, etc." Another affirmed: "As interpreters, a stable mind and the flexibility to learn under stress is king."

For some participants, having the regular, weekly time devoted to mindfulness training, "definitely filled a number of gaps." As one pointed out,

> "[A]s soon as we got to [institution], most of our teachers said something along the lines of *you have to take care of yourself, and make sure you are exercising, eating well, and sleeping enough*. However, they never gave us any insight as to HOW we could take care of ourselves better. (What happens if you are sleeping and eating well and exercising regularly, but are still very stressed out?).

Many of the participants said that they would like to see everyone have the opportunity to benefit from mindfulness training. Yet they also recognized that "the actual impact…might vary from person to person" and such a course should be optional, not compulsory because the degree to which individuals are open to such training "might also influence the effect."

Conclusions

Pilot 2 provided interesting preliminary quantitative findings and highlighted a number of limitations to be addressed the main study. These are summarized here according to the aims of the study:

1. Try out revised recruiting procedures to increase participation. In Pilot 1, 19 students expressed interest but only four (21%) participated in at least two sessions, including orientation. In Pilot 2, with the revised recruiting procedures, 32 students expressed interest and nine (29%) participated. In short, the actual number of students interested and participating essentially doubled, and smaller a percentage was lost between recruitment and start of the training.

Nevertheless, these results indicated that, even with effective recruiting procedures, approximately 40 or more interested students would be needed in order to obtain a target class size of at least 12 treatment-group participants in the *Mindfulness for Interpreters* course for the main study. Also, that course would not convene until eight weeks after students were recruited during the start-of-semester enrollment period. This time gap would likely present new challenges.

2. Assess participant persistence and experience in a revised 4-week co-curricular mindfulness training. Pilot 2 attendance was better than in Pilot 1 with an overall median of 75% (six of eight sessions). Yet only a core of seven participants attended four or more sessions (median of 7). Thus like Pilot 1, Pilot 2 persistence rates seemed to indicate that it was unrealistic to expect sufficiently strong participation in a co-curricular training longer than four weeks.

Regarding home practice, on average (median) Pilot 2 participants meditated on their own a total of seven times over the four-week course (range: 1–14) and did three “mini module”

daily life exercises (range: 0–19), demonstrating a high degree of variability. Even the most dedicated participant meditated only every other day and did a "mini module" daily life exercise every one in three days. The least dedicated participant practiced on his or her own almost not at all. Participants reported wanting to participate more but not feeling able due to other commitments. This aligned with Rogers' finding that (2013) attrition increases as the number of sessions increases and that four-sessions over four weeks is optimal.

Similarly, in multiple iterations of a four-week "Koru" mindfulness course at Duke University, Rogers found that "students do best if they are 'required' to attend class and practice," because "college students are accustomed to being externally motivated and adapt easily to a structured learning environment" (2013, p. 77). The *Mindfulness Practice Guide and Journal*, surveys, and other practice-supports in Pilot 2 were intended to provide such a structure, and participants reported finding them helpful, yet attendance and home practice remained lower than hoped.

Based on Pilots 1 and 2, I thus concluded that the surest way to reach optimal attendance and home practice would be to offer the mindfulness intervention as a regular credit course for which students enrolled. One purpose of the main study thus became to compare levels of attendance and home practice between a co-curricular intervention (as in Pilots 1 and 2) and a curricular one, namely the Fall 2014 Mindfulness for Interpreters course developed for the main study.

3. Try out quantitative and qualitative measurement instruments and data collection procedures.

Measuring interpreting exam performance. Little could be concluded from the interpreting exam performance data given the flaws in how it was measured. For the main study

it would be important to have all professors report their assessments using the same simple, standardized scale for both pretests and posttests. Furthermore, I concluded that interpreting exam performance should be operationalized, for both pretest and posttest, as performance on exams that count toward course grades (for example, midterms and finals). This would help ensure that the repeated measures are evaluated more similarly. Still, there might remain some inherent inconsistency depending on how professors consider midterms and finals. Some professors may take a firmly evaluative approach to both, or approach midterms as more of a formative assessment and grade more easily or more harshly, depending on their psychology of motivation. Professors may also be influenced in their grading by how much each exam counts toward the course grade.

Measuring mindfulness. While the FFMQ effectively revealed differences in the *observing* and *nonreactivity* aspects of mindfulness, I concluded that it would be useful to try a shorter mindfulness scale that measures similar aspects of mindfulness as a trait. Also, one limitation of the FFMQ is that it may over- or under-represent some theoretically meaningful aspects of mindfulness depending on the number of items contributed by each scale from which it was compiled (Bergomi et al. 2013). Furthermore, the two FFMQ subscales for which results were significant in Pilot 2 contained no reversed items, whereas the other three subscales did—two of them being completely reversed. One could argue that these reversed subscales actually measure a *lack* of mindfulness. For measuring mindfulness in the main study, the FFMQ was thus replaced by the Cognitive and Affective Mindfulness Scale—Revised (CAMS-R) which is much shorter (12 items), theoretically derived, and mostly positively-cast (9 of 12 items).

Measuring Cognitive measures. The Letter Comparison, Pattern Comparison and Connections Test were selected because they seemed practical and had recently been used in

related research with participants from the same sample population (Macnamara & Conway, 2016). However, they turned out to be somewhat onerous to administer since each required separate instructions and practice items. The *Connections Test* was particularly time consuming because it involves eight slightly different trials. They collectively they took 15-20 minutes to administer, making the overall testing session an excessive 30 minutes long for in-class testing. They were also time consuming to score, particularly the Connections Test.

For the main study, I thus replaced these tests with one single test, the 14-item pencil-paper d2 Test of Attention, which similarly measures selective attention, processing speed, and concentration performance, but requires only eight minutes to administer.

Conclusions from the qualitative data. Most importantly, the Pilot 2 qualitative data further convinced me of how essential such data would be to testing my hypotheses and interpreting quantitative data in my main study. Qualitative data is what told the story behind the numbers. In this case, I drew a number of conclusions from the participants' narrative comments and accounts:

- Students come to mindfulness training with different and often multiple, interconnected motivations. Thus, mindfulness trainings offered to graduate students may have a focus or context (such as interpreter training), but should not be narrowly focused on specific outcomes (e.g. brain training).
- Mindfulness training should be offered as an actual course in the Translation and Interpretation curriculum, but as an elective rather than a requirement, and might most beneficially be offered in the second half of the first semester of interpreter training.
- As expected, mindfulness training seemed to help student interpreters become more aware of and regulate their own emotions and attention, experience greater equanimity and less

reactivity, and become kinder toward themselves, including when they were interpreting. Some participants, however, may have been over-attributing to mindfulness the progress they felt they were making in their interpreting classes.

- My Cognitive Load Theory model of interpreting for novices learning to interpret (see Figure 1 at the end of Chapter 1) did seem accurate in that it matched how Pilot 2 participants described their experience of interpreting and had predicted how several participants reported that mindfulness training had improved the quality of their experience of interpreting by helping them focus on the task at hand rather than on internal or external distractors.

APPENDIX B

Newly Developed Instruments for Rating Interpretation Exams

1) Consecutive Interpreting Exam Rubric (20-point) Used in Pilot 2

2) Proposed Holistic Interpretation Rating Scales

Consecutive Interpretation Rubric[1]

Instructions: For each criterion, please simply circle or (bold) the level that best describes the student's performance

Criterion	Scale			
	1	**2**	**3**	**4**
Completeness (even if somewhat misinterpreted)	• Multiple ideas omitted, and/or • Many specific-content omissions (e.g. items in list, numbers, names)	• 1 or 2 ideas omitted, and/or • Several specific-content omissions (e.g. items in list, numbers, names)	• 0-1 ideas omitted • 1-2 specific-content omissions (e.g. items in list, numbers, names)	• No ideas omitted. • no specific-content omissions (e.g. items in list, numbers, names)
Accuracy (other than omissions)	• Many statements do not make sense or fail to convey speaker's point • Many elements of specific content are inaccurate	• Several statements do not make sense or fail to convey speaker's point • Several elements of specific content are inaccurate	• Nearly every statement makes sense and accurately conveys speaker's point • Almost all specific content is accurate	• Every statement makes sense and accurately conveys speaker's point • Specific content is accurate.
Delivery & Audience Point of View	• Lacks coherency • Fails to gain or maintain listener confidence. Reason(s) why[2]: • Fails to achieve speaker's intent (e.g. entertain, persuade, inform)	• Some lapses in coherency • Tenuously gains or maintains listener confidence. Reasons why[1]: • Partially achieves speaker's intent (e.g. entertain, persuade, inform)	• Mostly coherent • Generally gains or maintains listener confidence. Reasons why[1]: • Mostly achieves speaker's intent (e.g. entertain, persuade, inform)	• Coherent throughout • Gains or maintains listener confidence. Reasons why[1]: • Fully achieves speaker's intent (e.g. entertain, persuade, inform)
TL expression	Hard to understand due to: • Grammatical errors • Incorrect or misused idioms, terminology, word choice • Diction: Pronunciation, intonation, enunciation	At times hard to understand due to: • Grammatical errors • Incorrect or misused idioms, terminology, word choice • Diction: Pronunciation, intonation, enunciation	Generally clear and effective: • Few if any grammatical errors • Mostly correct and appropriate idioms, terminology, word choice • With few exceptions, diction is clear and natural	Clear and effective throughout: • No grammatical errors • Flows idiomatically with effective word choice and accurate terminology • Diction is clear and natural
Skills & strategies	• Lacks resourcefulness • Does not use good language-manipulation or coping strategies[3]	• 1 or 2 instances of resourcefulness • Only occasionally uses good language-manipulation or coping strategies[2]	• Several instances of resourcefulness • Quite often uses good language-manipulation and coping strategies[2]	• Very resourceful • Consistently uses good language-manipulation and coping strategies[2]

Grade/score: _____

[1] Developed by the author, Julie E. Johnson, for Pilot 2 conducted in Spring 2014. Based on Wu (2010).

[2] e.g. pacing, eye contact, body language, voice quality…

[3] e.g. abstracting, segmenting, restructuring, neutral statement, correcting errors, avoiding nonsense and wrong sense

Proposed Holistic Interpretation Rating Scales[1]

The Accuracy Scale

Level	Description
6	The message in the interpretation is the same as that in the original speech. It contains no errors.
5	The message in the interpretation is nearly the same as that in the original speech. It contains one or two minor errors.
4	The message in the interpretation is similar to that in the original speech. It contains one major error *or* several minor errors.
3	The message in the interpretation is somewhat different from that in the original speech. It contains one major error *and* several minor errors.
2	The message is different from that in the original speech. It contains two major errors and several minor errors.
1	The message in the interpretation is very different from that in the original speech. It contains more than two major errors and many minor errors.

The Delivery Scale

Level	Description
6	The interpretation is fully comprehensible and very coherent with no instances of hesitation, repetition, self-correction or redundancy. It contains no inappropriate usages of grammar or terms.
5	The interpretation is fully comprehensible and very coherent with almost no instances of hesitation, repetition, self-correction or redundancy. It may contain a few inappropriate usages of grammar or terms.
4	The interpretation is mostly comprehensible and coherent with a few instances of hesitation, repetition, self-correction or redundancy. It contains some inappropriate usages of grammar or terms.
3	The interpretation is generally comprehensible but not very coherent. It contains multiple instances if hesitation, repetition, self-correction or redundancy and multiple inappropriate usages of grammar or terms.
2	The interpretation is at times incomprehensible and lacks coherence. It contains many instances if hesitation, repetition, self-correction or redundancy and many inappropriate usages of grammar or terms.
1	The interpretation is mostly incomprehensible and very incoherent due to hesitation, repetition, self-correction or redundancy and inappropriate usages of grammar or terms.

[1] Developed by the author, Julie E. Johnson, in 2016 as a prototype to be tried, tested, and refined. Modeled on the scales used for Taiwan's English and Chinese Translation and Interpretation Competency Examinations (ECTICE).

APPENDIX C

Two-part scale developed for Taiwan's

English and Chinese Translation and Interpretation Competency Examination

(ECTICE)

Student's name: _____

□ Midterm
□ Final

Consecutive Interpretation Rating Scales

Please circle your rating of the student's performance on each of the scales below.

Accuracy

Level	Description
5	The message in the interpretation is the same as that in the original speech. It contains no errors.
4	The message in the interpretation is similar to that in the original speech. It contains one or two minor errors.
3	The message in the interpretation is slightly different from that in the original speech. It contains one major error or many or minor errors.
2	The message in the interpretation is very different from that in the original speech. It contains two or more major errors.
1	The message in the interpretation is completely different from that in the original speech.
0	No interpretation is produced.

Delivery

Level	Description
5	The interpretation is fully comprehensible and very coherent with few instances of hesitation, repetition, self-correction, and redundancy. It contains few inappropriate usages of grammar or terms.
4	The interpretation is mostly comprehensible and coherent with some instances of hesitation, repetition, self-correction, and redundancy. It contains some inappropriate usages of grammar or terms.
3	The interpretation is generally comprehensible but is not very coherent and has many instances of hesitation, repetition, self-correction, and redundancy. It contains many inappropriate usages of grammar or terms.
2	The interpretation can be understood with great difficulty.
1	The interpretation cannot be understood at all.
0	No interpretation is produced.

