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Technology-Based Training for Evidence-Based Practice

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UNIVERSITY OF MIAMI

TECHNOLOGY-BASED TRAINING FOR
EVIDENCE-BASED PRACTICE

By

Leticia Duvivier

A DISSERTATION

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of the University of Miami
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TECHNOLOGY-BASED TRAINING FOR
EVIDENCE-BASED PRACTICE

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A self-paced online training was created to teach mental health providers how to conduct a high quality, empirically informed suicide risk assessment. The "Tree of Life" training was based on the Decision Tree Model of suicide risk assessment, which is informed by Joiner et al.'s Interpersonal Theory of Suicide (2009). The training was then evaluated through a randomized controlled trial assigning both students and professionals in mental health to either complete the training immediately, or to a waitlist control group. Although participants assigned to train did not have greater improvements in self-efficacy or in attitudes towards computer-based trainings than the control group, the training did have large effects in increasing both their knowledge and their skills in suicide risk assessment (including their ability to rate the severity of individual risk factors for suicide, and to determine overall suicide risk). Potential predictors and moderators of outcomes were examined, but generally failed to predict outcomes or moderate group differences, suggesting that the training was beneficial for a wider range of providers than originally anticipated. Future directions are discussed.

DEDICATION

This work is for my parents – for always encouraging me to ask questions, to dream, and to never give up.

This work is for Billy, who knows how to make me laugh, gives me hope, and makes everything worth it.

And this work is for my advisor – for being there all along, teaching me what I needed to learn.

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Introduction

Youth Suicide

Although suicide has been increasingly recognized as a major public health problem, and numerous initiatives and billions of dollars have been dedicated to preventing suicide, the number of Americans dying by suicide continues to rise (American Foundation for Suicide Prevention, 2014). In 2013, 41,129 Americans died by suicide: a rate equivalent to one suicide every 13 minutes (Centers for Disease Control and Prevention; CDC, 2015). Among 10-18 year olds, suicide is currently the second leading cause of death (CDC, 2014a). In 2014, 1,782 10-18 year olds died by suicide, and 97,032 non-fatal, suicide-related youth injuries were recorded (CDC, 2014a). In 2010, the lifetime cost of self-inflicted injuries for 10-18 year olds in the U.S. was nearly half a billion dollars (US$496 million), and lost productivity cost an additional US$ 830 million (CDC, 2014b). The estimated cost of completed youth suicides (10-18 years old) in the U.S. was nearly $2.5 billion, with each death costing over 1.7 million US dollars (CDC, 2014b).

In addition, many more youngsters consider suicide than complete it. In 2013, 17% of 9th to 12th graders reported having seriously considered suicide in the past year; as many as 13.6% went as far as formulating a plan (CDC, 2015). One in 12 actually attempted suicide (8%), and 2.7% made an attempt that required medical attention (due to an injury, poisoning, or overdose; CDC, 2015). To put these statistics in perspective, based on current estimates it can be expected that during a single school year, in a theoretical high school classroom of 30 students, 5 will consider suicide, 4 will create a

plan for how to kill themselves, and at least 2 will attempt suicide one or more times during the year. More than a third of these attempts will require medical treatment.

In addition to poignant suffering and the loss of the youth's life, a death by suicide also brings a heavy burden to friends, family, and others in the person's social circle. Although research shows that the grieving process for a person who died by suicide shares more similarities than differences with other types of grief, a consensus has emerged showing that there are unique, complicated aspects in grieving a loss by suicide (Jordan, 2001). Differences seem to manifest in three main areas of grief responses: Survivors of suicide struggle more with making meaning around the death (Grad & Zavasnik, 1996; Silverman, Range, & Overholser, 1994), they feel more guilt, blame, and responsibility for the death (Cleiren, 1993; Silverman et al., 1994), and they feel more rejection, abandonment, and anger for the deceased (Reed, 1998). In addition, suicide survivors tend to be perceived more negatively than survivors of other types of deaths (Calhoun & Allen, 1991). Although 76% of survivors of accidental deaths reported having more positive social interactions, only 27% of survivors of suicide had that experience, and they were the only group who lied (44% of subjects) about circumstances surrounding the death (Range & Calhoun, 1990).

In sum, despite increasing public recognition and efforts to prevent it, suicide – including youth suicide – remains a widespread public health problem in the U.S., with dark and pernicious consequences.

Mental Health Professionals and Suicide

Mental health professionals can be highly strategic allies in the battle against suicide. Mental health professionals are considered "gatekeepers" for suicide prevention,

because they often come in professional contact with individuals at risk for suicide (Gould & Kramer, 2011; WHO, 2012). Among those who die by suicide, it is estimated that half have contact with a mental health professional one month or less before committing suicide (Grad & Michel, 2005). Because they are among the first people who can recognize warning signs, they are in a unique position to help save lives (Quinnett, 2007).

Yet, treating suicidal patients is highly stressful for clinicians, and is one of the experiences with the greatest likelihood of damaging a clinician's personal and professional sense of self (Brown, 1987; Chemtob, Hamada, Bauer, Kinney, & Torigoe, 1988; Kleespies, Penk, & Forsynth, 1993). One study of therapists' reactions to losing a patient to suicide found that clinicians often experienced anger and relief, and that the anger often began before the suicide – suggesting that some therapists felt highly stressed throughout treatment (Hendin, Lipschitz, Maltsberger, Haas, & Wynecoop, 2000). Therapists' emotions when losing a patient to suicide are similar to those of surviving family members and friends (Marshall, 1980) but they also experience a unique anguish from having lost a patient (Gitlin, 1999; Marshall, 1980). Emotions most commonly experienced include profound shock, grief, guilt, shame, anger, betrayal, fear of blame, and self-doubt (Darden & Rutter, 2011; Hendin et al., 2000; Yousaf, Hawthorne, & Sedgwick, 2002).

Approximately one third of clinicians also experience anxiety and insomnia (Dewar, Eagles, & Klein; 2000), as well as severe distress following the suicide of a patient (Wurst, Mueller, Petitjean, Euler, Thon, et al., 2010). These emotions can be so vivid that some have compared them to symptoms of post-traumatic stress disorder

(PTSD); in fact, some clinicians reported experiencing nightmares associated with the loss or with a fear of repercussions, or even developed hyperarousal (e.g., jumpiness when the telephone rang at night), for up to two years following the death of the patient (Hendin et al., 2000; Sacks, Kibel, & Cohen, 1987). In one sample of psychiatric residents who lost a patient to suicide, 22% met DSM-IV criteria for PTSD, and 20% for Acute Stress Disorder (Fang et al., 2007). To some, the experience was so painful and traumatic that they questioned their career choice, were unable to continue working as usual, or became reluctant to accept new suicidal patients (Fang et al., 2007; Hendin et al., 2000; Wurst et al., 2010).

Not surprisingly, even therapists who have not lost a client to suicide often report - understandably - being concerned about making decisions that can have life or death consequences, distress at the possibility of losing a patient, and/or fear of malpractice litigation (Jobes, Rudd, Overholser, & Joiner, 2008; Hendin et al., 2000; Wurst et al., 2010). As a result, it can also be difficult to find an outpatient provider who is willing to take a suicidal client (Baraff, Janowitz, & Asarnow, 2006; Olfson, Marcus, & Bridge; 2012; Bridge, Marcus, & Olfson, 2012), which in turn limits clients' access to care.

Mental Health Professionals and Suicide Prevention Training

Although to some extent these concerns come with the territory, they could be reduced if providers had access to quality training in suicide prevention. Ideally, quality training in this area would help providers develop skills in one or more of several core competencies identified by experts.

Core competencies for suicide prevention have been identified by (Rudd, Cuckrowitz, & Bryan, 2008) as including the following elements: 1) attitudes and

approach to working with suicidal clients (e.g., managing one's own reactions, maintaining a collaborative stance), 2) understanding suicide (i.e., terminology, phenomenology, statistics, risk and protective factors, 3) collecting accurate assessment information (i.e., assessing for suicidality early in a clinical interview process and conducting ongoing assessment, obtaining information about risk and protective factors, warning signs, obtaining records and collateral information), 4) formulating risk (making a clinical judgment of risk and documenting it and its rationale), 5) developing a treatment and services plan (i.e., including an emergency plan, a written treatment plan addressing immediate, acute, and ongoing suicidality, and coordinating work with other professionals), 6) managing care (i.e., following clients closely, follow principles of crisis management, document appropriate information), and 7) understanding legal and regulatory issues related to suicidality (including state laws, legal challenges resulting from inadequate documentation, and protecting clients records and rights to privacy and confidentiality. These core competencies are largely consistent with those identified by others (e.g., American Psychiatric Nurses Association; APNA, 2015; National Action Alliance for Suicide Prevention; NAASP, 2014; Suicide Prevention Resource Center; SPRC, & the American Association of Suicidality; AAS, 2008).

Unfortunately, serious gaps exist on how mental health providers are trained to assess or treat suicidal clients. For example, among medical mental health professionals, although half of psychiatry residents (and psychiatrists) will lose a patient to suicide, residents report that only 25% of training programs offer workshops to develop suicide prevention skills (Brown, 1989; Chemtob et al., 1988; Ellis, & Dickey, 1998; Ruskin, Sakinosfsky, Bagby, Dickens, & Sousa, 2004). Compounding the problem, residents

typically spend their first two years of training in inpatient and emergency psychiatry rotations, so that the least experienced clinicians often are paired with the patients who are the most ill (Fang, et al., 2007).

Among high school counselors, only one in three felt prepared to recognize students at risk for suicide (King, Price, Telljohan, & Price, 1999). In another sample, although more than half of school psychologists belonged to their district's crisis response team, only 37% reported having had some type of university coursework in crisis intervention, and more then two thirds (68%) felt only minimally prepared by this training; these same professionals ranked suicide training as the most important crisis intervention topic to be emphasized in university training (Allen, Jerome, White, Marston, Lamb, Pope, et al., 2002). However, a few years later it appears the situation for school psychologists had improved: 99% reported having "some type of training in suicide risk assessment", although only 40% had received any such training through their graduate coursework (Debski, Spadafore, Jacob, Poole, & Hixson, 2007). Students who had been trained in the past 5 years were more likely to have had graduate training in suicide prevention, possibly because as of the year 2000, the National Association for School Psychologists' training standard began requiring preparation in crisis intervention. It has been reported that suicide-related training is also rare in counseling psychology programs (2000).

The picture is not much brighter in clinical psychology, where experts have been highlighting the need for better training in the assessment and management of suicidality since the 1970's (Light, 1976). This is sensible, since many as 99% of psychologists report treating one or more clients at risk for suicide during graduate school (Dexter-

Mazza & Freeman, 2003; Kleespies et al., 1993), and one out of six psychology interns have worked with a patient who died by suicide (Kleespies, Becker, & Smith, 1990; Kleespies et al., 1993).

Despite these numbers and historical calls for improved training in suicide risk assessment and management, as of 1991, clinical psychology training directors still reported that only 40% of programs had any formal training in the management of suicidality, including assessment, intervention, and postvention (services to support survivors of suicide; Bongar & Harmatz). In 1993, 55% of psychology trainees had minimal didactic instruction in suicide prevention, and 45% reported receiving minimal instruction during practica or internship. Over a decade later, there had been minimal improvement: by the time they reached their last year of clinical training (internship), half of psychology doctoral trainees still reported having received no formal training in suicide assessment (Dexter-Mazza & Freeman, 2003). More recently, a study found that 76.3% of doctoral clinical psychology trainees had received some type of in-class education on suicide assessment or intervention, with only 20% having received supervision on the matter (Mackelprang, Karle, Rheil, & Cash, 2014). However, this entire sample came from a single clinical psychology doctoral program in the United States, and was not considered by the authors to be representative of national training programs on demographic characteristics. In addition, none of the students who had transferred from other programs reported receiving any formal education in those programs before transferring, suggesting that the program studied may have been an exception to the rule (Mackelprang et al., 2014).

The content of trainings offered in graduate programs has also been called problematic, so that "when such training is offered, it is typically limited to a recitation of risk factors and a cursory discussion of no-harm contracts, coupled with the ethical necessity to report and prevent client self-injury. Needless to say, this leaves trainees substantially unprepared for managing the complexity of actual suicidal crises" (Neimeyer, 2000, p. 551). Consistent with these concerns, in their sample, Mackelprang et al. found that although the majority of trainees had received classroom education on suicide assessment or intervention, students who received classroom training scored no differently on a measure of suicide prevention knowledge than students who had not (Mackelprang et al., 2014).

After concluding that no or very little requirements for suicide assessment and intervention training currently exist, the National Action Alliance for Suicide Prevention recently created the Clinical Workforce Preparedness Taskforce to make training recommendations for nurses, social workers, physicians, mental health professionals, and others (National Action Alliance for Suicide Prevention; NAASP 2014). The Task Force's Training Guidelines make recommendations for: 1) how training should be structured, 2) essential topics (including establishing a therapeutic relationship, suicide concepts and facts, protective factors, legal and regulatory concerns, documentation, follow-up and transition of care, cultural and local factors, and organizational issues), 3) suicide first aid and assessment (including covering specific, listed risk factors, specific, listed warning signs, specific, listed protective factors, and emphasizing the need to synthesize risk and protective factors information in order to develop a plan of care), 4) intervention (including determining the client's level of risk to inform short- and long-

term planning, assessing issues related to lethal means and self-injurious behavior, and developing a safety plan tailored to the client based on information collected during the assessment process), and 5) ensuring continuity of care by following several specified strategies (NAASP, 2014).

These guidelines also mention (under Structure of Training) that training programs should have a written plan identifying the program's target audience, goals, limitations, content, and length (NAASP; 2014). They also recommend that the teaching methodology be "commensurate with the level of skill expected to be developed by trainees and employs the following methodologies, as appropriate: a) classroom lectures and discussion; b) workshops; c) webinars and online, self-paced modules; d) case study review; e) simulations; f) mentorship), and g) internship" (p. 16, NAASP, 2014). As an example, they state "simulations should be appropriate to the profession and may include such activities as role-play, risk formulation, and treatment plan development" (p. 16, NAASP, 2014). To fully prepare professionals for all of the core competencies involved in suicide prevention, the guidelines also state that a complete training program is expected to be "comprehensive and multi-modal and should incorporate multiple learning styles and methods" (p. 16, NAASP, 2014).

Although developing a training program to address *all* core competencies involved in suicide prevention, and following *all* of these guidelines, was beyond the scope of the present study, the state of the field as discussed above suggests that a quality training program focusing on a limited set of core competencies, and integrating as many as NAASP's guidelines as appropriate and possible, would likely prove useful in better preparing mental professionals to work with this challenging problem.

A Possible Solution

In sum, despite the fact that suicide has received increasing attention as a serious, growing public health problem, the availability and quality of training for mental health professionals is still bleak. Given this immediate need, it may be useful to offer providers training beyond what is available through graduate programs, in a manner that can be easily accessible and cost-effective. As a result, researchers have increasingly suggested that the use of technology may be a promising way to train more clinicians and improve the quality of training in general, while keeping therapist trainings cost-effective and therefore financially viable (Carroll, Martino, & Rounsaville, 2010; Herschell et al., 2010; Sholomskas & Carroll, 2006).

Online Training and Suicide Prevention: The State of the Field

Online training in suicide risk assessment may offer significant advantages in addressing this problem. For example, this modality can provide a private environment in which to learn about this stigmatizing condition, allow students to receive instruction at their own individualized developmental level, be available to trainees and professionals at any stage of their training (e.g., required by graduate programs, or as an option for practicing professionals who feel they did not receive adequate training in this important area), and be accessible at all times and be completed at whatever pace is feasible for the learner (Ghoncheh, Koot, & Kerkhof, 2014).

Although a few online suicide assessment and intervention training courses are available, very little is known about their effectiveness. A recent literature review searched PubMED, Web of Science, and PsycINFO for 45 expert-suggested permutations of synonyms of the terms "gatekeepers", "suicide", and "e-learning modules" (Ghoncheh

et al., 2014). Although 448 studies were returned, not a single one pertained to (1) online training modules (2) focusing on teaching suicide prevention (3) to gatekeepers. The authors then searched Google for online training modules, and found 23 learning programs. Of those, only 9 programs worldwide offered enough information to determine that they met the selection criteria (online training on suicide prevention for gatekeepers). However, as of the publication of this review, none had a single published study on its effectiveness.