Rating scales for accuracy and delivery of Taiwan's ECTICE interpretation exam. Source: Liu, M. (2013). Design and analysis of Taiwan's interpretation certification examination. In D. Tsagari & R. van Deemter (Eds.), *Assessment issues in language translation and interpreting.* (pp. 163–178). Frankfurt: Peter Lang

APPENDIX D

Pretest Packet including Opt-out Consent Form

Appendix D credit and copyright notes

Existing instruments in order of appearance in this packet:

Cognitive and Affective Mindfulness Scale (CAMS-R)

Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment*, *29*(3), 177–190.

Instrument available free online, for example at:
https://ogg.osu.edu/media/documents/MB Stream/CAMS-R.pdf

Ten-item Perceived Stress Scale (PSS-10)

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on Applied Social Psychology* (p. 31-67). Newbury Park, CA: S

Originally developed as the PSS-14: Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24,* 385-39

This scale has been used by the American Psychological Association for its annual *Stress in America* report since 2007. For example:

American Psychological Association (2014). *Stress in America. Are Teens Adopting Adults' Stress Habits? http://www.apa.org/news/press/releases/stress/?tab=3*

Instrument available free online, for example at:
http://www.macses.ucsf.edu/Research/Psychosocial/pss10.php

d2 Test of Attention

Brickenkamp, R., & Zillmer, E. (1998). *d2 Test of Attention*. Oxford, England: Hogrefe.

Testing manual available for purchase from Hogrefe, LTD:
http://www.hogrefe.co.uk/d2.html

Note that the not-to-scale copy provided here is for information only. The test can only be administered and scored using the original testing sheets and masking templates provided with the testing manual.

Profile Questionnaire

Please fill out the following information:

Gender: ☐ Male ☐ Female

Age:

GSTILE language combination: A: _____ B: _____ C: _____
Other (e.g. A-A, A-C-C): _____

Degree track: ☐ MATI ☐ MACI ☐ Other: _____

Ethnicity: _____

How much experience do you have with meditation?

☐ none ☐ a little ☐ a fair amount ☐ quite a lot ☐ extensive

If "quite a lot" or "extensive," please describe:
_____

_____
_____

STOP

DO NOT TURN THE PAGE
PLEASE WAIT FOR FURTHER INSTRUCTIONS
CONSENT / OPT-OUT FORM

CONSENT FORM

What follows are some quick, simple activities used in cognitive psychology that may be relevant to interpreting. We will be doing them again later in the semester to see if there has been any change. For research purposes, I may also ask your professor to share with me some interpreting exam results from this course to see if there are any connections.

I am an Associate Professor here in GSTILE, and the purpose of my research is to understand how interpreting programs can best help students become proficient interpreters.

Please read the information below, then check the appropriate box to let me know whether it is OK with you that I include your data in my analyses.

Privacy/Confidentiality
I will keep all of this classroom data secured and confidential unless disclosure is required by law. It will not be shared with your professors. In any report I publish, I will not include information that will make it possible to identify you or any individual participant.

The Consent Forms will be destroyed after 7 years. The raw coded data, which no one—not even me—can then link to you personally, will be kept indefinitely for research purposes.

Your agreement to allow this research use of your classroom data is voluntary and you may refuse to have it included. There is no penalty for opting out; doing so will not affect your course grades in any way. Your professor will not know who, if anyone, opts out.

Please ask me any questions you have now. If you have questions later, please contact me: **Julie Johnson**, **415-385-0822** (cell) or **jejohnso@miis.edu**. If you have questions or concerns about your rights related to this study, you may contact the following member of the Middlebury Institutional Review Board: Dr. Michael Sheridan at irb@middlebury.edu

CONSENT INSTRUCTIONS

Please check the appropriate box below to let me know whether you agree to let me use your classroom data as describe above.

☐ Yes! You can use my data as described above. *(Thank you!)*

☐ No. I prefer to opt out.
I understand that, except for this form, the contents of this folder will be removed and destroyed. Likewise, if my professor provides interpreting exam results for this research, my own will be deleted.

_____ _____ _____
Name *(please print clearly)* Signature Date

_____
Primary (A or B language) T&I language program

(e.g. Chinese, Spanish, or Japanese)

STOP
DO NOT TURN THE PAGE
PLEASE WAIT FOR FURTHER INSTRUCTIONS

People have a variety of ways of relating to their thoughts and feelings. For each of the items below, rate how much each of these ways applies to *you*.

1 Rarely/Not at all	2 Sometimes	3 Often	4 Almost Always

_____ 1. It is easy for me to concentrate on what I am doing.

_____ 2. I am preoccupied by the future.

_____ 3. I can tolerate emotional pain.

_____ 4. I can accept things I cannot change.

_____ 5. I can usually describe how I feel at the moment in considerable detail.

_____ 6. I am easily distracted.

_____ 7. I am preoccupied by the past.

_____ 8. It's easy for me to keep track of my thoughts and feelings.

_____ 9. I try to notice my thoughts without judging them.

_____ 10. I am able to accept the thoughts and feelings I have.

_____ 11. I am able to focus on the present moment.

_____ 12. I am able to pay close attention to one thing for a long period of time.

In the last month, how often have you…?

	very often	fairly often	some-times	almost never	never
1. Felt confident about your ability to handle your personal problems?					
2. Felt that you were on top of things?					
3. Been able to control irritations in your life?					
4. Felt that things were going your way?					
5. Felt nervous and stressed?					
6. Been angered because of things that were outside your control?					
7. Been upset because of something that happened unexpectedly?					
8. Felt difficulties were piling up so high that you could not overcome them?					
9. Found that you could not cope with all the things that you had to do?					
10. Felt that you were unable to control the important things in your life?					

Name: _____

Age: _____ Sex: ☐ male ☐ female

Handedness: ☐ L ☐ R

Years of education: _____

Occupation: _____

d2 Test of Attention

Rolf Brickenkamp & Eric A. Zillmer

Examiner: _____ Date: _____

Example: d" d d' d"

Practice line:

d"	p"	d'	d'	d"	d"	p"	d'	d"	d"	p'	d'	d"	d"	d'	p"	p"	d"	d"	d"	p"	d'	d'
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	

	Raw Score	Percentage	Percentile Rank	Standard Score
TN (total number)				
Omissions: E1				
Commissions: E2				
E (errors)				
TN-E (total-errors)				
CP(concentration performance)				
FR (fluctuation rate)				

S-Syndrome: ☐

Order number #01 013 22

TN
E1, E2
CP
1
2
3
4
5
6
7
8
9
10
11
12
13
14

APPENDIX E

Qualifications of Mindfulness Trainer

VITA

Marianne Bingham Rowe, MS
Marriage and Family Therapist
Mindfulness Meditation Teacher
Founder: Mindful Education Project
Co-founder: Monterey Bay Meditation Studio

Contact Information:
529 Central Ave., Suite 208
Pacific Grove CA 93950
(831) 373-1017
mrowe@pacbell.net

Websites:
www.mariannerowe.net
www.mindfuleducationproject.net
www.montereybaymeditation.com
www.mindfulpainting.com

EMPLOYMENT AND EXPERIENCE

Marriage and Family Therapist (CA Lic. #MFC22067)
Private Practice; Pacific Grove CA
1986 - Present

a) Individual, couples and family therapy;
b) Expertise in working with children and adolescents;
c) Consultation and in-service training for educators (preschool through university);
d) Published author of articles pertaining to child development and parenting issues;
e) Developer and teacher of over 15 Mindfulness Meditation courses, workshops and retreats;
f) Founder, Mindful Education Project (teaching Mindfulness to students and educators, in Monterey Co. elementary and high schools, and at CSUMB since 2006);
g) Developer and co-facilitator of weekend retreats and therapeutic groups for couples;
h) Founding member, officer and board member of Monterey Co. Chapter, California Assn. of Marriage and Family Therapists;
i) Board member and clinical consultant to Suicide Prevention and Crisis Center;
j) Consultant to Parents Place and the Buddy Program of the Monterey Peninsula;
k) Co-presenter at "The Contemplative Academy" conference; The Assn. for Contemplative Mind in High Education;
l) Course Leader for Authentic World/Integral Center, Train-the-Trainer Intensive (6-month training program in Intersubjective Meditation);
m) Co-facilitator of Authentic Relating Games, a relational practice of intentional connection and presence;
n) Co-founder of Monterey Bay Meditation Studio;
o) Teacher of Integral Life Practice at Osher Lifelong Learning Center;
p) Specialized credentials, training and awards:

- EMDR (Eye Movement Desensitization and Reprocessing), Levels I & II;
- Thought Field Therapy, Levels I & II;
- Sandtray therapy with children and adults;
- Extensive training and experience in Play Therapy;
- National Board Certified Clinical Hypnotherapist;
- Extensive training in Mindfulness & Contemplative Education, as well as
- Intersubjective Meditation & Interpersonal Neurobiology;
- Listing in *Who's Who Among Human Services Professionals*;

q) Areas of specialty: Children/Adolescents, Mind/Body, Anxiety/Phobias, Depression, Grief/Loss, PTSD, Parenting/Step-parenting, Mindfulness, Relationships/Couples

Co-teacher and Adjunct Faculty

Middlebury Institute of International Studies at Monterey; Monterey, CA
2013-Present

a) Co-creator and co-teacher of mindfulness curriculum for graduate students.

Clinical Consultant
Suicide Prevention & Crisis Center of Monterey & San Benito Counties; Pacific Grove CA
1989-1992

a) In-service training and case consultation for crisis line volunteers and staff;
b) Supervision and training for Survivors of Sudden Death program.

Children's Therapist
Smoky Mt. Area Mental Health; Marble NC
1979-1982

a) Individual, group, and family therapy with children and adults;
b) Educational and diagnostic evaluations (grades K-12);
c) Consultation with hospital and school staffs, physicians, and social service agencies;
d) Counselor at therapeutic camps for children and adolescents;
e) In-service training for nurses: preparing children for hospital procedures;
f) Crisis intervention.

Children's Specialist
Massac Co. Mental Health and Family Counseling Center, Inc.; Metropolis IL
1977-1978

a) Individual, group, and family therapy with children and adults;
b) Consultation with school, day care, and hospital staff;
c) Created and implemented Child Life program at local hospital;
d) Creator of therapeutic games for children.

Teacher
Pacific Oaks Children's School; Pacific Grove CA
1988-198

Galloway School; Atlanta GA
1974-1976

GRADUATE EDUCATION & TRAINING

Child Development Specialist Program
Peabody College (now Vanderbilt University); Nashville TN
MS, Psychology, 1976-1977

a) Masters program designed by the American Psychological Association;
b) Academic training -- Intervention strategies for behavior disorders, psychological

and intelligence testing, educational assessment, consultation, coding systems for in-school observation, play therapy, and systems intervention techniques;

c) Practicum experience -- DeDe Wallace Mental Health Center: children's therapist, camp counselor for children with behavior problems, educational consultant.

UNDERGRADUATE EDUCATION

Hollins College; Roanoke VA
BA, Psychology, 1970-1974

Training, Curriculum Development, Teaching, & Presentations
Related to Mindful and Contemplative Education

Marianne B. Rowe, MS, LMFT
Founder, Mindful Education Project
529 Central Ave., Ste. 208, Pacific Grove, CA
(831) 373-1017 ~ mrowe@pacbell.net
www.mariannerowe.net ~ www.mindfuleducationproject.net

2005
Curriculum Development: "Introduction to Mindfulness" courses for students and educators.
Training: Meditation teachings and 3-day retreat with His Holiness the Dalai Lama.

2006
Teaching: "Introduction to Mindfulness" and additional mindfulness courses at CA State University of Monterey Bay. These courses continued to be offered through 2012.

2007
Training: "Mindfulness in the Classroom" conference. Groundbreaking gathering for implementing mindfulness in schools. Mindful Schools and Assn. for Mindfulness in Education.
Training: "Mindfulness & Psychotherapy" conference. Jack Kornfield, Daniel Siegel, Thich Nhat Hahn.
Training: "Mindfulness and Healing: Applications of Neural Integration". Daniel Siegel.

2008
Curriculum Development and Teaching: "Introduction to Mindfulness," "Peace from the Inside Out: Mindful Relationship with Anger, Depression & Anxiety," "Presence of Mind & Heart: Practicing Mindfulness in Relationships," and "Shifting Gears: Mindful Flow through Change & Uncertainty". These courses continue to be offered.

2009
Training: "Mind & Life Institute: Educating World Citizens for the 21st Century". International convening of educators, contemplative practitioners and researchers exploring "How will we educate people to be compassionate, competent, ethical, and engaged citizens in an increasingly complex and interconnected world?"
Training: "Mindfulness in Education: Foundation for Teaching & Learning" conference. Assn. for Mindfulness in Education.
Training: "The Heart of Change: Finding Wisdom in the Modern World". Teachings by His Holiness the Dalai Lama.

2010
Curriculum Development and Teaching: "Mindfulness in the Classroom: Teaching through the Left & Right Hemispheres of the Brain". This course continues to be offered.

Co-presenter: "Integrative Mental Health" at "The Contemplative Academy" conference. The Assn. for Contemplative Mind in Higher Education
Training: "Eight Verses for Training the Mind". Teachings by His Holiness the Dalai Lama.
Training: "Neurobiology of Awakening". Rick Hanson, PhD, & Richard Mendius, MD.
Training: "Introduction to Mindfulness for the Adolescent for Professionals". Gina Biegel.
Training: "Equanimity". Rick Hanson, PhD.