As of 2016, two studies have been published examining the effectiveness of online training programs. The first examined the web-based version of QPR (Lancaster, Moore, Putter, Chen, Cigularov, Baker, et. al., 2014). The authors described two evaluations of QPR; in the first, learners had significant increases in suicide-related knowledge, self-efficacy for suicide prevention, and the behavioral intent to act when needed (Lancaster et al., 2014). In the second, outcomes for online QPR proved comparable to face-to-face outcomes; however, 6 months later, knowledge, self-efficacy, and the intent to intervene declined in both groups (Lancaster et al., 2014). Although these results suggest that there may be a role for online training in suicide prevention, the study provides limited information about this role, since QPR is aimed at teaching a screening assessment to non-mental health professionals rather than teaching a full suicide risk assessment to therapists, which requires the establishment of a therapeutic relationship, and in-depth coverage of a broad number of risk and protective factors in order to facilitate an accurate estimate of the person's risk and inform a treatment plan, as outlined in published lists of core competencies (Rudd et al., 2008; SPRC & AAS, 2008) and in the NAASP guidelines (2014).

Another group has also since published results from its program (the PITSTOP suicide prevention training from the VU University of Amsterdam; deBeurs, deGroot, Keijser, Mokkenstorm, Dujin, & Kerkhof, 2015). They found that their e-learning group adhered significantly more to the suicide prevention guidelines taught in the training, and had significantly higher self-perceived knowledge and confidence than those who received the same guidelines through traditional methods of dissemination (namely, posting the guidelines on websites of professional organizations, reviews of the guidelines in clinical journals, presentations in professional conferences, and manuals and books).

However, the PITSTOP training employed a blended (face-to-face plus online module) model where the face-to-face portion of the training lasted one day, and the online training module lasted one hour. The training was also a "train-the-trainer" effort: it aimed to create a cadre of suicide prevention trainers, who would in turn disseminate their knowledge to other service providers. Results showed that the online module yielded no improvement in participants' adherence to the guidelines taught (measured 3 months after the training) beyond levels of adherence obtained with the face-to-face portion of the training alone (deBeurs et al., 2015). Because the online module followed the face-to-face training, the utility of the online model itself is unknown. It was also brief, and therefore unlikely to be sufficient if used as a stand-alone training.

One other study evaluating online suicide prevention trainings was underway at the time of Ghoncheh's review in 2014 (evaluating the Mental Health Online program from the VU University of Amsterdam); however, as of January 2016, it has not yet been published. An evaluation of another program was being planned (Cafcass; Ghoncheh,

2014), which has also not yet been published. Of these programs, only one focuses on evaluating the effectiveness of a training for *adolescent* suicide risk assessment (Cafcass).

Therefore, there is still a great need to understand if online suicide risk assessment training can help prepare mental health professionals to work effectively with patients at risk for suicide. The present study aimed to develop and such a training program, and to test it using a randomized controlled trial design.

Training Scope

To keep the present training feasible, its scope had to be defined, as suggested by the NAASP guidelines for suicide prevention training programs (2014). Based on personal experience and dialog with faculty involved in training mental health professionals, it was decided that the present training would focus on the third and fourth core competencies outlined by Rudd and colleagues: namely, collecting accurate assessment information, and formulating a determination of risk (2008).

This decision was made because these skills were considered highly practical and potentially useful to trainees, as well as pre-requisites for other core competencies such as developing a treatment plan and managing care. Although the first two core competencies (attitudes and approach to working with suicidal clients, and understanding suicide) were also considered highly important, they were deemed to be more theoretical and more often covered in mental health graduate programs. Therefore, the present training touched on these first two core competencies, focused on collecting assessment information and formulating a determination of risk, and, to keep its scope feasible, deferred focus on treatment, managing care, and legal and regulatory issues. For the purposes of the present study, the focus of the training, namely "suicide risk assessment", therefore encompasses

skills in interviewing clients to gather accurate information related to suicidality, and skills in determining the client's overall level of risk for suicide.

The Decision Tree Model of Suicide Risk Assessment (Joiner et al., 1999, 2009)

To produce a high quality training course in suicide risk assessment, an empirically informed approach to risk assessment should be used. A few such approaches exist, including Linehan's Risk Assessment and Management Protocol (LRAMP; Linehan, Comtois, & Ward-Cieleski, 2012), the Collaborative Assessment and Management of Suicidality (CAMS; Jobes, 2006), and Joiner's Decision Tree model of suicide risk assessment (Joiner, Walker, Rudd, & Jobes, 1999; Joiner, van Orden, Witte, & Rudd, 2009).

Although all of these approaches cover risk and protective factors with the goal of facilitating the determination of the client's level of risk for attempting suicide as outlined by the NAASP guidelines, Joiner's Decision Tree model (1999; 2009) could be considered ideally suited for an online training program. This is because in addition to including an in-depth assessment of risk and protective factors shown in the literature to be empirically related to suicide risk, this model also includes an *algorithmic* approach to integrating this information to arrive at a determination of a specific level of risk for each person.

The Decision Tree model of suicide risk assessment is based on Joiner's Interpersonal Theory of Suicide (2005), whose strengths include clearly defining its terminology and the boundaries of the phenomena it addresses (namely, fatal and almost fatal suicide attempts), as well as discussing core processes that underlie suicidal behavior (Van Orden, Witte, Cucrowitz, Braithewaite, Selby, & Joiner, 2010). In addition

to a strong theoretical foundation, the model is also informed by an up-to-date, precise list of empirically supported risk factors for suicidal behavior, including family conflict, mental disorders, previous attempts, physical illness, social isolation, and other risk factors, including warning signs for suicidal behavior, such as agitation and hopelessness (Van Orden et al., 2010).

Based on this theory, the Decision Tree model of suicide risk assessment offers guidelines for *what* questions to ask of clients, *how* to ask them, and guidance on *how to organize and integrate* the information obtained (Joiner et al., 1999; 2009). Specifically, information is gathered across several "domains of risk", including the Acquired Capability to attempt suicide (including past suicidal behavior or behaviors that reduce fear of harming oneself), Desire and Ideation about attempting suicide, Plans and Preparations of varying types and degrees for making an attempt, Thwarted Belongingness (a sense of being alone and disconnected from others), Perceived Burdensomeness (self-hate or feeling like a burden to loved ones), and Other Stressors and Risk Factors (including mental illness, warning signs for suicidal behavior, etc.; Joiner et al., 1999; 2009).

Although few studies have directly investigated the use of this (or other) model(s) as a way to train mental health professionals, one unpublished dissertation did report that a brief in-person presentation on the Interpersonal Theory of Suicide given to graduate students in mental health did increase participants' knowledge of risk factors for suicide, knowledge of the theory/model, and knowledge of resources for working with suicidal clients (Weatherbee, 2011).

In addition to this preliminary support, the model was selected for the present study particularly due to its clarity and algorithmic approach. Suicide prevention guidelines (including the NAASP guidelines) have been typically vague about how practitioners should be trained to integrate information to determine risk, offering no more detail than "assess risk and protective factors", and "determine the person's level of risk for suicide". But *how* is a provider to arrive at this determination? In their recent proposal of a set of core competencies and a framework for training in suicide risk assessment training for psychology doctoral programs, Cramer and colleagues state that "all available information should be integrated and analyzed so that the clinician can be as informed as possible before using their clinical judgment to determine the client's level of risk (p. 7; Cramer, Johnson, Laughlin, Rausch, & Conroy, 2013). Similarly, Rudd and colleagues suggest "the trainee (either alone or in consultation with the supervisor) can then integrate this information with known facts about suicide to determine current risk status. Discussion of this assessment process during group supervision allows other trainees to think through these risk decisions simultaneously and assist in reviewing the selected safety plan and initial treatment plan." (Rudd et al., 2008). Yet again, the question remains - for a novice without extensive experience, *how* is this judgment to be made?

Although an explicit algorithmic approach like the one offered by the Decision Tree model might not continued to be employed by providers by the time they become experts in suicide risk assessment (since experts may conceivably internalize their own decision making algorithm, and use it implicitly), at the very least it provides an extremely useful starting point for novice providers to make a risk determination that is

clearly linked to the information at hand, versus a diffuse judgment. This approach also has the distinct advantages that it makes training easier (since the decision making process can be explained to trainees), and that it can be used in future technology-based tools much more easily than a non-algorithmic approach to risk determination (since by nature, nearly all computer code uses algorithms for decision making).

Aims and Hypotheses

 Specific Aim 1: Tree of Life Suicide Risk Assessment Training. Given the prevalence of youth suicide and the scarcity of accessible training resources in this area, the first aim of this study was to develop an evidence-informed online training course on youth suicide risk assessment. This training course was based on Joiner's Decision Tree model of suicide risk assessment (Joiner et al., 1999; 2009), and modified/supplemented to be developmentally appropriate for use to children and adolescents. To ensure feasibility, the course focused on suicide risk assessment only, as this is the first essential/pre-requisite task that mental health professionals have to master in order to triage and plan treatment for (and therefore help) patients at risk for suicide. Due to its origins on Joiner's Decision Tree model, and to its life-preserving goal, this self-paced online course was named the "Tree of Life" Youth Suicide Risk Assessment Training. To characterize the use of this training within the research trial described below, the present study also describes the number of trainees enrolling in the training, completing the training, and the range and average of number of days it took them to complete the training.

 Specific Aim 2: Effect of Training. The second aim of the present study was to contribute to the literature on the role of online training for suicide risk assessment. To do so, a Randomized Controlled Trial design was used to evaluate the acceptability and short-

term training outcomes of the Tree of Life training, by comparing learning outcomes of learners receiving the Tree of Life training (online training; OLT) with those of learners in a (waitlist; WL) control condition. In addition, satisfaction with the Tree of Life training was examined.

H2a. Group differences: Knowledge. Prior studies on online training, whether specific to suicide prevention (Lancaster et al., 2014) or not (Dimeff et al., 2009; Heck et al., 2015; Ruzek et al., 2014) have shown that online training can improve content knowledge. Therefore, it was hypothesized that compared to therapists in the waitlist condition, OLT learners would show higher knowledge about evidence-based suicide assessment at post-training, and higher gains in knowledge from pre-post training.

H2b. Group differences: Skill. Because online trainings have also been found to increase learners skills (e.g., while interacting with standardized patients; Ruzek et al., 2014), it was hypothesized that compared to therapists in the waitlist condition, OLT learners would show higher skill in evidence-based suicide assessment at post-training, and higher gains in skill from pre-post training.

H2c. Group Differences: Self-efficacy. In addition, like in person workshops (Beidas & Kendall, 2010; Herschell et al., 2010), online training programs very often increase learners' perceived self-efficacy (e.g., Dimeff et al., 2009; Lancaster et al., 2014; Ruzek et al., 2014; Wyman, Brown, Inman, Cross, Schmeelk-Cone, Guo, et al., 2008). Therefore, it was expected that compared to therapists in the waitlist condition, OLT learners would show greater improvements in self-efficacy in suicide risk assessment from pre-post training.

H2d. Group Differences: Attitudes towards computer-based training.

Compared to therapists in the waitlist condition, OLT learners would show greater

improvements in attitudes towards computer-based training. The measurement of attitudes

towards computer-based training has been developed only recently. Therefore, although data

exist on therapists attitudes towards online training do exist (Becker & Jensen-Doss, 2013),

these data were not collected in the context of a computerized training study (i.e., they do

not speak to pre-post changes following engagement with a computerized training program

in mental health). However, because studies of brief in-person workshops frequently find

that these trainings fairly easily improve therapists' attitudes towards the subject at hand

(e.g., Beidas & Kendall, 2010; Herschell et al., 2010), it was therefore expected that

exposure to a computer-based training would improve attitudes towards this type of training,

even if simply due increased familiarity with the modality.

H2e. Training Satisfaction. It was hypothesized that OLT trainees would be

satisfied with the training (their average satisfaction would be statistically significantly

greater than "neutral", which is assigned a score of 4 in a 7 point scale). Because this is the

first study to report on results of learner satisfaction with a training program based on the

Decision Tree model of suicide risk assessment, this hypothesis was meant to explore

whether, similarly to other empirically informed online trainings in mental health (Dimeff et

al., 2009), the present training would also generate appropriate levels of satisfaction among

learners. Satisfaction encompassed Training Satisfaction with Tree of Life Training itself,

and with the Decision Tree Model underlying it.

Specific Aim 3: Moderators of the Effect of Training. To help the field

understand which learners benefit most from online training in suicide risk assessment,

potential moderators of group differences in main study outcomes (Knowledge and Skill) were examined.

H3a Moderator of Group Differences: Prior Suicide Assessment Training and Experience. It was anticipated that post-training differences between OLT and control participants for knowledge and skill (both in Rating Risk Factors and in Determining Overall Risk) would be larger for participants with less prior training in suicide risk assessment (measured as number of hours in training), and with less experience in this task (measured as number of suicidal clients seen), than those with more prior training because the former would have more "room to grow" with respect to knowledge and skills.

H3b. Moderator of Group Differences: Task Value. Based on the theory of planned behavior (Azjen, 1985), it was expected that participants who most valued the opportunity to learn the task at hand would be more motivated, and more likely to form an intention to apply themselves to the training than those who valued it less. Therefore, it was expected that differences in knowledge and skill would be higher for participants who had higher scores on a measure of task value.

H3c. Moderator of Group Differences: Control of Learning Beliefs. Similarly, the theory of planned behavior posits that control beliefs (beliefs about factors that may facilitate or interfere with the performance of behavior) influence the formation of intention and subsequent behavior (Azjen, 1985). Consequently, in the present study's case, it was expected that participants who felt more able to control their own learning experiences would be more likely to form a strong intention (as well as to behave) so as to engage with the training content more deeply. As a result, it was expected that group differences between

OLT participants and the control group would be higher for participants with higher scores on a measure of Control of Learning Beliefs.

Specific Aim 4: Predictors of gains among OLT participants. For outcomes or candidate predictors that were only relevant to the OLT group (e.g., outcome = satisfaction; predictor = self-regulated learning), predictors of outcomes within the OLT group were examined.

H4a. Predictor of OLT gains: Self-Regulated Learning. The ability to regulate one's own learning has been defined as a person's ability to manage his or her own learning process through metacognitive, motivational, or behavioral strategies (Zimmerman, 2000). A growing body of literature suggests that self-regulated learning is related students' ability to successfully learn both in traditional settings (Richardson, Abraham, & Bond, 2012), and via online methods (Azevedo, 2005; Broadbent & Poon, 2015). It was therefore expected that OLT participants with a higher ability to regulate their own learning, as measured by the Motivated Learning Strategies Questionnaire - B's Critical Thinking, Rehearsal, Metacognitive Self-Regulation, Organization, and Elaboration scales (for more details, see Measures below) would score higher on measures of knowledge and skill (both in Rating Individual Risk Factors and in Determining Overall Risk). Because WL participants did not have an opportunity to learn suicide risk assessment during the study, self-regulated learning was only measured among OLT participants.

H4b. Predictor of Training Satisfaction: Prior Suicide Assessment Training and Experience. Within OLT participants, it was expected that satisfaction ratings would be higher for with less prior training in suicide risk assessment. This hypothesis was rationally derived based on the expectation that those with less prior training in suicide risk

assessment would stand to gain more from the training than those with more prior training or experience.

H4c. Predictor of Training Satisfaction: Task Value. It was expected that OLT participants who valued the opportunity to learn suicide risk assessment the most would be most satisfied with the training, simply because they were expected to be most receptive and dedicated to the opportunity to train.

H4d. Predictor of Training Satisfaction: Control of Learning Beliefs. It was also expected that OLT participants who felt more in control of their own learning would feel more satisfied with the training because the training was formatted as an individual, self-paced experience. Therefore, it was expected that participants who felt more in control of their own ability to learn would be more satisfied with the training format.

H4e. Predictor of Training Satisfaction: Self-Regulated Learning. Similarly, because of the individual, self-paced nature of the present training, it was expected that OLT participants who were better able to regulate their own learning (e.g., as measured by their ability to think critically, elaborate content, rehearse content, organize their thinking, and to assess their own learning and learning strategies), would be better able to engage with the training, and consequently more satisfied with it.

Chapter 2

Method

Participants

Participants were primarily female, mental health professionals (vs. mental health students), and represented a range of ethnicities, disciplines, and levels of training and prior experience (both general and specific to suicide risk assessment). Detailed characteristics are provided in Table 2.1.