2011
Program Development and Teaching: Implemented Mindful Education Project at Sherwood Elementary, Salinas, CA. Training 26 educators (administrators, staff, and faculty) and over 375 students (K-6th grade). This program continued to be offered through 2012.
Presenter: Facilitated "Race to Nowhere" panel discussion after screening of the film.
Training: "Intersubjective Meditation: Train the Trainers Intensive". 5-month training program.
Training: "Wisdom 2.0 Youth: Mindfulness and Technology" conference.
Training: "Mindfulness in Education: A Foundation for Teaching & Learning" conference. Stanford University and Assn. for Mindfulness in Education.

2012
Facilitator: "Intersubjective Meditation: Train the Trainer. 5-month intensive training program.
Co-facilitator: "Authentic Relating Games. Bi-monthly group practices fostering deep connection and mindful relationship. These gatherings continued through 2013.

2013
Program Development and Teaching: Implemented Mindful Education Project courses for students and teachers at York School, Monterey, CA. Training 10 educators and 16 students.
Curriculum Development and Teaching: Co-developed "Introduction to Mindfulness for Interpreters" course for graduate students at Monterey (now Middlebury) Institute for International Studies, Monterey, CA. This course was base for a research study of mindfulness training and interpreting performance. This course continues to be offered at MIIS.
Facilitator: "Intersubjective Meditation: Train the Trainer". Course leader in this 6-month intensive training program.
Co-Teacher: "Mindful Painting: Presence in the Moment". 2-day workshop focusing on bringing mindful awareness to the creative process. This workshop continues to be offered.
Co-Facilitator: "Mindful Painting: Presencia en el Momento". 4-day retreat focusing on mindfulness, creativity, and cultural connection in San Miguel de Allende, Mexico.

2014
Training: "Brainstorm: The Hidden Power of the Adolescent Mind"; Daniel Siegel, MD

Training: "Bridging the Hearts and Minds of Youth: Mindfulness in Clinical Practice, Education & Research". 3-day international conference with Amy Saltzman, Daniel Siegel, Congressman Tim Ryan, and others.

2015

Curriculum Development and Teaching: "De-stressathon for Teens: Breathing Space for Calming & Connecting". This half-day retreat continues to be offered.
Facilitator: "Aletheia"Weekend relational meditation intensive.
Co-facilitator: Faculty and Staff Contemplative Retreat. Middlebury Institute of International Studies

2016

Co-Founder and Teacher: Monterey Bay Meditation Studio.
Co-Facilitator: "Contemplative Pedagogy Retreat"; Middlebury Institute.
Curriculum Development and Co-Facilitator: "The Educators' Retreat". A day-long retreat for educators focusing on cultivating mindfulness and compassion through personal practice and in the classroom. This retreat continues to be offered.
Curriculum Development and Facilitator: "The Missing Link: Kindness and Compassion as Key to Healing and Transformation". Day-long retreat for those in academic and healing professions, focusing on cultivating compassion for self and others. This retreat continues to be offered.
Curriculum Development and Teacher: Several courses in the Mindful and Compassionate Living Series, focusing on engaging awareness and kindness while moving through life's challenges.
Curriculum Development and Facilitator: "Deep Nourishment". A day-long retreat of meditation, gentle movement, relational practices, and reflection intended to inspire clarity and renewal.
Curriculum Development and Co-facilitator: "Waking Up in the Wild". A series of retreats designed to engage practice of mindfulness and compassion in natural settings, including the forest, ocean, rivers, and mountains.
Curriculum Development and Teacher: "Drop-in Meditation Classes for Educators." A discussion and practice group designed specifically for educators interested in bringing mindfulness and compassionate awareness into the classroom and school environment.
Training: "The Art of Meditation". Month-long teachings by Adyashanti.
Training: "Self-Compassion". Psychotherapy Networker course.
Training: "Embodying the Open Ground". Year-long meditation training with Dustin di Perna.
Co-Facilitator: "Authentic Relating Comprehensive". 3-month intensive in relational skills and process.
Training: "The Art and Science of Awe". Day-long workshop exploring research and experiencing of awe, offered by UC Berkeley's Greater Good Science Center.

APPENDIX F

Mindfulness for Interpreters Course Documents and Consent Forms

(In order used)

Course description
Mindfulness for Interpreters
Fall 2014
Fridays 12-2
McGowan 210

Prof. Julie Johnson with Marianne Rowe, MFC

The primary purpose of this course is to support student interpreters by helping them develop some of the general cognitive and affective abilities that underlie interpreting. These include the ability to focus, sustain, and shift one's attention, to be at once alert and relaxed, and to handle internal distractors like performance anxiety and self-criticism.

The course, however, is open to all MIIS students. It does not involve any interpreting-like tasks, but rather builds these abilities through practice at simply paying attention in the present moment on purpose and non-judgmentally.

The course is not about performing, but simply experiencing. There will be no tests, and the grade is a simple participation-based pass/no pass. Classes will consist of guided mindfulness meditation and discussion. With concentration on the breath, you will learn to focus your attention and develop awareness of your own sensations, thoughts and emotions as they occur, with an attitude of compassion for yourself and for others.

Outside of class, you will be asked to practice on your own 10+ minutes a day, and invited to read key research on the foundations, mechanisms and neuroscience of mindfulness—how it is the mind can and does change the brain through intentional awareness and acceptance.

Beyond potential benefits for interpreters, mindfulness creates space for insight, fosters a sense of connectedness, and cultivates general wellbeing. In recent decades, Western science has empirically found, for instance, that mindfulness can decrease blood-pressure, cholesterol, cortisol (stress hormone) levels, anxiety and depression, while enhancing immune system functioning, resilience, coping skills, communication, quality of relationships, self-awareness, and self-trust.

By enrolling in this course, you will also be contributing to novel empirical research on the effects of such mindfulness particularly as it relates to interpreting. For this reason, you will be asked to sign a consent form agreeing that data collected from you during the course under a pseudonym (brief surveys, an interview, a focus-group discussion) can be used for research purposes.

Mindfulness for Interpreters Course
Detailed content of class sessions and retreat

Class 1: Overview
Definition and Benefits of Mindfulness
Guided Meditation: Bringing Awareness to Breath
Course Overview
- Schedule and Assignments
- Introduction of Practice Journal

Description of Research: Purpose, Forms
Assignments for Week
Guided Meditation: Personal Motivations for Mindfulness Practice (Body, Heart, Mind)

Class 2: Beginning with Awareness of Posture and Breath
Guided Meditation: Connecting with Self
Bringing Attention to Attention: How we direct attention and the qualities of mindful attention
Participant Intro's
Teaching: Definition of Mindfulness
Discussion: Bringing Mindful Attention to Interpreting
Teaching: Kindness and Compassion for Self and Others
Teaching: Body as Foundation for Mindful Awareness
Guided Meditation: Body Position and Body Scan
Discussion of Experience
Teaching: Neuroscience of Mindfulness
Guided Meditation: Awareness of Breath
Discussion of Experience
Announcements and Assignments
Closing Poem

Class 3: Mindfulness of Sensations: Body, Emotions, and Thoughts
Guided Meditation: Opening Mindful Awareness
Discussion: Experiences with Daily Practice, Mini-modules, and Readings
Review of Last Class
Teaching: Attention and Awareness
Discussion: How Attention and Awareness Come to Play in Interpreting
Practice: Mindful Movement
Teaching: Meeting Comfort and Discomfort
Practice: Mindful Eating and Sensing
Discussion of Experience
Teaching: Relationship of Body, Thoughts and Emotions
Guided Meditation: Awareness of Internal Sensations and Relationship to Them
Discussion of Experience
Announcement and Assignments
Closing Poem

Class 4: "Equanimity and Flow"

Guided Meditation: Elements that Foster Equanimity
Discussion: Experiences with Daily Practice, Mini-modules, and Readings
Review of Previous Classes
Teaching: Enhancing Equanimity and Awareness of Flow

- Let it Go and Let it Be
- Stress = Discomfort x Resistance
- Definitions of Equanimity
- Equanimity as Gateway to Compassion

Guided Meditation: Contemplation of Phrases for Developing Equanimity
Discussion of Experience
Teaching: Brain Evolution
Discussion: How an Attitude of Equanimity affects Interpreting Practice
Teaching: Acceptance of Change → Awareness of Flow
Guided Meditation: Lake Meditation
Discussion of Experience
Announcements and Assignments
Closing Poem

Class 4: Opening the Heart: Cultivating Compassion & Lovingkindness
Guided Meditation: Expanding Circles of Motivations for Practice (Beyond the Personal)
Discussion: Experiences with Daily Practice, Mini-modules, and Readings
Review of Precious Classes
Teaching: Bringing Mindfulness to Relationships: With Ourselves and Others
Discussion: Attention to Deeper Meaning and Intention in Interpreting
Guided Meditation: Cultivating Self-Compassion
Discussion of Experience with Highlight on How Self-compassion Plays in Interpreting
Teaching: Cultivating Compassion
Guided Meditation: Cultivating Lovingkindness
Discussion of Experience
Overall Summary, Final Comments and Questions
Guided Meditation: 3-D Circle of Gratitude

Half-day Retreat: Cultivating Awareness (if possible, held between Class 3 and Class 4)
Held off-campus in serene, wooded, oceanside setting.
Retreatants are silent upon entering, through lunch, and until leave at end of day.
Facilitators are only ones that speak.
Rather than discussions between experiences, retreatants are invited to journal reflections and/or respond to writing prompts.

Opening Bell
Welcome
Context for Retreat

- Intention
- Container
- Why Silent?

- Agreements (Honor Self, Extend Regard, Confidentiality)

Avenues

- Sitting (Awareness of Self)
- Movement (Awareness of Body)
- Sensing (Awareness of Environment)
- Relational (Awareness of Connection with Others)

Invitation (Non-judgmental Noticing of Openings and Contractions)
Overview of Day
Guided Meditation: Grounding into Present and Setting Intention
Journaling
Practice: Drawing the Breath (Elizabeth McKenzie, ACMHE 2013 conference)
Journaling
Guided Meditation: Wheel of Awareness (Daniel Siegel)
Journaling
Contemplative Lunch: Engaging the 5 Senses
Practice: Opening the Body through Yoga
Relational Practice: Silent Noticing and Connection
Journaling
Reflections on Experiences of Day: Writing with Sentence Stems
Whole Group Creative Practice: Writing/Drawing Reflections
Closing Remarks
Collective Shavasana and Blessing
Closing Bell

Class 6: Focus Group

Set Context and Explain Process
Guided Meditation: Connect to Self
Practice:
What does Stress/Attention/Mindfulness mean to you?

- Write notes on note cards
- Discuss with partner
- Whole group sharing

What is the most important thing mindfulness has done (or you hope it will do) for you?

- Whole group sharing with note-taking on large pad

Suggestions/requests for future courses?

- Whole group sharing with note-taking on large pad

Paperwork: course evaluations; Video-use and Follow-up consent form
Guided meditation: Self and Other Acknowledgment

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CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Thanks for your interest in participating in this study as part of the Mindfulness for Interpreters course. I am the professor who developed and is teaching this course in collaboration with an experienced mindfulness trainer.

I am conducting this study as part of my dissertation research for a doctorate in education from University of San Francisco. My faculty supervisor for this study is Dr. Mathew Mitchell, a professor in the School of Education at University of San Francisco.

Below I describe the research procedures and explain your rights as a participant. You should read this information carefully. If you agree to participate, you will sign in the space provided to indicate that you have read and understand the information on this consent form. You are entitled to and will receive a copy of this form.

What the Study Is About
The purpose of this study is to examine the effects of mindfulness training for students learning to interpret.

What I Will Ask You To Do
During this study you will receive 12 hours of training by an experienced mindfulness trainer. The group training will include mindfulness meditation and some gentle movement. With concentration on the breath, you will learn to focus your attention and develop awareness of your own sensations, thoughts and emotions as they occur, with an attitude of compassion for yourself and for others.

You will also be asked to practice for 10+ minutes a day on your own and note what you experience. For this, you will receive a Practice Guide and Journal. That journal is yours to keep and will remain private—you will not be asked to share with anyone what you write in it.

For research purposes, you will be asked each week to complete a short survey on how much time you practiced that week and what you are experiencing. You also will be asked to complete a final survey asking for your feedback and suggestions.

During the final weeks of the semester, after the four-week training, you will be invited to share your thoughts in a short individual interview with me and then participate in a 2-hour in-class focus group with the other participants.

Duration and Location of the Study
The training will be spaced out over the next four regular class sessions on and one four-hour retreat at Asilomar Conference Center in Pacific Grove on November 15.

Potential Risks and Discomforts
I do not anticipate any risks or discomforts to you from participating in this research. However, for some individuals, paying conscious attention to one's bodily sensations, thoughts and feelings can at first be uncomfortable or make those feelings seem stronger.

If you have experienced past traumas or abuse, paying attention to your own inner experience might cause these to resurface. If you experience addictions, these could feel heightened. Also, it can be challenging to sit with oneself, and some individuals might not like what they discover about themselves.

As you become more aware of your own inner experience, your typical reactions, behaviors, and ways of communicating may also change. People close to you may be uncomfortable with that, or the dynamics of your relationships may change.

The training, however, will be in a safe environment, under the guidance of an experienced mindfulness trainer who is also a longstanding licensed marriage, family and child therapist. I encourage you to discuss with her any concerns or discomforts that arise for you at any time.