Table 2.1

Sample Characteristics

Statistic	%	M	s.d.	Range
Gender				
Female	92.02	-	-	-
Male	7.98	-	-	-
Ethnicity				
Caucasian	77.64	-	-	-
African-American	11.80	-	-	-
Asian American	5.59	-	-	-
Native American	3.73	-	-	-
Other[1]	8.07	-	-	-
Hispanic[2]	11	-	-	-
Degrees Earned (All that Apply)				
Bachelor's (BA, BS, RN)	61.96	-	-	-
Master's (MA, MS, MEd, LPC, LCSW, LMFT)	68.10	-	-	-
Doctoral (Ph.D., M.D., Ed.D.)	3.68	-	-	-
Unknown (MFT, "Other")	40.49	-	-	-
Professional Status				
Student	65.64	-	-	-
Professional	34.36	-	-	-
Professional Discipline - Professionals				
Social Work	36.89	-	-	-
Marriage and Mental Health Counseling	26.21	-	-	-
Marriage and Family Therapy	13.59	-	-	-
Clinical Psychology	9.71	-	-	-
School Counseling	2.91	-	-	-
Psychiatry	1.94	-	-	-
Nursing	0.97	-	-	-
Other	7.77	-	-	-
Professional Discipline – Students				
Mental Health Counseling	39.62	-	-	-
Social Work	26.42	-	-	-
Marriage and Family Therapy	15.09	-	-	-
Clinical Psychology	7.55	-	-	-
School Counseling	3.77	-	-	-

Other[4]	7.55	-	-	-
General Training – Professionals				
Semesters of Training	-	6.05	6.02	1 - 5
Semesters of Practicum	-	3.45	1.31	0 - 6
No practicum	6.00	-	-	-
Completed Full-Time Internship	74.67	-	-	-
Lifetime work as a mental health professional (Y/N)	83.50	-	-	-
Lifetime work as a mental health professional (# years)	-	7.06	6.30	2 mos. - 25 yrs.
General Training – Students				
Semesters of Training	-	5.06	2.36	1 - 20
Semesters of Practicum	-	2.72	1.23	0 - 4
No practicum	15.09	-	-	-
Completed Full-Time Internship	58.83	-	-	-
Lifetime work as a mental health professional (Y/N)	32.08	-	-	-
Lifetime work as a mental health professional (# years)	-	3.53	5.28	6 mos. - 23 yrs.
Suicide Risk Assessment Training Experience				
Number of Hours	-	12.72	19.55	0 – 175 hrs.
Number of Suicidal Clients Seen: 0	9.82%	-	-	-
Number of Suicidal Clients Seen: 1-5	46.62	-	-	-
Number of Clients Seen: 6-10	17.18	-	-	-
Number of Clients Seen: > 10[5]	21.47	-	-	-
Number of Suicidal Clients Seen: N/A	4.91	-	-	-

Note. [1]Self-described as: Hispanic, Latino, Puerto Rican, Mexican, Mexican-American, Israeli, Pakistani, or European. [2] Hispanic ethnicity was assessed with a separate question, such that participants could self-identify as Hispanic and any other category listed above; therefore, percentages do not add up to 100%. [3]Self-described as: School Psychology, Educational Psychology, Counseling Psychology, Professional Counseling, Mental Health and Substance Abuse, and Art Therapy. [4]Self-described as: Clinical Social Work, Forensic Psychology, Learning Sciences and Human Development, and School Psychology. [5]$M = 61.21$, *s.d.* $= 92.18$, range = 15-500).

Procedures

An automated email invitation to learn more about the present study was sent to each person who completed TF-CBTWeb during the recruitment period for the present study. Participants were recruited until the target sample was achieved. Recruitment lasted 63 days over the Summer/Fall of 2015. During this period, 4,047 mental health students and professionals completed TF-CBTWeb and were told about the present study.

Of these, 296 responded to the invitation to learn more about the study and were sent a link to the informed consent form. Of these, 211 (71.28%) completed the study's consent form, with 23 (10.90%) declining participation, and 188 (89.10%) consenting to participate. Of the 188 consenters, 5 (2.70%) never started the study's baseline survey, 20 (10.60%) started, but did not complete it, and 163 (86.70%) completed it.

Following completion of the baseline assessment, participants were randomized to one of two conditions: to begin training immediately (OLT), or to begin training 2 weeks after completing their baseline assessment (WL). To reduce noise and improve statistical power, participants were assigned to blocks (students vs. professionals), and randomized to conditions within blocks. Qualtrics, the study's survey administration software, was programmed to perform this randomization electronically (Qualtrics, Provo, UT; http://qualtrics.com). Overall, 80 participants (49.08%) were assigned to OLT, and 83 (50.92%) to WL. Among OLT participants, 63.75% were professionals, and among WL participants, 66.27%.

All participants were asked to complete training within 2 weeks of receiving access to it. Participants were emailed a link to the study's post-training assessment immediately upon completing training (OLT participants), or two weeks after being given access to the training (both OLT and WL participants), whichever was earlier. To prevent contamination of the post-training assessment results among OLT participants, their access to the training was disabled when the post-training assessment was sent to them. Several reminders were sent to maximize subject retention, as shown in Table 2.2.

Table 2.2

Subject Retention Strategies

Study Condition	Situation	Contact Type	Timing
Both	Baseline assessment not completed	Email	4 days after consent
	Post-training assessment not completed	Email	4 days after link emailed
	Post-training assessment not completed	Email	11 days after link emailed
OLT	Global reminder to train – all OLT participants	Email	3 days after training access emailed
	Targeted reminder to train – only participants who have not trained yet	Email	5 days after training access emailed
	Targeted reminder to train – only participants who have not trained yet	Call/Text[1]	7 days after training access emailed
	Global reminder to train – all OLT participants	Email	9 days after training access emailed
	Targeted reminder to train – only participants who have not trained during the past week	Email	11 days after training access emailed
	Targeted reminder to train – only participants who have not trained during the past week	Call/Text[1]	13 days after training access emailed

Note. [1]Only if participant consented to receiving these contacts.

Study Conditions

OLT. The training developed for the present study, called the "Tree of Life Suicide Assessment Training", was informed by Thomas Joiner's model of suicide risk assessment – including its published materials on suicide risk factors to evaluate during a risk assessment interview, and the decision tree used to estimate a person's level of risk for suicide (Joiner et al., 1999; Joiner et al., 2009). Because the aim of the Tree of Life training was to prepare professionals to assess suicidality in children and adolescents, contents were adapted to be developmentally appropriate, both in the risk factors assessed, and in the techniques used for interviewing clients and utilizing collateral

information. These adaptations were made in consultation with experts in child clinical psychology and adolescent suicidality.

Contents of the training targeted two main goals. The first was to prepare a clinician to interview a child or adolescent about suicidality thoroughly, directly, and with sensitivity. The second was to teach the clinician to integrate the information obtained during this interview, using the adapted risk-level decision tree to assign an estimated suicide risk level for each client interviewed.

Contents of the training were programmed to be presented electronically and interactively, accessed through a web browser over an internet connection. The platform used to program the training was Articulate Storyline, and the platform used to create and manage participant access to it was Articulate Online (https://www.articulate.com/); Articulate Global is a leading providers of e-learning products.

The Tree of Life training included 10 modules. A description of each module is given in Table 2.3.

Table 2.3

Tree of Life Training Content

Module	Content
1. Introduction	The Tree of Life training model
	How to navigate the online platform
	Increasing motivation to train
	Tips for training
2. The Decision Tree Model	Why Suicide Risk Assessment is hard
	How the Decision Tree model can help
	Domains of Risk (Joiner's)
	Interview Checklist
	The Decision Tree
	Proximal vs. Distal Risk Factors
	Applied practice quizzes
3. Acquired Capability	Definition
	Interviewing
	Rating Risk/Interview Checklist
	Applied practice quizzes
4. Desire and Ideation	Definition
	Interviewing
	Rating Risk/Interview Checklist
	Applied practice quizzes
5. Plans and Preparations	Definition
	Interviewing
	Rating Risk/Interview Checklist
	Applied practice quizzes
6. Perceived Burdensomeness	Definition
	Rating Risk/Interview Checklist
	Rating Risk
	Applied practice quizzes
7. Thwarted Belongingness	Definition
	Interviewing
	Rating Risk/Interview Checklist
	Applied practice quizzes
8. Other Risk Factors	Definition
	Interviewing
	Rating Risk/Interview Checklist
	Applied practice quizzes
9. Putting it all together: the Decision Tree	How to use the Decision Tree
	Applied practice quiz 1 – step by step
	Applied practice quizzes
10. Beyond the Assessment	Talking openly about suicide: words to use
	Practicing
	Supervision and consultation
	Keep calm and break confidentiality
	Advanced tips
	Introduction to disposition options: Safety Plan vs. Hospitalization[1]
	Documentation

Note. [1]Brief overview only; participants encouraged to obtain further training in these and other intervention strategies.

WL. The WL condition was provided access to the training after they completed their Time 2 measure, which was administered two weeks after baseline.

Measures

Participants were evaluated at baseline (Time 1) and post-training (Time 2). The measures for this study included various demographic and training characteristics (Time 1 only), as well as risk assessment knowledge and skill (Times 1 and 2), and satisfaction with the training (OLT participants only, Time 2). In addition, although the study was designed to gather data about how many times a user accessed the training and how much time was spent in training as indices of trainee engagement, it was discovered during the study that although these were advertised available metrics of the professional, award-winning learning management system (LMS) used (Articulate Online), the LMS could not capture data from each user's last training session (the session during which the user happened to finish the training, which could range from their first session, if they completed the training in one sitting, to their n^{th} session). As a result, these data could not be calculated accurately and are not reported.

Measures were administered only to applicable study group(s) at the applicable timepoint(s). Table 2.4 reflects the measures administered to each group at each timepoint. Measures are described below.

Table 2.4

Measures-by-Timepoint

Measure	Baseline (T1)		Post-Training (T2)	
	Group(s)	**Role**	**Group(s)**	**Role**
Knowledge	OLT[1], WL[2]	IV	OLT[1], WL[2]	DV
Skill – Rating Individual Risk Factors	OLT[1], WL[2]	IV	OLT[1], WL[2]	DV
Skill – Determining Overall Risk	OLT[1], WL[2]	IV	OLT[1], WL[2]	DV
Self Efficacy – Interviewing	OLT[1], WL[2]	IV	OLT[1], WL[2]	DV
Satisfaction	N/A	N/A	OLT	DV
MSLQ-A	OLT[1], WL[2]	Moderator[3]	N/A	N/A
MSLQ-B	N/A	N/A	OLT	Predictor[4]
Prior Suicide Assessment Training – # of Hours	OLT[1], WL[2]	Predictor[4], Moderator[3]	N/A	N/A
Prior Suicide Assessment Experience - # of Clients Seen	OLT[1], WL[2]	Predictor[4], Moderator[3]	N/A	N/A

Note. [1]Encompassing two indices: Interviewing Skill, and Classification Skill. [1]Online Training condition. [2]Waitlist condition. [3] Motivated Strategies for Learning Questionnaire. [3]Moderator of the effect of training (condition) on the DV; [4]Predictor of the DV's scores, among OLT participants only.

Demographic Characteristics and Previous Training (Appendix A). Participants

provided information about their age, gender, ethnicity, and education. They also answered

questions about previous mental health-related education, clinical experience, and suicide

risk assessment training.

Computer-Based Training Attitudes Scale (CBTAS; Becker & Jensen-Doss,

2013, 2014). The CBTAS was used to assess participants' initial attitudes towards

computer-based training, as well as changes in attitudes from pre-post training. The CBTAS

asks respondents to rate how much they agree with statements related to computer-based

training. Ratings are on a 5-point Likert-like scale, with anchors ranging from "Strongly

Disagree" to "Strongly Agree". Five items were shown to load on an "Efficacy" factor

(beliefs about the efficacy of computer-based trainings), and three were shown to load on a

"Comfort" factor (the respondent's comfort level with computer-based trainings). CBTAS scales are scored by taking the mean of the respondent's answers for the items that make up the scale (3 items for the Comfort scale, 5 items for the Efficacy scale). A prior study of its psychometric properties (Becker & Jensen-Doss, 2014) found significant correlations between more positive attitudes and greater computer fluency, supporting the scale's concurrent validity, and CBTAS scores were stronger predictors of prior participation in computer-based training than high scores on computer fluency or openness to new practices (Becker & Jensen-Doss, 2014). Both CBTAS scales had good internal consistency in the present sample (Comfort scale, .897; Efficacy scale, .927).

Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1991; MSLQ). To enhance the study's ability to identify predictors of training completion, performance, and satisfaction, items from this well-established measure of trainee motivation and learning strategies were used. Specifically, 10 items from Part A (Learning Motivation) were administered at baseline (T1) to all participants. These items represented the scales for Task Value (how important the subject in the training is for the person) and Control of Learning Beliefs (how much in control of learning the material the person feels).

To better understand which trainees are more likely to benefit from the Tree of Life Training, 24 items from Part B (Learning Strategies) were slightly adapted (e.g., changed from the present to the past tense) and administered at post-training (T2) to OLT participants only (these items were not applicable to WL participants at T2 since they had not yet had a chance to complete the training, and therefore report on learning strategies employed during the course). The Part B items represented the Critical Thinking and Metacognitive Self-

Regulation scales, both of which have been shown to relate to successful learning in an online environment (Broadbent & Poon, 2015), as well as the Organization, Rehearsal, Elaboration scales, as they contained strategies that seemed relevant to the content and modality of the Tree of Life training. All MSLQ items are rated on a 7-point Likert scale, where the extremes are labeled "Not at all true of me" and "Very true of me".

Scores for each MSLQ scale are created by taking the mean of respondent's answers for the items that constitute the scale. Most of the MSLQ scales, modified to be applicable for the present study, had adequate or better internal consistency in the present sample, given the nature of the present research (above .70; Lance, Butts, & Michels, 2006). Cronbach's alpha values in the present sample were as follows: MSLQ-A – Control of Learning Beliefs, .754 (4 items), MSLQ-A – Task Value, .683 (6 items), MSLQ-B – Metacognitive Self-Regulation, .802 (9 items), and MSLQ-B – Critical Thinking, .705 (5 items), MSLQ-B Organization, .823 (3 items), MSLQ-B Rehearsal, .717 (4 items), and MSLQ-B Elaboration, .402 (3 items).

Suicide Risk Assessment Knowledge (Appendix B). Because no published questionnaire exists assessing knowledge of suicide risk factors and assessment strategies covered in Joiner's Decision Tree model, a study specific questionnaire including 20 multiple choice questions was used to assess participants' knowledge gains. Questions covered factual questions related to the six domains of risk in the Decision Tree model (acquired capability, plans and preparations, desire and ideation, thwarted belongingness, perceived burdensomeness, and stress/other risk factors), as well as behavioral recommendations made in the Tree of Life Training about how to conduct a sensitive and informative risk assessment (e.g., therapist avoidance, time management, etc).

Scores were created by adding the number of the participant's correct answers, dividing this by the number of total possible correct answers (18), and multiplying the result by 100 for better interpretability. Cronbach's alpha for this scale in the present sample was .535 (18 items). Several steps were taken to attempt to improve the internal consistency of this measure, including deleting items based on item-level diagnostics, and conducting a factor analysis. More information is provided below (under Analyses).

Suicide Risk Assessment Skill (Appendices C and D). Few standardized measures of trainee skill in assessing level of suicide risk are available. To date, most studies on risk assessment and management have measured trainee self-perceptions of skill (e.g., Robinson, et al., 2008), or utilized the Self-Injury Risk Inventory (SIRI-2; Neimeyer & Bonnelle, 1997). However, self-perception ratings suffer from accuracy problems (Beidas & Kendall, 2010; Desmarais, Nicholls, Reed, & Brink, 2010), and the SIRI-2 focuses most of its content on general interviewing skills and management of suicidality rather than on its assessment. One measure takes an applied approach by asking trainees to rank order four vignettes based on suicide risk level (e.g., Madson & Vas, 2003). However, because the vignettes describe adults and include issues such as heavy alcohol use, employment issues, etc., the scenarios would have had to be adapted to represent children and adolescents for the present study. In addition, such rank ordering only captures the trainee's overall classification decision, offering limited insight about the person's ability to evaluate individual risk factors, and therefore into the reasoning leading the overall risk level decision. Finally, because the measure only asks the vignettes to be ranked relative to each other, it emulates an activity of limited utility in an applied clinical setting. In the context of daily clinical practice, the most important decision is for the clinician to be able to decide,

for each individual client, how much risk a person is in, so that treatment disposition and planning can occur.

Therefore, in the present study skill was assessed with applied questions specifically designed to tap the two main skillsets utilized in suicide risk assessment and in the Decision Tree model, which are also defined as core competencies by suicide risk assessment guidelines (e.g., NAASP, 2014). This measure's two scales reflect these two main skillsets, namely: Rating Individual Risk Factors (the person's ability to accurately rate the severity of each individual risk factor for suicide), and Determining Overall Risk (the person's ability to integrate and interpret findings to arrive at an overall risk level for suicide that could be used to assist clinical decisions).

To assess their skill in Rating Individual Risk Factors (Appendix C), participants were asked to rate 28 applied behavioral descriptions of risk factors (e.g., thinks about suicide for several minutes at a time) from 0-3 (no risk, mild risk, moderate risk, serious risk). In the Decision Tree model (and arguably implicitly in other suicide risk assessment paradigms), these ratings are integrated into decisions about which of the six domains of risk are "elevated" for the client in question. Those decisions are in turn integrated when the clinician applies the Decision Tree to estimate the client's overall level of risk.