You may choose to withdraw your consent and discontinue your participation at any time during the study without penalty other than not receiving credit for this elective course.

Benefits
The possible benefits to you of participating in this study are:

- Increased ability to focus and think clearly, even under stressful conditions
- Attentional strength and flexibility
- Enhanced emotional stability and sense of well-being
- Decreased feelings of stress, anxiety and depression
- Improved physical health and performance
- Expanded compassion and feeling of connection within oneself and with others

Additionally, your participation will contribute to understanding of how interpreting programs can best help students become proficient interpreters. It will also help the researcher and trainer refine the content and logistics of the training for future students.

Privacy/Confidentiality
I will keep confidential any data you provide in this study unless disclosure is required by law. In any report I publish or presentation I give, I will not include information that will make it possible to identify you or any individual participant unless you first explicitly authorize me in writing to use the elements in question for that purpose.

I will not share with your other professors or anyone else anything you do or say during the training. Out of respect for others and the integrity of the research, you similarly agree to keep confidential anything that fellow participants do or say during the training.

Research data collected in the context of this course will be kept secure in a locked cabinet and/or password-secured online folder. This includes survey responses as well as interview and focus-group recordings and transcripts. You will also be given the opportunity to read and revise or clarify the transcript of your interview and of your comments during the focus group.

Any materials containing personal identifiers will be destroyed or deleted after 7 years. All

coded raw data not traceable to you will be kept indefinitely. The data are being kept for these time periods to enable possible follow-up studies and later reanalysis of the data for other research purposes.

Compensation/Payment For Participation
There is no payment or other form of compensation for your participation in this study other than 1 unit of credit for the course.

Voluntary Nature of the Study
Your participation is voluntary and you may refuse to participate without penalty other than not receiving credit for the Mindfulness for Interpreters course. Furthermore, you may skip any questions or tasks that make you uncomfortable. You may discontinue your participation at any time without penalty other than not receiving credit for the course. In addition, I, as the researcher, have the right to withdraw you from participation in the study at any time. Participation, nonparticipation or withdrawal from the study will not affect your grades in other courses any way.

Please ask any questions you have now. If you have questions later, please contact me, **Professor Julie Johnson**, at **415-385-0822 (cell)** or **jejohnso@miis.edu**.

If you have questions or concerns about your rights as a participant in this study, you may contact the chair of the Institutional Review Board for the Protection of Human Subjects at University of San Francisco or at Middlebury College:

Dr. Terrance Patterson at IRBPHS@usfca.edu
Dr. Michael Sheridan at irb@middlebury.edu

I HAVE READ THE ABOVE INFORMATION. ANY QUESTIONS I HAVE ASKED HAVE BEEN ANSWERED. I AGREE TO PARTICIPATE IN THIS RESEARCH PROJECT AND I WILL RECEIVE A COPY OF THIS CONSENT FORM.

_____ _____ _____
PARTICIPANT'S NAME (printed) *PARTICIPANT'S SIGNATURE* *DATE*

_____
*LANGUAGE**

* Please indicate the primary GSTILE language program in which you are enrolled (e.g. Chinese, Japanese, Spanish…)

Mindfulness Practice Guide and Journal Sample Page

Day 1 "Beginning with Awareness of Posture and Breath"

Mini module: "Pebble in the stream"
Purpose/Focus: Non-efforting

How: Take a moment to sit quietly. Breathing deeply, slowly, imagine being a pebble falling through the water of a clear stream—slowing sinking to the soft, sandy bottom, gently carried by the current until at complete rest on the riverbed. Allow yourself to be at peace in this place for now, totally complete and satisfied in the present moment.

Experience: What happened? (sensations, thoughts, feelings)

Experiences outside of mindfulness practice
(Note anything you noticed today happening in your body, your mind, emotions, reactions…)

Interpreting-related experiences
(Note anything you noticed today happening in class or practicing outside of class— body, mind, attention, emotions, reactions…)

"Over against all the world with its turbulance, distraction and worry, one should cultivate a style of mind that can reach through to an inner stillness and calm. The world cannot ruffle the dignity of a soul that dwells in its own tranquility. Gradually, this serenity will begin to pervade our seeing and change the way we look at things." —John O'Donohue

Log 1

* Required

- **Name** * Please enter your name (in parentheses, please include the name you go by, if different)

- **I am inspired to practice mindfulness for my physical being because... ***

3. **I am inspired to practice mindfulness for my emotional being because... ***

4. **I am inspired to practice mindfulness for my cognitive being because... ***

5. **I am inspired to practice mindfulness for my relationships because... ***

6. **Comments on Monkey Mind article** * Please note how you related to this article and any questions it raised for you.

7. **Comments on "Meditation: It's Not What You Think" article** * Please note how you related to this article and any questions it raised for you.

8. **Comments on "The Compassionate Interpreter" article** * Please note how you related to this article and any questions it raised for you.

9. **Questions I have about mindfulness or about this course:**

Logs for Weeks 2 - 5

* Required

- **Name** * Please enter your name (in parentheses, please include the name you go by, if different)
- **Since the last class, how many times have you practiced meditating for 10+ minutes outside of the training sessions?** * Please refer to your Practice Guide and Journal, and give your best, honest estimate.
- **Since the last class, how many times have you tried a daily-life or mini module?** *
- **Please describe what you have been experiencing this week during mindfulness practice** *
- **What have you been experiencing outside of practice, in general?** *
- **What have you been experiencing when interpreting (in class and when practicing)?** *
- **Anything you would like to add? Any questions?**

Final Reflection

Consider this final reflection like a personal interview. There are no right or wrong answers. Please set aside enough time to answer the questions thoughtfully. You may respond either in writing or orally (recorded).

Due date: Monday December 1
Submitting: Just upload your Word or mp3 sound file to the *Submit Final Reflection here* button on Moodle.
File name: Please use the following format: First name_Last name (e.g. Julie_Johnson)

Section 1: The Mindfulness for Interpreters course

1. Why did you take this course? What did you hope to get out of it?

2. Please describe your experience of this course and of practicing mindfulness. What has it meant for you? What changes, if any, have you noticed in yourself?

3. If you attended the retreat, please describe any ways in which that particular experience was meaningful or helpful to you.

4. What now? In what ways would you like to continue your mindfulness practice? What do you need in order to do that?

5. Do you have any suggestions for this course in the future?

Section 2: Interpreting

6. For you, what is good and what is hard about being a graduate student in the T&I program here?

7. What do you find most challenging about interpreting and learning to interpret?

8. Please describe any changes you have noticed over the past month in your ability to focus and sustain the kind of attention you need to interpret effectively.
To what do you attribute those changes?

9. Please describe any changes you have noticed over the past month in how you handle interpreting-related stress. To what do you attribute those changes?

10. In your own subjective experience, how has your overall interpreting performance evolved over the past month? Do you feel it has improved? Declined? Stayed about the same? Why do you think that is?

MFI-FA14: Focus Group
December 4&5, 2014

Approx Time	Who	Activity	Notes/Materials
4:30	jj & mr	Prep snacks, sitting area, white board, etc. Video cam set up (on back table?) Screen/computer setup	• Video cam from Media Services • Snacks (jj & mr) • Usual bag of materials • Zafus • banner? • Sign in
5:00	jj mr	Welcome, purpose, process (1 minute) Announcements: • if need to leave early, please fill out and leave video consent form (indicate where) Short opening meditation (few minutes)	
5:10	jj	Screen *The Inside of Interpreting*	Computer
5:25	**jj** : prompts, timing **mr:** invite discussion with open-ended probing questions (jj may ask some, too)	Distribute pens, 3x5 cards within reach **Write word on white board and ask:** "What does ____ mean to you? How do *you* experience it? **Allow 1 minute for individual reflection** **Allow 2 minutes to share with 1 other person, or move directly to full-group expression & discussion** (8-10 min) Word (about <10 minutes total per word): [pick 3?] • **Stress** • **Attention** • **Mindfulness** (toward self and situations) Question: **What is the most important thing mindfulness has done (or you hope it will**	pens, 3x5 cards

		do) for you? (<10 minutes) **Anything else you would like to say or suggest?**	
6:15		Break	
6:25	jj	Course evaluations (play slide show)	Ss need computers
6:35	jj	Video/follow-up study consent forms* **Distribute, present, fill-out** [just keep for the moment, can be left in pile as leaving]	consent forms
6: 45	mr	Closing meditation	
6:50		End	

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Monterey Institute of International Studies
A Graduate School of Middlebury College

Permission to Use Video Recordings

I agree that photos and video footage in which I appear from the Mindfulness for Interpreters course can be used in multimedia productions that may be created to communicate the research and training experience to others, whether in person or via online means such as a website.

I **do / do not [circle one]** want to be identified by name.

My permission is contingent on the following restrictions: **[check all that apply]**

☐ None

☐ OK in principle, but I want to see the multimedia production before I definitively agree.

Email address to use: _____

Phone No. for second means of contact: _____

For later completion:

□ Other restrictions:

I have viewed:

_____

and **agree / do not agree [circle one]** to this use of footage of me as described above

Initials: _____ Date: _____

Permission to Contact for Follow-up Studies

[Check box if you agree, otherwise leave blank]

☐ I agree that I may be contacted in the future for related follow-up studies, knowing that I will be free at that time to decide whether or not I want to participate.

Name of participant: _____ [please print]

Signature of participant: _____

Date: _____

APPENDIX G

Focus Group Transcripts

Focus Group Transcript

Mindfulness for Interpreters

Fall 2014, Section A

Note: In the following transcript, "Julie" and "Marianne" refer to the co-instructors of the Mindfulness for Interpreters course: Julie Johnson and Marianne Rowe. The names/pseudonyms of the participants are as each individual requested on their consent form.

Julie	So for our conversation, that's my backup. Just in case anyone is talking really softly, then I can take the audio and the video together and maybe figure it out, right? So, what we'll do is I will successively give you three different words as three different themes, and ask you what that means to you and how you experience it. And you'll see that there are these, this, there's this scratch paper all around. Oh! So grab a pen or a pencil, um, if you don't have one just now. So our process for each will be that first I'll give you a generous minute just to use the scratch paper to kind of stream of consciousness, jot down what naturally arises for you in response to those questions, to kind of get clear in yourself what's coming up for you. And then I'll invite you to turn to somebody next to you and just chat for a couple of minutes privately between the two of you exchanging, um, your experiences. And then we'll, as a whole group, have a conversation about what came out of those smaller conversations. OK? So, our first theme, apropos for finals week, right?, is 'stress'. So, what—and this doesn't have to be just related to school or interpreting, but just in any sense—what does stress mean to you personally? And how do you experience it? How do you experience stress? What does it mean to you and how do you experience it? […] As you're ready, then you can just turn to the person next to you, uh, and I'll give you a couple of minute just to chat between yourselves about your answer as to what stress means to you and how you experience it. And when I sound the bell that will be your cue that it's been a couple of minutes, so maybe just start if you two, you two, you two.

	[*indecipherable individual conversations*]
Julie	We have one more minute so please make sure your conversation has gone both directions. […]
	[*indecipherable individual conversations*]
Marianne	So now, given what you've observed and shared about yourself, bringing that forward now to the whole group. Um, shares about what does stress mean for you, and how do you experience it?
Julie	And you're welcome to share from yourself or something that your partner said that's like, "Oh, wow, that's really a great comment."
Ana	So, we were, um, we agreed that we both feel very uncomfortable when we are under stress. And that we are moody, um, and I know we have neck pain.
Marianne	Both of you have neck pain.
Ana	Well, I have upper back pain […]
Laura	…And we also talked about interpreting, how we experience this stress. And as for me when I'm doing simultaneous interpreting, for instance, I make very, like, huge, horrible mistakes. With words. I hear a word and just, something else unrelated to that word. It's because I'm really under stress. And we have, sometimes for consecutive as we were saying, we have many holes. So we just put holes, missing, omissions, so that's stressful.
Marianne	So then, does the stress compound as you realize you're making a mistake and then there's more stress on top of that so it just, yeah.
Laura	Yes, yes, yes, and what I try to now is, well, thanks to mindfulness, is to just take a, take a big breath and just let it go. Like, it's, OK, it's an omission, but it's not the end of the world.
Marianne	Ah, yes, yes.
Laura	So, I try to think that way.
Marianne	Yes. Thank you.
Laura	Yeah.
Marianne	Other shares from your dialogue.
Abby	Well, Kris and I were talking about how stress relates to procrastination. The more we are stressed, the more we procrastinate. And to that end, we were talking about public speaking class and we have one week to prepare for the speech, but most of the time we wait until the last minute just because we don't want to touch it, don't want to touch it. And so we are stressed for the entire week until we get to the point where we sit and start to prepare for the speech. And then we realize that, "Huh, it's not that bad." So, we're just stressed for nothing. So, but, and then the next time it starts over again, we never learn from it. [*everybody laughs*] Well, realizing it doesn't really help, but, um, yeah. We were just talking about that.
Marianne	Anything Kris that you want to add?
Kris	Well, um, we come up with a way of coping with that kind of stress, which is that if we can start just, don't procrastinate and just start on day one, we wouldn't have to carry that stress for that entire week. But, as