The remaining questions in this measure belong to the Determining Overall Risk (Appendix D) scale, and assess the clinician's ability to integrate such information and apply the Decision Tree to determine a patient's overall risk level. Specifically, a case vignette is presented, which includes pre-determined risk ratings for each relevant risk factor. Six dichotomous (yes-no) questions then ask, for each of the six domains of risk, if it is "elevated". An additional question asks how many additional "significant findings" the

client has (this information is used to capture additional risk levels which are important in the determination of overall risk). The last question asks the participant to estimate the client's overall level of risk (presumably using the previous information). Scores are created by adding the number of the participant's correct answers on the items that constitute the scale, dividing it by the number of total possible correct answers, and multiplying it by 100. Cronbach's alpha for the Rating Individual Risk Factors scale was .694 (28 items), and .720 for the Determining Overall Risk scale (23 items).

Training Satisfaction (Madson & Vas, 2003; Appendices E and F). To determine the acceptability of the Tree of Life Training, the present study used a pre-existing measure of trainee satisfaction with a suicide risk assessment training exercise that has been described in two independent prior studies (Madson & Vas, 2003; Norrish, 2009). This measure includes eight questions on perceived learning, enjoyment, and whether participants would recommend the training, rated on a 5-point Likert-like scale, and was named Satisfaction – Tree of Life Training (Appendix E). A modified version of the questions was used to assess participant' satisfaction with the Decision Tree model used in the present study, assessing, on the same 5-point Likert-like scale, the helpfulness, ease of understanding, ease of use, and intent to apply the Decision Tree model, and named Satisfaction – Decision Tree Model (Appendix F). Scoring followed Madson & Vas' (2003) strategy for scoring the unmodified version of these items, which comprises taking the mean of the items that constitute the scale. Cronbach's alpha for the Satisfaction – Didactic scale was .788 (8 items), and .867 for the Satisfaction – Decision Tree scale (4 items).

Data Analyses

Missing data. Prior to analyzing the study hypotheses, the data were screened for missing values. In addition to examining the frequency of missing data, Little's test was used to help clarify the nature of missing data (1988).

Missing Items. The frequency at which individual items were missing was examined for each measure. Some variables were only applicable/meaningful at Time 1. These included the amount of prior training in suicide risk assessment (number of hours devoted to it to date), and the amount of prior clinical experience with suicidal patients (number of suicidal clients seen to date). These variables had complete data. Within the MSLQ-A, one scale had no missing items (Control of Learning Beliefs), and the other (Task Value) had one item missing for .6% of participants, and another for 1.2% of participants. None of the remaining scales collected at T1 – namely, the CBTAS, the Self-Efficacy scales, the Knowledge scale, and the Skill scales, had any missing values.

Some variables were only collected of OLT participants, as they did not apply to the WL condition: namely, Training Satisfaction (Didactic and Decision Tree scales), and the MSLQ-B scales, which asked about learning strategies the participant used while training. Among study completers, items in these scales were missing data for 1.8% of cases or less. At Time 2, there were no missing data for items from the Attitudes scales or Self-Efficacy scales. The Knowledge scale had items with missing values for 2.4% of completers or less. Among the two skill scales, data was missing at 7.3% of participants for one item/response option combination (out of a total of 51), at 6.5% for 4 items/response options, at 5.6% for 6 items/response options, and at 4.8% or less for the remaining items/response options. In addition to examining the frequency of missing data, Little's test was used to help clarify the

nature of missing data observed (1988). As seen in Table 2.5, results were not statistically

significant, suggesting that among study completers, data for these insolated items were

missing completely at random. As such, since all measures scores were based on means, if a

single item was missing, the missing item was dropped and the scale's score was computed

without that item. For any scales where a participant had more than one item missing, the

scale's score was treated as missing.

Table 2.5

Item-level missing data: Little's tests

Measure	Baseline (T1)			Post-Training (T2)		
	$\chi 2$	df	p	$\chi 2$	df	p
Knowledge	N/A[1]			57.386	50	.220
Skill – Rating Individual Risk Factors	N/A[1]			88.113	108	.919
Skill – Determining Overall Risk	N/A[1]			2.460	3	.483
CBTAS – Efficacy	N/A[1]			13.922	18	.734
MSLQ-A – Task Value	8.080	10	.621	N/A		
MSLQ-B – Critical Thinking	N/A[2]			1.165	4	.884
MSLQ-B – Metacognitive Self-Regulation	N/A[2]			2.041	8	.980

Note. Little's test was not performed on [1]measures with no individual items missing (such that any missingness was due to attrition and involved the entire scale only; e.g., T2 CBTAS - Comfort), [2]nor on single item measures (e.g., Self-Efficacy). [2]Measure not applicable at this timepoint.

Missing Scale Scores. In addition to examining missingness of individual scale

items, missingness of scale scores due to attrition was also examined. Across the entire

sample, 45 participants (27.60%) dropped out of the study (they did not complete any

portion of the T2 assessment). Participants in the training condition dropped out

significantly more often (n = 29, 36.3%) than participants in the waitlist (n = 16, 19.3%; $t =$

2.453, df = 161, p = .015), presumably due to more intensive time requirements (time had to

be spent in training in addition to study assessments). Figure 1 below shows the flow of participants in the study.
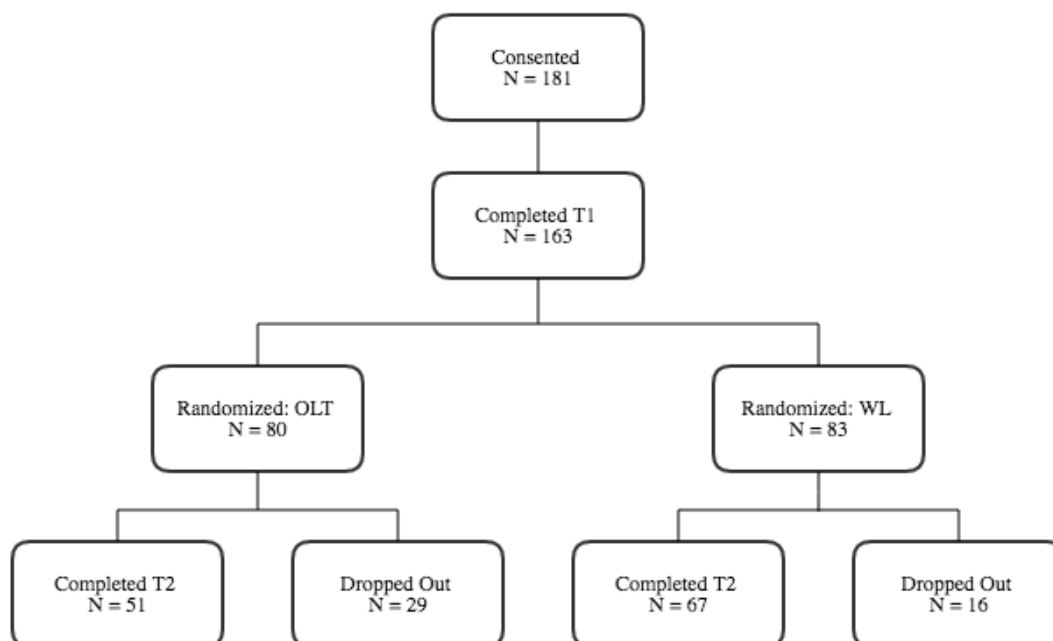
Figure 1. Participant Flow.

Table 2.6 depicts the rate of missingness of scales scores due to attrition, as well as due to partial scale completion (more than one missing item per scale). A Missing Values Analysis including all of the study's IVs, DVs, control variables, and demographics (e.g., age, sex) was conducted. Little's tests were conducted to understand the nature of these missing data. Specifically, one test was conducted on all variables available to both study groups, and a second test on variables available only to the training group. Results were not significant in either case ($\chi 2 = 161.320$, df = 153, $p = .307$, and $\chi 2 = 194.919$, df = 195, $p = .488$, respectively), again suggesting that these data were missing completely at random. To handle missing scale-level data, the data were imputed five times using SPSS' multiple imputation procedure. Analyses testing the study's hypotheses were then carried out on

these five (m=5) imputed datasets. The results for the Tests of Study Hypotheses presented

in Chapter 3 are the pooled results from all 5 imputed datasets.