	she said, for a whole semester we've had mixed success with that. [*everybody laughs*]
Marianne	Thank you.
Clarissa	I, I, um, I don't know if this is very, I have a flying phobia and I flew to Santa Fe this week, this Christ-, this Thanksgiving. Well, I still fly, but the wreckage that it does to my body is crazy. Like, I, I'm this close to having a heart attack, literally. I start seizuring. So try to swallow it the best I can and I cover my face so I don't bother anyone else, um, but this time I tried mindfulness. I got this program where this woman was talking (sort of reminded me of you) and giving me these steps up. And I just tried to focus on every little step that she was saying very calmly. So that the whole experience for me, just this, like, being in an airplane and basically meeting death, this, like, huge thing can be taken apart in little tiny pieces, you know, being mindful so that, I guess, stress doesn't overwhelm me, totally. And it kind of worked. I think it would've worked better if I had been more diligent about practicing this semester. But, but I mean, that's one form of stress. I think, that in another area of life, it's still that, like, that big thing that's so scary in front of you that, like, takes you over and wreaks damage on you when you don't take it apart little by little and work on it. Your speech, you know, or something.
Maria	Um, we were actually discussing, and it's, uh, the same for both of us pretty much, we were discussing how when we are put in a stressful situation, such as doing interpreting, that it, it can be a good thing, because it gives us this rush of energy. And so, uh, our mind starts working faster and, well, sometimes we start shaking, but, um, it does give us this extra boost of energy that we didn't have. So, we were discussing… yeah, it can be a good thing but at the same time it can only be a good thing if we manage to harness the stress. And so we can direct it and control it. Because otherwise it just becomes overwhelming and it turns into anxiety and then that is, like, crippling us. So.
Clarissa	To channel the stress.
Maria	Yeah.
Hannes	I agree with what you said. Because, for me, as I told you, for me there are two different types of stress. One stress is what I feel in interpretation and for me that's a very positive stress and I enjoy it because it gives me energy and I'm up there on the spot and I can focus and everything. But then there is a negative kind of stress that's pretty much things that happen in life and personal relationships or something that annoyed you or just things that didn't go well or things you have to organize, things that take up your energy. That can stress me so much that I can't focus during interpretation. And, uh, so yeah, so, what I was trying with mindfulness was not actually cope with the stress of interpretation because I think I like that stress. But more cope with the stress in the other part of my life.
Julie	There are those festering subterranean stresses, right? That are kind of there and they come into our awareness every once in a while and it's

	like, "OK, go away" but it can churn there.
Marianne	And as you were applying the mindfulness to the, that negative stress, anything that you became aware of, Hannes, in terms of what was effective or not effective, or just…
Hannes	I think, I found it interesting what you just said *[looking at Clarissa]* when you walked up the, up the stairway to the plane…
Clarissa	That was actually part of the meditation, but yeah, I could've meditated while I was walking up the stairs.
Hannes	Oh, OK.
Clarissa	So she had you just sort of walking up to your safe little, step by step.
Hannes	What I thought was really, really good in the class was being with other people and sharing this information and sharing the fact that you're stressed and hearing from other people that they have the same experience, um, so that, I don't know, that reaffirms yourself or that calms you down. Because you know that you're not the only person that, who experiences that stress. And that gives me energy, so whenever I feel that stress, I'm like, "You're not the only one and this is not the most stressful thing in the world and there's other people who have a lot of other things going on." So, putting my, myself into perspective, that's good.
Megan	On a similar note, when, Laura, when you were talking about omissions and holes in your notes, I was thinking, "Oh my God, that's so stressful for me." Because when I see all these holes, all of these circles X'ed out because I didn't get it, I start to feel really stressed and I start to think that I'm not going to be able to do this interpretation or I'm going to do but it's not going to come out well and I just would rather not do it. [*everybody laughs*] And can I just sit down. [*everybody laughs*] Um, and so knowing that that's a source of stress or, uh, concern for someone else is somehow comforting. I don't know why exactly, maybe because it's not just me, um, it's not a huge problem. It's something that we're learning how to do and how to deal with, but, um, taking notes is really hard, so.
Julie	It is.
Hannes	It's interesting that you say that because I, I feel like for myself I accepted the fact that interpretation and studying interpretation is the way, and I know that it's a long path. And that, I know that if I make a mistake now, I might not make it next week or next semester or next year or next month. So, funnily, in interpretation I put it into perspective and it doesn't stress me out because I feel like, "OK, last month I made that mistake but I'm not making it now anymore. And I might be better at this and that next month." But I cannot apply this consciousness in my personal life. When there's some, something, for instance, I don't know, random example, something that annoys you. I cannot put that into perspective. I could not say, "Oh, you know, this happened now but it'll be gone in a day or so." Strangely, I don't know why.
Clarissa	That's true.

Marianne	And that you're aware of it is a bridge.
Hannes	Yes, yes.
Megan	I'm going to think about that today. [*everyone laughs*]
Julie	For those who haven't spoken up, would anybody else like to contribute any final thoughts?
Suhey	Just to add to what Hannes was saying […] that's the way I look at stress. It's worrying about specific things that you know you can't change, but you're still worrying about them, even though you know you can't change them. And, um, I just don't know why.
Ana	It's worrying why that creates stress because you cannot change it.
Suhey	Then you should just feel like, "Well, there's nothing I can do about it," but no, you're like, "but I should be able to."
Estella	Yeah, we agree, we just discussed that we try so much, want to fix, actually there is nothing to be fixed. They are already done, the damage is already done. [*everybody laughs*] So, I feel really bad because the stress for me is like I, uh, so want to, uh, perform very well in an exam or in interpreting but if it did not end up well I would feel really frustrated. And if I feel frustrated it's even hard for me to concentrate or hard for me to organize my words in interpreting. And, um, I also experience procrastination, mainly before I go to bed. Um, there's nothing I need do more, just go to bed early because there is exam tomorrow. But I still you know, uh, like playing with my phone or something and stay up really late. What I found the solution is that I have a friend who never has problem of procrastination. She just, like, keep doing things like workaholic. So I spent a lot of time with her and it helped me with that. [*everybody laughs*]
Hannes	But sometimes that can be, sorry, I don't want to talk too much, but sometimes that can be unproductive. Because I feel like this semester I did a similar thing. So whenever there was something coming up that I felt worried about, I decided, "OK, I'm just going to work, and I'm not going to do this and that." So I kept myself very busy, not realizing that the things that actually worried me would pile up. And then I feel like there's a certain point where you can't pile up things any more. So, I don't know, sometimes you have to deal with things that worry you. Like, you can't just keep working and working and working. Because at some point your body will be like, "Stop now."
Vianney	We also spoke about the physical aspect of stress, like for example, when I'm stressed my jaw gets really tight. I don't sleep very well and because I don't sleep very well I get moody and irritated the next day. I also, I have a tendency when I'm stressed, and I sleep, I clench my hands. So when I wake up I have these holes on my hands. And it's really painful but I mean if I'm sleeping I don't realize it until I wake up. Also, like, hair loss, I get hair loss as well, so.
Julie	Takes its toll.
Vianney	Yes, it does.
Abby	I totally agree with you because I experience sleep loss now. Or whatever

	you call it. I would go to bed and I would wake up and, like, for something. But it's not that I'm consciously trying to wake up to do something, it's just that something wakes me up and I couldn't go back to sleep. And when I'm driving I've noticed that I have one hand on the wheel and one hand was just [*makes a fist*]. So, I don't know, just being tense.
Estella	It's interesting, for me I experienced just the opposite thing. I can't wake up. [*everyone laughs*] I feel sleepy, I can't wake up. So my sleeping time during this period is much longer than, like, a month ago.
Julie	It's another way that we cope, right, by procrastinating, putting things off, by sleeping and drawing into ourselves, all sorts of different ways. You know, in the literature they define stress, I'm not going to cite this exactly, but as, um, when we have to face certain demands, either external demands put on us or ones that we put on ourselves, but we feel that we don't have the resources to cope with those demands, to meet those demands. Hence the feeling of overwhelmingness and all of that.
Clarissa	I have a friend, it just, to speak to that, I have a friend who would never check her bank account because she was super poor. And, and she just did not, she didn't spend a lot of money but she didn't check her bank account either and, you know, she would use a credit card or whatever. But, um, the stress, like, boiled up inside of her. Then she got a really good job and she started checking her bank account all of the time. So we'd be hanging out and she'd bring out her phone and just, you know open, look at the numbers…[*everyone laughs*]
Julie	Look at all the money I have!
Clarissa	And the reason why she told me her past with this is because I commented, like, "Wow, you sure like to pull up your Bank of America application randomly." She said, "I didn't used to be like this, I used to have like a complex about it. But now that I know I have a solid paycheck…" and it was reassuring for her, um, because she had the resources.
Julie	Mhm, yeah… Ready for another theme? This time: what does 'attention' mean to you? So you can interpret that as you wish: attention, paying attention, or the lack thereof. And how do you experience it? How do you experience attention? We'll take just a minute or so to gather our thoughts individually. […] So as you're ready you can chat with your neighbor, but let's rotate a little bit. I'll get out of the way and then you can come over with Maria and we can just shift one counter-clockwise.
	[*indecipherable individual conversations*]
Marianne	So, bringing back to the group what you discovered in your, in your share with your partner.
Ana	Ok, so we were talking about attention or lack of attention and I was telling her that this, if not the biggest, it's one of my biggest weaknesses, this lack of attention. And that's why I wanted to take this course in order

	to try to focus on that and things. And how I experience it: I feel frustrated, I feel stupid, I want to give up, so. I really need to improve that, I need to improve my attention. I don't know how but maybe being more calm, being more, uh, aware of, "OK, I'm losing concentration now, I'm not paying attention. Then I have to go back." So...
Julie	Yes.
Marianne	Anything you want to add?
Clarissa	Um, in terms of attention during interpretation. Well, I guess just attention generally, it's problematic, I guess, to know what exactly you're paying, I should pay attention to. We were talking about reading a text and how it's impossible for me to read something without doing little notes in the margin. But then that means that it's inspired me to go somewhere else in my head and I have to be, like, remember to be humble in front of the text and have it teach me something before I go off somewhere else and that's a continual battle. And in interpretation you don't, can't do that, you can't do little marginal notes when you're listening to somebody talking. Yeah, it's a different sort of…
Marianne	Staying with it, staying with it.
Clarissa	Mhm.
Marianne	Thank you.
Hannes	I think we were discussing how to describe this experience at all. You know what you said that in interpretation, I think, since there are so many levels that you have to pay attention to, I think actual, real attention is when you somehow manage or cope with all these different levels and it doesn't feel, um, like work anymore. It feels like it's all just flowing. And it just, I had a similar experience the yesterday. There was this one speech, it was well-prepared and I really enjoyed it. And I understood what the person was saying and everything and the topic was really interesting. At one point I wasn't in a working, sitting position anymore, I just leaned back, like, "This is so interesting, I'm just going to say what that person is saying in another language and it's all easy." [*everyone laughs*] So that was really, that was really, I don't know how to describe it. That was one kind of attention. And it's, when this attention doesn't feel like work, I guess. But then of course then there's other instances when it actually does feel like work and I jot it down in notes like, "Aaa!" and I'm behind and…
Estella	We were just talking about the concentration issue, outside interpretation. For example, we can't study at home. And what ends up…eventually we crash into our bed with a computer and watch episodes [*everybody laughs*], never reading or studying. So, um, what the solution we find out is find your friend, like my workaholic friend, and come out and we now basically live in Samson and, and it's uh, we drift away or take a break once in a while, still. But it really increase our working efficiency when we're doing our homework or even practicing. So, I think that's really […]
Abby	I don't know if anyone, I think this too, or anyone's experienced this. Me

	too I can't study at home, it's just that maybe there's distractions or maybe there are many other options that you can chose. I can go wash my clothes or do dishes or anything, then I cannot sit down and concentrate, I have to pack up everything and go to a coffee shop. And that way I put in my earphone and just finish the work but if I were at home it would take me hours before I can concentrate. So, I don't know, it's just me.
Marianne	So the effects of where you are, the environment, on your attention. Yes. And then what you can do once you're aware that you're not paying attention. And what you can do to shift that. Yeah.
Laura	Vianney and I were talking about visual attention because we're really visual people, so we just like to visualize things. But unfortunately it's not possible to do all the time for interpreting. And sometimes it doesn't work at all. When it's really abstract and complex, you can't visualize it. So it's really hard. And as for me personally I think that, um, I'm really concentrated when I have this very professional straight position, and my voice even changes. It's like, more professional. And many friends tell me that.
Julie	That's really interesting what you're saying because it's a way in which we can physically and auditorily, with our voice, cue ourselves to enter into a different frame of mind.
Laura	I cannot just go like [*leans back*] um, I, I'm not able to do that. Even if I'm feeling really comfortable with a speech, so I really need to [*sits up straight*], it's just how my body works, I guess.
Maria	I was mentioning about how before this I spent three years as an *au pair*. And so you're taking care of children and it just automatically makes you become a multitasker and thinking of a million things at once. And so one thing I realized coming here and going back to, you know, studying, is that I really have to re-hone my attention and my focus because I'm used to multitasking, I'm used to thinking, "OK, put this up, they need to do their homework, we need to do dinner, I have to prepare everything for the bath." I have to do, like, all these things at the same time and answer my phone if it rings, you know, if it's the grandparents and they want to do something and so I'm having to, like, yeah, retrain my focus so that I can do, you know, 100% on this one activity, and then, you know, think of the things that are later on the list instead of trying to do the entire list at once. So. Uh, yeah, and we were both experiencing something in interpretation where we noticed that we have better focus if we can block out our personal commentary, um, because that just will distract us, um, from actually giving a good interpretation. And, uh, really seeing the message that the speaker wants to give.
Megan	And that spills over, so you when you say attention, I immediately thought of listening. And then I'm hearing everyone else presenting, when you talked about multi-tasking, I realized you didn't say listening, you said attention. But, um, what we were talking about is in terms of our personal commentary that spills over to conversations. And when

	anybody is speaking to you, not just a speaker that you will interpret, and when we begin to run this commentary when someone is speaking to us, with us, sharing something, we're no longer listening to them, we're no longer paying attention, we're, we've shifted our focus to our own agenda and we're just looking for the moment to insert something. And we've lost the connection.
Marianne	So what I'm hearing, …it's a lot of the effects of paying attention to where your attention is. And what helps you focus and what has you scattered, and, with the practice of mindfulness, that's a lot of what that practice is about: developing the consciousness of "where is my attention right now?" because then once you have that awareness then you can make choices accordingly.
Julie	Did anybody have any final thoughts that you'd like to add to the conversation before we do our next theme?
Ana	Sometime it helps me to pay attention when I, when I convince myself that the topic (and I'm thinking about interpretation) when I convince myself that the topic is interesting to me. And I tell myself, you know, I'm like, "Oh, this is so interesting!" [*everybody laughs*] I do that because otherwise, my mind's like [*gesticulates*], so I tell myself, "This is really interesting." That's my idea.
Julie	Our colleague David Violet told us that when he was a student, professors at ISIT in Paris told them, "In order for something to be interesting, you have to take an interest." Yeah, it's exactly that.
Hannes	But sometimes it's *too* interesting [*everybody laughs*], then you're actually forgetting to interpret it, like, "I want to listen to that."
Julie	There are stories like that in court, where you're just sitting there, and the judge says, "You have to interpret." And the interpreter says, "Oh, I just got so caught up in the testimony!" Lastly, and then we will have our break, 'mindfulness'. So what does mindfulness mean to you, how do you experience it, and what is the most important thing that mindfulness has done or that you hope it will do for you? What does it mean, how do you experience it? And what is the most important thing that it's done, that you hope it will do for you? […] So as you are ready, skip over the person on your left, and chat to the person to the left of the person to your left. OK? So like, Megan, you'll grab right there…
Marianne	Here, here, here..
Julie	Oh, they switched places
Marianne	Oh, OK.
Julie	Bottom line, choose somebody new you haven't talked with. If you're orphaned, raise your hand, if you don't have a partner raise your hand. OK.
	[*indecipherable individual conversations*]
Marianne	So, for this one, we'll do the shares a little bit differently. We'll just go

	around the circle and just share your own, your, either from your conversation what mindfulness means to you or your experience of it. And particularly what you've gotten from your mindfulness practice or hope to get from your practice. So, Hannes if you would start.
Hannes	To be completely honest, before I took the class I didn't really know what mindfulness was, so I Googled it and I read about it. And some people told me, "Just take the class, it's going to be good," And, I'm usually open to these things, I want to say. [*everyone laughs*] So I don't want to close my mind to anything. So I said, "Yeah, why not." And, um, how I experienced it, like I said before, the group thing was really, really good for me. I, I felt that we were a really nice group, sharing with each other and everything. Um, the mindfulness itself was sometimes…so since it made you aware of what was going on and sometimes not-so-nice things were going on, it wasn't pleasant. And it wasn't always easy to accept that you are right now focusing or being mindful about something that's not pleasant. I didn't know that before we were trying to work this out, too. Um, in the future I hope it'll help me to, um, I told Laura this, because there's a saying in German, I think you have a similar thing in English, that "Do not make an elephant out of a mosquito." And I tend to do that. And I hope that mindfulness will help me not do that any longer. Um, to just be mindful of the fact that it's a very small thing, it's not a huge thing.
Wendy	For me, from mindfulness I think, um, I want to learn to be nice to myself. Because sometimes I think stress, most of the stress comes from your attention to the rest of the world. Because you pay too much, too less attention to yourself. And I just want to be nicer to myself. [*background noise drowning out speaker*]
Kris	Um, I practice mindfulness just to direct my attention, so that I can focus on the things I want to focus on, instead of being distracted by frustration or stress or whatever. I didn't see a big difference, but um, I didn't see a big difference before, I just kept practicing, but earlier this morning when I was doing Julie's test, with, we were crossing out the D's with two dots [*reference to the d2 Test of Attention in the posttest*], I found it a lot easier than the last time. Or is it just you're giving us more time to finish it, Julie?
Julie	No, I wasn't giving you more time, and it may be changes in your attention, just being able to settle into the task. But there's also just the effect that you've done it before, and so it's already a familiar task and that can make a difference in your experience of it as well.
Kris	Because I have an extra few seconds even for each line, it's [*laughs*].
Abby	Um, yeah I was sharing with Estella that mindfulness has done a lot of good things for me. Because before, if I wasn't taking this class, I might not have given myself two hours in a day to just be with myself. And so it has helped me direct the attention back inside to my internal self to take care of it. Because sometimes there's a long list of things and you just want to squeeze your time to focus on everything else. And then you

	forget about yourself and that sometimes happens to me. And another way that it has helped me is to focus my attention also outwards. Because one time I was doing a module, I think it was "Let it flow, let it flow" or the module that you have to focus on something that flows and then you flow with it. And I was, I chose the clouds and I was looking at the sky and there was a moment I realized, "Huh, it was a beautiful day." Because before I probably was just looking at myself. So, that has helped me set aside some time and space for myself.
Estella	Uh, well, for me the experience is a little different right now. Um, I can sense that my, like, attention is improved and it's easier for me to be relaxed when I feel really anxious, but when I'm meditating it's more like a struggle for me, it's like a war against myself. I can't balance when all the thoughts fight back, I let it go, and if I let it go, it will drift with them and I don't know where it will end up or how long it will last. And so I have to work really hard to bring the attention back to my breath. And so it just goes, my mind goes away, I'm dragging it back, it goes away, I'm dragging it back. Uh, sometimes when I finish my meditation I feel a little tired. [*everyone laughs*] It reminds me that I read the novel *Eat, Pray, and Love* and the author, she also practices mindfulness, and, uh, in a party I think, there are a lot of photographers. They go to the wild places, like, the jungle, uh, so the photographers all were talking about how brave they are and how brave they are when they're confronting all this danger in the jungle. But the author thought that after you're practicing mindfulness you will know that you know nothing about, you know, this danger or this difficulty. Because the war against yourself is the most difficult one.
Julie	There's, um, mindfulness guidance that I'm familiar with, frequent reminders that when the attention has gone running off, and you notice it, and it may feel like you have to drag it back, you know, because it's, it can be difficult. To always remember to do that with a gentleness and even a compassion towards your mind that has wandered to something else. Right? That that's what it felt it needed to do and not be angry at our attention, for not being where we want it to be. But to gently, gently bring it back. And you, that can lead to less of a feeling of tiredness. [*laughs*]
Megan	Uh, mindfulness for me has just meant an increase in my awareness and knowing where my attention is. And when I realize that it's far away from what's actually happening, I just breathe, or I look at the sky, or if I think about my, my foot or my pinkie or something, a part of my body, then it brings me back into the moment. And then I can, kind of, restart what I was working on or where my attention was supposed to be. So it's, it's taught me that, this, these classes have taught me techniques to come back to what's happening right now. And something that I will absolutely take away and continue to think about every day is responding, not reacting, which is something that Claire and I talked about. And just knowing what that means. And when I, being aware of

	when I want to react and then trying to take a breath and realizing that I can in fact respond and don't have to auto-pilot react. And that's been useful but it does require a lot of energy to do it.
Clarissa	And we were talking about how it's really hard in our personal relationships, especially when you're really close to another person, to not switch into this reactionary mode and why that's so difficult. That's so difficult with your mother, your whatever, it's easier with people. But, um, mindfulness, I think for me, it, it helps to be reminded that I'm in autopilot and I'm divorced from where I am actually a lot of the time. Whether it's like going into the phone or the computer, but I feel like this, this world that we live in just feeds that. And so you come in here and it's kind of like, well remember when you were a baby, like, forget about everything, all that societal stuff that's all around you and um, try to get back to this space that's sort of more pure. But I guess I say that also with a sense of despair because, I don't know. I guess I need to practice more, but, like, it seems so hard, like, difficult and maybe that's also why I, um, I don't know. But this is like, some, a, little retreat but then you go off and it's back to your phone, back to your computer, back to your car where you don't even feel the pavement or feel the grass. But just to become reconnected as much as you can, that's what I take away from it.
Julie	I know when I feel disconnected like that a lot, it's about not efforting too much, but just noticing when I *do* experience those little glimmer moments of, "Oh, I am here now, or I just noticed this beautiful thing." As we did with the raisin, just savoring that, "Oh, I just had a moment when I was here. Oh", and then you whipped off. Just by savoring those moments, little by little, it expands.
Clarissa	Talk about getting divorced from the situation, I have an appointment, I'm going to have to go.
Julie [*to Clarissa*]	So I'm going to give you something to take with you and you can give me later. And then just, if you could do the course evaluation when you get a chance. If you have any questions you can ask me when we see each other. You can take it with you, don't be late.
Clarissa	I can give it to you next week.
Julie	Thanks, thank you.
Clarissa	Thank you, it's been wonderful. [*leaves*]
Maria	Um, sort of, feel kind of awkward that I didn't know what I was getting myself into. But it has revealed this new level of awareness and new level of focus that I'm working on attaining. Um, but just in making myself practice mindfulness, you know, 5 times a week, yeah sometimes I just can't get 7, I don't know why. But, um, just even doing regular mindfulness practice, has given me a richer sense of calm, just in my life. And just even those 10 minutes, just lets me step out and away from myself and I can kind of see myself from like a third-party standpoint and I can just give myself a break from all of the craziness that's going on, all the stress that I have going on. It's like, "OK, for these ten

	minutes I don't have anything to do and I can just focus on breathing and, um, practicing being fine with myself." Because I think I'm kind of my harshest critic. Um, but, I have seen in the past few weeks how, this centering of myself has actually helped me deal with my friendships. Like I had a friend who was going through a really hard time and somehow I had the emotional energy and emotional calm to be this stabilizing force for her so that I could help her deal with her upset and her hard situation. And I just thought like, "Huh, you know, I mean, I was emotionally invested but I wasn't emotionally drained by this hard situation." So, yeah, I am going to continue to keep working on it, just so I can continue to keep working on my focus, and re-hone so I'm not a multitasker all the time and sort of keep working on being calm and being nicer to myself. So…
Vianney	Well, I not only took mindfulness for myself, I also took it for the people around me because when I'm stressed or frustrated or overwhelmed, I tend to put that on other people. I get annoyed and angry when they miss something or they forgot something. And I let it out on them, my anger, my stress goes to them. And so, you know, I've improved that after taking this course. I definitely, when I feel stressed and I feel annoyed at someone, I'm like, "It's not their fault. Just breathe, and just let it go." And so that's definitely improved, and my focus has improved as well. I don't feel as stressed anymore. If I compare my midterm for interpretation with the one I had yesterday, I feel like, I just, I did much better. Much more focused and like, "Whatever grade I get, I get. What am I going to do about it?"
Ana	So mindfulness has also helped me to better concentrate on, uh, interpretation and things that I found hard to concentrate on before. So that's my, that's my best achievement of this course. Because it was my first concern. And it also helped me to be more calm and more gentle to myself, which is also important. Because I tend to be like, "Ah, you did this wrong. Ah, you're not, why are you here." And, I, I tend to exaggerate actually, a little mistake that I made and then I make a big deal. And now I'm more trying to be calm. And, yeah, it has been very positive.
Suhey	Um, I think taking this course reinforced, I've been trying to find ways and techniques of dealing with stress and being OK with everything that happens, if it doesn't go your way. And so having the techniques and the PBJ [*reference to "Pause, Breathe, Just notice*] just those three little letters has helped, um, change perspective and just being OK with whatever goes around, whatever's happening it's just OK. It's just another, another event. Nothing good or bad about it, it's just like, let it be. And similar situations like Vianney mentioned with the exam, if I compare my final and my midterm, I knew I had done everything I could and instead of stressing out right before the exam, I just sat down on the bench and took a few breaths and kind of just enjoyed the scenery. And it had just stopped raining so it's like, OK. So just enjoyed that moment

	because there was really nothing I could do at that point. I'd rather just go in with, with a good outlook and [...] and I think that helped just getting through that final, knowing that it's worth a lot but not being stressed about it. And um, I almost want to share, I want to share with everyone. When I go back home I want to, "Download the app!" [*everybody laughs; NB: a resource list including various mindfulness apps was provided*] Just because I want to share everything that I've learned with those that I feel could also benefit from it.
Laura	Well, as for me I think I had a similar experience, when talking about exams. I feel more comfortable now, not so nervous and I did, I guess, better in the finals than in the midterms. Especially into English, which is my main issue. And mindfulness has, uh, helped me to be more gentle to myself. And not to be that strict anymore. Because I used to be really strict to myself too much. And now I am more gentle and I just accept my mistakes. And I just, if I don't have more time, this day is over, it's over. I just need to relax, go to bed and tomorrow will be a new day and a new start.
Marianne	My heart is very happy in hearing, you know, especially about the gentleness to yourself. As that becomes more and more rooted, so much more opens up and there's so much more relaxing and just being engaged with what's here. And I, I want to just, um, point out, you, most of you, have only been doing this for 4, well, 4 weeks. That, that this is new and this is just the tiniest little seed that has been planted. And, as we said at the beginning, mindfulness is not something that's like a skill, "Boom, I got it, got it down. I'm good, I'm good to go." It, it continues to grow and cultivate. And so these little moments of pausing and just noticing, anytime you do that, that's cultivating that. And continuing with your practice, that is actually, you know, the biggest, mm, well, we talked at the beginning that there can be certain neurological changes after 4 weeks of daily practice, but really after 3 months of daily practice you can actually start to really feel like, "Oh wow" and you look back and see the shadow of, 'this is how I used to respond' and, and it's different now, so… So I encourage you during your winter break to use that as an opportunity to deepen, deepen your practice. So we're going to take a break.
Julie	Yes, so, we've, we had such rich conversation that we took more time than we expected. I think perhaps given the time, um, I'll present a few things and then you can use the time as you need to. And do I understand that a few of you need to leave? So um, what I'd like to pass around to you is a video consent form. And, um, just, pass these around the table. Take one and the extras will end up with Marianne. Um, so you'll see that there are a few little parts to this. As you can see with the slideshow, with my little movie that I made and whatnot, sometimes just images can do so much. And so I like to work them in when I can, when I'm presenting my research and whatnot. But I don't want to violate your wishes in any way. So at the top you can let me know in what way it is or

	isn't' OK for me to use any photos or video that do include an image of you. And at the bottom, I'm hoping to continue my research in the future and if you're OK, if I would contact you in the future if you would be open to possibly being part of future studies and more longitudinally. And of course, signing and all of that at the bottom. And the one thing I'd ask you to add is this: when I write up the qualitative comments and things, like from this focus group, would you put on here "use my real name" if that's OK with you, first names only, right? Or if you prefer that you not be named by name, put on here for me "pseudonym" and what you would like your pseudonym to be. And that way in if I include any of your comments in my research [write-up], I'll refer to you as your pseudonym and not your real name. But this is your chance to let me know what you would like that name to be. So you, as you're able you can fill this out. If you don't have time you can get it back to me later. And the second thing is the course evaluation. While you're doing this, I'll put the course number on the board and then you can just go to the website, go to the, you know, your course evaluation email and look up that course and fill that out. I'll put back on the slideshow. If you need a little break during this time we can do that. And take just 5 minutes or so for these different activities, using the time as you see best fit and then we'll have a little closing meditation. If you don't have time, for example, to complete the course evaluation, that's OK, you can do it after the closing meditation. But I do hope to get everybody's evaluations in because the administration needs to know "Is this something that we should include in the curriculum or not?"
Marianne	And, um, a couple of things. If you haven't signed in, be sure and sign in. And also, I will put, well I'll just pass, no I'll put this by the sign-in sheet. I teach on-going mindfulness courses about mindfulness with relationship, mindfulness with anger, depression, and anxiety out of my office in Pacific Grove and so if you would like to be on my email list to be notified when courses are coming up, um, then if you would just put your name, email, and phone number. And I'll put this sheet up here by the sign-in sheet so that you'll just get emails from me periodically about courses or different workshops, things that are happening.

Focus Group Transcript

Mindfulness for Interpreters

Fall 2014, Section B

Note: In the following transcript, "Julie" and "Marianne" refer to the co-instructors of the Mindfulness for Interpreters course: Julie Johnson and Marianne Rowe. The names/pseudonyms of the participants are as each individual requested on their consent form.

Julie	So just so you know, this isn't going to, like, go on primetime on the web or anything like that. What this is mainly for, the reason why I'm videotaping, is because, just to capture comments and insights that you may have. If you're doing that just audio and you can't see who's talking in a group, it can be really difficult to transcribe. So this is mainly to facilitate the transcription. You will for this part need a pen. Or pencil, something, anything to write with, and if you don't have that you can borrow from somebody. This is just going to basically be a fun little conversation that we'll have for the next 45 minutes or so. You'll see that I've placed around the table a number of pieces of scratch paper. If you go ahead and take a few, what I'm going to do is write a word on the board and then give you a minute or so just to, on your own piece of paper, just for yourself, write down any little notes in response to the question of what that means to you, how you experience it. OK? So our first word, which is à propos for today with final exams et cetera, is "stress". Just think about what does stress actually mean to you and how do you personally experience it? We'll take a quiet moment for you to do your own thinking first. […] Oh hey, come on in Tomoko.
Tomoko	I'm sorry I'm late.
Julie	That's OK. What we're doing right now, we just began our focus-group session this evening. You see I've put scratch paper on the table. What everyone is doing is just taking a moment to jot down for themselves on that paper our first theme of discussion, which is stress. And so, on your scratch paper for yourself, capture what does stress mean to you, and how you experience it. We'll just take another few minutes. […] And as you're ready, what I'd invite you to do is just turn to chat with the person next to you. So, like, the two of you, the two of you, the two of you, and the three of you on this side of the table can get together. And just share amongst yourselves what came up for you, describing for each other what stress means for you and how you experience it. When I ring the bell after a

	couple of minutes, it means that we'll come back together as a large group. OK.
	[*indecipherable individual discussions*]
Marianne	So now with the whole group, um, I'd like to just open it up for shares. You know, again, what stress means to you, how do you experience it, and what impact that it has on your life, on your performance, on your relationship with yourself and others. So, opening up for shares.
Mark	Yeah, can I start?
Julie Marianne	Yes
Mark	Um, like, I've come to understand that stress is actually my body's and mind's reaction to a challenging situation. So, first thing I experience is stress because of, you know, whatever happens that is negative or, makes me feel nervous, yeah. And, yeah, so to me it's just, um, well, a reaction to something negative.
Marianne	And for you, what are the ways that you generally experience that? Does that reaction show, how does that show up?
Mark	Well, I think it varies depending on the situation. Um, I don't know, just, well the fact that I'm always, like, I get hung up on whatever it is that is bothering me, I keep thinking about that and um, yeah, it's hard to, you know, not think about that.
Marianne	So, a loop…
Mark	That's right, exactly…
Marianne	…gets started
Mark	That's right, yeah. So that's why I think it's important to sort of be able to, to cut that loop. Um, and that's something that I've learned in this course, yeah. And, uh, I think that ties in with also with the concept of equanimity, of not being attached to a particular outcome. That's something that I'm trying to, you know, work into my way of seeing things and, you know, in my life.
Marianne	I'm feeling excited that you found ways out of the loop, that you're finding that…
Mark	Yeah, I'm trying to, I'm trying to…yeah.
Julie	Did other interesting things come out of your conversation in turn here?
Mark	Well, we agreed on the fact that it's all a reaction to a tough situation. And, um, yeah I think that it's something, well, I'd said that, that's something that everybody experiences and that you just can't escape stress because I see it as a normal reaction, um, you said that some people don't experience it. And, yeah, that may be true, some people are more…
Chelsea	Some people are more optimistic people. They don't have stress because they didn't care. [*everyone laughs*]
Marianne	So caring is an element, yes, yes. Mhm.
Anna	It's interesting that you brought up a loop because we were talking about a spiral. Um, and for me it, it like stress has changed, sort of, like, I don't experience it as badly as I used to, but at the same time instead of, like, manifesting itself as, like, really strong anxiety it's more like, I feel like,

	depression for me. Um, and that leads to other things like negative thoughts that I can't get out of. And, um, and I usually have to give myself a little time before I can do anything about it because, like, one of the biggest feelings that stress brings to me is the feeling that I just can't do anything. Um, so even, like, when I've been really stressed, that's, those have been the times that I've had the hardest time making myself take time to meditate because I feel like I can't do it.
Marianne	So there's a self-perpetuating aspect to it.
Anna	Mhm.
Marianne	Yeah. Have you found some things that help?
Anna	I mean, if I can make myself leave my apartment, go for a walk, see friends, you know, reach out, then it's, that's good, but, I can't, I can't always do it right away.
Julie	Yes.
Anna	But usually those things help.
Caroline	Yeah, I also feel like if you're stressed, if you have a routine that you usually stick to, when you're stressed, just stick to that routine. Even if it, if it is something like, you know, you go for a walk once a day or something or you go someplace or you do something that's not interpreter-related, that's good to just to keep up, like a structured routine, I feel. Instead of just *haaah*, you know, rolling up in a ball or something, which happens sometimes. But yeah.
Marianne	Anybody else experience this loop or this self-perpetuation aspect of stress?
Tomoko	Yeah.
Marianne	How does it show up?
Tomoko	When it starts showing up, I, I don't notice it immediately showing up, until it gets really bad. Something about how we get, how we notice that when you're stressed. And then by the time I notice that I'm stressed, I'm really very down in that spiral. So, and then I feel helpless and depressed. I'm already there. So I, but since I started meditation, I think I got a little better at observing myself, it's small, little things, like if I keep sighing a lot it's one of the signs that I'm feeling stressed. So, what I do is I just write my feelings down, just without really thinking about it, just flow-of-consciousness type of writing. And then I usually, I've come to realize that most of the time the cause of stress is within me, instead of something outside of myself. And then if I can get there, the stress, the cause of stress can be something manageable for me, controllable. Most of the time, not always, but that's how I usually, recently try to process my stress.
Marianne	So the self-awareness, first of all to notice that you are stressed. And then using the writing as a tool to bring awareness of what are the stories that you're telling yourself that's perpetuating it.
Tomoko	When it's visible it's much easier to deal with, so.
Julie	Yes, yeah, thank you. What came up out of your conversations?
Milena	Um, we also talked about the list. We, um, I talked to her about how I get stressed when I have too many things to do or people who are maybe

	waiting for a call back home and, but I'm too busy here doing other things and there's a time difference, and it, it gets a little complicated. So maybe stopping and realizing that stress, only stressing, is it going to get things done? So stop and make a list of the things that I have to do or I want to do, uh, prioritize and see what types of time limits I have. And, and then start doing things.
Kris	Yeah, actually I think, because once I thought stress was a complete negative thing. So I think it will greatly affect my performance, but when I regard it on purpose as a very positive thing, actually it can enhance my performance in some way. So, yeah.
Milena	Yeah, we talked about, um, noticing that we're feeling stressed and trying to, uh, transform stress into energy and that adrenaline can make you do very well, or perform better if you're doing an interpretation or whatever it is.
Kris	Yeah, especially when you think, you try to think that stress, if you feel stressful, that means you, like, you try to put your, an emphasis on something so that you will become less stressful. And when you get this thought, you will, like, more, kind of, relax. So.
Julie	Anything you want to add?
Alysha	With me it was, uh, so much that, usually when I'm stressed it's because I'm constantly worrying about very specific things. And really it gets to the point where I need a way to get myself out of that mindset. And my outlets tend to be, like, exercising, or dancing or anything that physically involves me in something else. Um, it might mean that I have to, if I have a long list, I set the list aside and I do something for a little while. And then I can come back and just look at it and be objective enough to say, like, "OK I can do this today and then tomorrow's another day. And that's what I'm going to do." So.
Julie	Anything anyone would like to add before we go on to our next theme? OK. Um, so our next one is "attention". So, what does attention or paying attention mean to you? And how do you experience attention when it's happening or not happening? So again, take a minute or so just to gather your thoughts on your own. […] And as you're ready, you can turn to your partners and have a private little chat together first about what attention means to you and how you experience it. And again I'll ring the bell for you to know when a couple of minutes is up.
	[*indecipherable individual discussions*]
Julie	Your time is not up, but if somebody you're talking with hasn't had a chance to say much, be sure to switch, so you hear from both of you. So you have a little bit longer.
	[*indecipherable individual discussions*]
Marianne	And so now, same thing, shares about attention. What does attention mean to you and how do you experience having it? How do you experience it, losing it?
Elizabeth	We talked a little bit about what it feels like when you can't focus. At first it seems like everything is just so interesting and so important that you have

	to focus on all of it at once, and you can't really just focus on one thing. And then the opposite of that is when you're so focused that it's like you don't have to, like, go out into the world and look for the information that's important, it just comes straight into you and you know, "this is what I'm, like, working on." That's, this is it.
Julie	I love that image of the information coming to you.
Marianne	So attention having to do with focus.
Elizabeth	Mhm.
Marianne	Yes, yes.
Anna	I'm having trouble thinking about attention outside the context of interpreting now. [*everybody laughs*] But I think that if I'm paying attention I feel pretty calm. Or if I'm paying attention well, then I feel pretty calm and I, um, and I think that I will remember it.
Mark	The problem is when you, when something happens that grabs your attention away from whatever it is you're supposed to be focusing on and, uh, that's hard to deal with. It's like, I find myself, I find that I have to, sort of, force myself to focus back on whatever it is I'm supposed to be focusing on. And, uh, that's not, that's not easy to do.
Marianne	Anyone else have that experience of attention getting hijacked?
Alysha	I feel like it happens to anyone who is a multitasker. And I feel like all of us who are interpreters, we are being "programmed" to do multiple things all at once and I naturally tend to be the kind of person that I'm doing something but I'm thinking about something and I'm planning something, and it's, I'm doing 30 million things all at once. And somehow I manage to divide my attention well enough, but then I sometimes think about it, and I'm like, "I am really not paying attention at all." I think I'm paying attention to all these things all at once, but not really. And it gets a little frustrating when you notice that. Because then you have to train yourself to focus on one thing after you've pretty much done it all your life to focus on 20 million things at once. So it's really hard.
Caroline	I feel like I'm really able to concentrate after coming to these meditations that we do. I feel more relaxed, like if my blood pressure is lower, not dangerously low [*everybody laughs*], then I feel like I can really, like I can really just absorb everything like a sponge and I'm not worried about, "yes, yes" and, like, having to shake my head and, "yeah, I understand what you mean". Because sometimes you get so tied up in letting the other person know that you're listening and you're there that you just lose track of their words. [*everybody laughs*] Yeah, or when I'm talking to you, I'm thinking about, they're listening to us, that's awkward [*everybody laughs*]. Not really, but I have to be like, "But it's OK, just still listen to Alysha's voice". It's not awkward, but I mean [*everybody laughs*], you're just aware of other things that are happening and you just have to…it's OK. So I don't know, maybe that's just a personal thing.
Marianne	So that connection again with the effortlessness of that when you're dropped into attention, it just comes to you. And, and you feel like the sponge.

Caroline	Yeah, like you don't have to work so hard at it, you just…
Marianne	That's right, that's right. I like that "effortless sponge" metaphor. Other shares?
Chelsea	For me, paying attention is, uh, making a choice. Because there are so many things, so many important things. But when I, when I pay attention, that means I choose one thing, I choose one thing to concentrate or to focus, so, that's all about my choice.
Tomoko	I've noticed that when I pay attention to one thing, then I can, sometimes, not always, sometimes I can be more attentive to other things, too. Like, I started to try to pay attention to the sounds or noise that I make in the past couple weeks. Like I try, I try not to slam doors or when I put something on the table, I try to do it quietly. It's just a little experience that I am trying out. So I am constantly paying attention to sound that I make, but then I find myself more attentive to other things, too. Like, sight or visual stimulation or other senses that I have become more, become sharper.
Julie	That's so interesting.
Marianne	So there's an attunement aspect, so that you're…
Tomoko	I think so, yeah…
Marianne	…with that *in*tention you're attuning your *a*ttention.
Tomoko	Yes, mhm. Yes.
Julie	In connection with that, I wanted to pick up on something that Anna brought up, and that is that, I believe you said that you feel more relaxed when you're paying attention. And, which, I have that experience a lot of when I pay attention to something, like, when I'm walking from here to McCone building and I notice the rustle in the trees or I notice the sun, or I notice a bird chirping or something. Whatever it is, just that bringing of the attention seems to slow time down. Because the, for that moment that's all that exists. And I was curious if any of you have similar kinds of experiences.
Tomoko	I feel the same way when I'm in that state. Somehow when I interpret, when I do simultaneous interpretation I'm just [inaudible] paying attention very hard to something and 15 minutes seems like 3 minutes.
Marianne	Sort of tagging onto that and also in what you were talking about, about choice and having an agency aspect of that. Is there a difference, does there, is there a difference when you're noticing, when you're paying attention to what is happening right now, like the rustle in the leaves or the birds, or, uh, when you're paying attention to your thoughts about what's going to happen or what has happened. Is there, are those the same or are they different? What is that quality in terms of attention to present, attention to future, or attention to past?
Alysha	I feel like I experience that [*pointing to Julie*] that you were trying, that you mentioned, when I studied abroad in Spain, because over here in the United States, everything is so fast-paced. Everything. You have to do everything fast, you have to be efficient about it and I think, as an American, it's just, you're kind of like, you're brought into that world where everything is just fast-paced. And then when you go to a country where everyone is just laid-

	back and you try to adapt to that while you're there, you notice that time slows down so much. And things that you thought you wouldn't be able to finish or accomplish, you end up doing. But it's because you're not stressed anymore because everyone's so laid-back and almost like, "Oh, we'll have time, we'll do this then we'll do that." And that's the only time I ever experienced that, that semester where I wasn't stressed. [*everybody laughs*] But then I came back to the Sates and it was stress all over again. [*everybody laughs*] So, I don't know.
Julie	Our third theme is, let me see with my glasses, here, "acceptance". Oh, excuse me, "mindfulness", sorry. Mindfulness. So, what does mindfulness mean to you and how do you experience it? [...] So let's again talk with each other, and just to shake it up a little bit, why don't we rotate a little bit? If Mark, you want to come over and talk with Tomoko, and Caroline you want to come and join with them? And then the two of you can chat, and the two of you. Does that work? And again, I'll give you two minutes and then we can talk as a group.
	[*inaudible individual discussions*]
Julie	And before we start this conversation, just in case you're wondering, after this little conversation, we're going to have a break, OK?
	[*inaudible individual discussions*]
Marianne	So, we'll do this, um, share a little bit differently from the other two. And we'll just do this as a go-around, so that you share, you know, what does mindfulness mean to you, or what do you experience, how do you experience it, and then also, what is one of the important things that you are taking from what you've experienced with mindfulness and your practice, or that you hope to take from it. And the share actually it's going to be a practice of mindfulness because what I invite you to do as each person is talking is to be mindful of what they're saying so that you're actually not thinking about what you're going to say, but that you're letting yourself really drop in and attune to what each person is saying. So.
Julie	And as part of that…
Marianne	Yes.
Julie	…after you've been paying attention to what somebody else has been saying and it's time to come back into your own thoughts, it's OK to take a few moments of silence just to gather your thoughts and remember, "Oh yeah, this is what matters to me."
Marianne	Yes.
Julie	That's OK.
Marianne	Yes. Because as each person is talking, you may find yourself in resonance with what they're saying, or you may find yourself, "Well, it's not really like that for me". But just so you're, you're, you're letting yourself be impacted by each person, what each person has to say. [*points at Mark*] To start?
Mark	Sure. Um, so, um, mindfulness is, like, the ability to stay focused on what is going on, right, right here, right now. And, um, I have come to, sort of, uh, experience its benefits. But it's hard to actually put it into practice. Um,

	especially with the mindfulness routine and, uh, we were saying, um, sometimes I would try to set myself a goal of, "OK, I am going to, uh, be 'mindful' as appropriate from now on in what I do." Including interpreting, of course. But then it's hard to remember that's what I should be doing. As time goes by and things happen, I realize I'm not as mindful as I should've been. So, yeah. But I realized, and this is something that we touched upon that, probably has to do with, I would be better at it if I, um, consciously, you know, did the exercises, the meditation exercises every day, at least ten minutes, because it's like, you know, it's poise, or an activity that requires practice. And if you don't do it, it's just, you know, you cannot master it. I think.
Marianne	So, if you were to practice it, what would you hope it would do for you?
Mark	Um, well, like I said, the putting my focus on what is going on right here, right now and, and not letting other things, you know, disturb that.
Marianne	OK, so holding, uh, holding focus…
Mark	Exactly.
Marianne	…holding attention.
Mark	Right.
Marianne	Thank you.
Tomoko	So, mindfulness for me is simply the moment when my constant chatter, chatting, in my head stops, which is, it's always going on. Something is, I'm, someone, little people are going [*everybody laughs*] Or something, something at this moment. So that's why mindfulness for me. And this, it only happens to me naturally, without trying to be aware of it, it only happens to me naturally when I find something beautiful or small things like sky or trees or river. The moment I really am impressed or moved by something beautiful or when I'm interpreting and when it's going well. I think, well I can be mindful. But other than that, I was talking with, that we hope that we can improve this by practicing and I think that I am getting a little bit better in that I have more moments when I'm mindful. They only last for a couple of seconds, but then I'm hoping that I have more moments or more time when I can be mindful.
Marianne	Thank you.
Elizabeth	So, for me, oops, I'm trying to stop saying "so" at the beginning of everything. But for me, being mindful is like, after having been around all of this chaos all day, thinking about, or like, other things. It's this moment, when I can step back and think about all the things that I've been pushing down because I was busy. And, like, you know, how I'm feeling and things like that can kind of come out a little bit more.
Marianne	And so, from your experience over these past few weeks, what have you found, um, as a, as a benefit of accessing what's been pushed down, or when you're mindful? Or what do you hope to be a benefit?
Elizabeth	Well, one of the things that I've noticed is that I can find out when I'm about to be very stressed more easily, rather than noticing when I'm stressed, like, way after the fact, when it's kind of too late to stop the spiral. I can, kind of, get in on it earlier if I'm saying, "why am I feeling this way

	right now? Oh, I'm stressed, I need to maybe think about addressing this rather than just pushing it down to deal with other things."
Marianne	Yes, yes. So picking up cues that can be helpful to pay attention to. Thank you.
Anna	For me it's something that also comes on its own only when I'm outside, really, and I'm, um, and I notice, usually beautiful things or interesting things. And that's, and that's associated for me with really seeing or hearing things, um, but also with a feeling of not high-level, like, exhilaration or, you know, I'm not feeling, like, *so* happy. But I definitely feel like, like, some sort of quiet happiness and, um, and peace when I, when I see or notice those things and so it's been hard for me to, um, think about, sort of, detaching emotions from mindfulness because, because those, um, taking pleasure in things is sort of attached to it for me.
Caroline	I think sometimes when I remember what's going on outside of my world, like, it's, like… This is going to sound a little strange, but there are stars exploding in the universe right now. And like, that's amazing, even though I can't see it and I'll probably never will, wow that's so awesome. And just knowing that all these other things are happening. I have my own little bubble, my world here, but then outside of this there's so much more. So just keeping that in mind is, is interesting. And then the things that we learned here, like the "Pause, breathe, just notice" and the non-judge, non-judgmental, the compassion, equanimity, all those things, I just think encompass parts of mindfulness. And learning to label, um, your emotions that you're feeling before they develop into thoughts that can be totally false or unfounded. So.
Marianne	So what is the benefit of that?
Caroline	Just not wasting your brain energy, I think. [*everybody laughs*] Things that really have no substance to them, or aren't grounded in anything, they're just creations of our own mind. So.
Marianne	Thank you.
Julie	I wasn't going to be part of this conversation, but I find there are two things I'd like to contribute. I think for a while now, for me, what comes up a lot of my motivation and what I get out of it are two things: one is not just getting *through* my life, but actually the experience of *living* my life, an experience of experiencing my life as I'm living it, rather than just getting things done, which is hugely qualitatively different. Um, and the other thing is being in a place where I can see clearly and make clear choices, big and small.
Alysha	I agree with Caroline, um, the way that I experience it is the same way. It's usually I know that I'm a part of something greater than myself. And some days it's just really hard not to focus on anything else but yourself because you have so many things going on. But for me it's usually when I'm at peace and I'm calm. And I'm happy with myself and the choices I've made. There's some things that tend to be really hard, when you're closing, like, silly mistakes. But one of the things that I've been questioning a lot is whether, how mindful I am of myself versus mindful of others [*others*

	murmur in agreement]. Because I feel like sometimes we can be very mindful of others more than of our own selves. And I feel like that's something that I have to work with. I tend to focus a lot on my family, my friends and what is going on with them, trying to help them that sometimes I forget that I need to help myself.
Milena	Um, so as interpreters our, our bodies are a tool. And, um, we have to use it to work, we have to be aware about our senses and I feel like mindfulness is, is awareness and being able to recognize your senses and all the things that they can do for you. So, when you're mindful you can stop and recognize whatever feeling. Um, and the way I experience it is, yeah, stopping and recognizing my senses and my feelings or my emotions and being grateful. Because I have that moment. Or I have that feeling, even if it's sadness or anger or whatever it is that I'm feeling. Stop and, and, and accept, accept the feeling and embrace it and work through and be grateful that I care enough to have that feeling. And now when you're aware of, of your body and all the things it can do, you just, everything kind of falls into place. Because everything else has a, as your body has a reason for being and doing stuff, everything else does, too.
Marianne	Thank you.
Kris	I think mindfulness is a state of keeping alert of everything around. And meditation, I find, is really a good way to find the state of your mind and, every, because actually it's very difficult to know the voice in your heart, but through meditation you can definitely know, um, the state of mind, what your heart is talking to you, and especially when I'm in interpretation, I, if I'm very mindful, then I know what I'm talking about and what I'm going to talk about. And that will be a very helpful tool for me to handle interpretation tasks in the future.
Chelsea	Um, when I do mindfulness, I feel I, uh, I can see the current situation or I can see where I am. Because there are so many things happening in my brain, I have, I always have so many things. I'm thinking about so many things. But when, when you do mindfulness, you're supposed to, not to think about anything. And then if I try not to think about anything, there's only, like, one, um, true thing that I really have to concentrate on, or restate. So, I can just forget about everything that is not important, but I always have something very important in myself. And I can realize that important thing by doing mindfulness.
Marianne	Thank you.
Julie	Thank you, everybody. Um, that was a really rich conversation and I love all the different aspects of things that you brought out. Um, what we will do at this point is take a short break and then the second half of today is going to be, um, we'll do the course evaluations. Because, it may seem a little strange with this class, but we do them with all classes and, in a way, this is your chance to let the powers that be know what this class is for you. And that's the only way that they know if it's something that should continue to happen or not. And so it's worthwhile doing those. And also, I will show you the, uh, video consent form and choosing pseudonyms and

	some of those practical things. And then we'll close with the closing meditation. And we'll go ahead and take 5 minutes or so, you can run to the restroom, grab something to eat…
Marianne	Sign in if you haven't signed in…
Julie	…and for the course evaluation you'll need your computer so you can grab that and put it on the table.