Table 2.6

T2 scale scores: Missingness due to attrition and partial scale completion

Scale	Missingness N (%)
Knowledge	58 (35.6%)
Skills – Rating Individual Risk Factors	62 (38%)
Skills – Determining Overall Risk	62 (38%)
Self-Efficacy - Interviewing	53 (32.5%)
Self-Efficacy – Determining Risk	53 (32.5%)
Attitudes – Comfort	54 (33.1%)
Attitudes – Efficacy	54 (33.1%)
Satisfaction – Training	34 (42.5%)
Satisfaction – Decision Tree Model	34 (42.5%)
MSLQ-B[1]	34 (42.5%)

Note: Rates may vary among scales because some participants began, but did not complete, the Post-training (T2) assessment. [1]Same value for all subscales.

To identify potential control variables for the analyses, study completers and

dropouts were also compared on baseline characteristics (see Table 2.7). The groups did not

differ significantly on any baseline variables

Table 2.7

Differences between Completers and Dropouts on Baseline Variables

	Completers		Dropouts			
Baseline Variable	*M*	*s.d.*	*M*	*s.d.*	*t*	*p*
Knowledge	36.83	10.38	37.67	10.12	-.472	.637
Skill: Rating Individual Risk Factors	34.86	8.64	37.11	9.06	-1.435	.153
Skill: Determining Overall Risk	40.58	12.54	39.69	11.65	.427	.670
Self-Efficacy: Interviewing	4.76	1.38	4.64	1.63	.406	.685
Self-Efficacy: Determining Risk	4.47	1.22	4.47	1.50	.002	.998
Comfort: Attitudes	3.75	.57	3.93	.56	-1.836	.068
Comfort: Efficacy	4.41	.46	4.42	.44	-.300	.764
MSLQ-A: Task Value	5.73	.69	5.70	.73	.223	.824
MSLQ-A: Control of Learning Beliefs	6.43	.53	6.33	.66	.852	.396

Specific Aim 1: Development of Tree of Life Suicide Risk Assessment Training.
Aim 1 included descriptive statistics regarding training enrollment and completion.

Specific Aim 2: Effect of Training. The effect of training on the study's main
outcome variables was examined with linear regressions. Results reported are those pooled
from the 5 datasets obtained via multiple imputation. Each outcome score (e.g., Time 2
Knowledge) was predicted by the variable indicating the participant's condition (0 = WL, 1
= OLT), while simultaneously controlling for the participant's baseline score on the same
measure (e.g., Time 1 Knowledge). For all hypotheses that were tested using linear
regressions, the assumptions of regression were checked in the following ways: the
assumption of independence of residuals was tested with the Durbin-Watson test (with
values near 2 indicating adequate results), correlation coefficients (with values lower than
0.7 indicating adequate results), Tolerance (with values lower greater than 0.1 indicating
adequate results), and VIF (with values lower greater than 10 indicating adequate results)
values were checked for evidence of multicollinearity, and casewise diagnostics, leverage

values, and Cook's distance values were examined to detect outliers, high leverage cases, and highly influential cases, with subsequent inspection of suspect cases to determine whether any remediation was needed (e.g., fixing any data entry errors; no cases were deleted due to being flagged as outliers). Plots of the standardized and studentized residuals against the standardized predicted values of the dependent variable were used to check for homoscedasticity, by inspecting the plot patterns for unusual grouping, and to ensure that the independent variables were collectively linearly related to the dependent variable. Histograms (with a superimposed normal curve) of the standardized residuals and normal probability plots were used to check if the errors were normally distributed. Any problematic diagnostics are reported in the results section for the appropriate analysis.

To determine how satisfied learners were with the Tree of Life training, one-sample t-tests were planned to determine if learners' scale scores were significantly different than a "neutral" satisfaction score (coded 4 in a 7-item Likert Scale). A two-tailed test was used, with a 95% confidence interval. Prior to computing the t-test, the assumptions of a one-sample t-test – namely, that there are no outliers and the data are normally distributed, were tested. Because some assumptions were violated in some cases, post-hoc Wilcoxon signed-rank tests comparing the observed data to a hypothesized median value of 4 (a rating of "neutral" on these scales) were used. The t-tests and Wilcoxon signed-ranked tests were performed on the original data only, given the lack of guidelines in the field for how to pool these results when analyzing datasets obtained with multiple imputation. To assist in the interpretation of these results, parallel results obtained from the five individual imputed datasets are also reported. For analyses on the main effects of training (study condition), Cohen's d was used as the measure of effect size.

Specific Aim 3: Moderators of the Effect of Training. To better understand whether the magnitude of the difference in training outcomes between OLT and WL participants (examined in Aim 1) varied as a function of specific participant characteristics, possible moderators of the effect of training were also examined. Regressions examining each outcome that was applicable to both training groups were constructed, controlling for the participant's baseline levels on the same measure. The main effects of training condition as well as of the candidate moderator were entered simultaneously along with the interaction term between condition and the moderator, and the applicable T1 control variable (when applicable). In addition to regression weights, the proportion of variance explained by each regression model (change in R^2) is also reported as a measure of effect size. Due to lack of guidelines on how to obtain pooled R^2 for datasets resulting from multiple imputation, change in R^2 is reported for the original data as well as each of the imputed datasets.

Specific Aim 4: Predictors of gains among OLT participants. To better understand which OLT participants benefited the most from the Tree of Life training, hypothesized predictors of more positive training outcomes were examined. Specifically, separate regressions were constructed examining the impact of candidate predictors (i.e., MSLQ-B subscale scores, prior suicide risk assessment training - # of hours, and prior suicide risk assessment training - # clients seen) on each main training outcome (i.e., Knowledge, Skills, and Satisfaction). When a baseline version of the DV had been collected (i.e., Knowledge, Skills), it was entered simultaneously with the predictor to control for the participant's baseline level of performance on that measure. In addition to regression weights, the proportion of variance explained by each regression term (change in R^2) is also reported as a measure of effect size, for the original data and each of the imputed datasets.

Statistical Power. Statistical power was calculated using the software G*Power 3,
based on the final sample sizes (total n = 163, OLT = 80). For group comparisons (full
sample) using regression analyses with two predictors and an error rate of α = .05, the
achieved power to detect small effects (d = .20, R^2 = .02) was .34, whereas the power to
detect medium effects (d = .50, R^2 = .13) was .99, and the power to detect large effects (d =
.80, R^2 = .26) was also .99. For group difference models including interaction terms, the
majority of which had 4 predictors, power was .26, .99, and also .99, respectively. For group
difference models including interaction terms and the dummy coded variables representing
numbers of prior suicidal clients seen, which had six predictors power was .22, .97, and .99.

For regressions performed within the OLT group only (n = 80), power to detect
small, medium, and large effects in models with two predictors was .18, .87, and .99,
respectively. For models with three predictors, the ability to detect small, medium, and large
effects was .16, .82 and .99 respectively, and for models with four predictors, it was .14, .77,
and .99

For t-tests of satisfaction among OLT participants, with the present study's sample
size of 80 and an error rate of α = .05, the achieved power to detect a small effect (d = .20)
was .55. Power to detect a medium effect (d = .50) was .99, and power to detect a large
effect (d = .80) was also .99.

Chapter 3

Results

Characteristics of the Sample at Baseline. Table 3.1 shows the sample's scores on

suicide risk assessment-related variables at T1.

Table 3.1

Suicide Assessment Training-Related Characteristics of the Sample at T1

Variable	%	*M*	*s.d.*	Range
Prior Suicide Assessment Training – # hours	n/a	12.72	19.55	0-175
Prior Suicide Assessment Experience				
0 suicidal clients seen	14.73	n/a	n/a	n/a
1-5 suicidal clients seen	46.62	n/a	n/a	n/a
6+ suicidal clients seen	38.65	n/a	n/a	n/a
Computer-Based Training Attitudes				
Comfort	n/a	3.879	0.568	2.33 – 5.00
Efficacy	n/a	4.422	0.441	3.00 – 5.00
Self-Efficacy in Suicide Risk Assessment				
Interview	n/a	4.670	1.563	1.00 – 7.00
Determine Overall Risk	n/a	4.470	1.424	1.00 – 7.00
Knowledge[1]	n/a	37.437	10.174	11.11 – 66.67
Skills				
Rating Individual Risk Factors	n/a	36.483	8.977	17.86 – 53.57
Determining Overall Risk	n/a	39.936	11.871	17.39 – 78.26
MSLQ-A				
Task Value	n/a	5.712	0.713	4.00 – 7.00
Control of Learning Beliefs	n/a	6.360	0.623	4.00 – 7.00

Relationships between Study Variables. The correlation matrix for the study variables is presented in Table 3.2. Of note, correlations suggested that OLT participants had significantly higher scores for Skill in Determining Overall Risk than the waitlist participants ($r = .197$, $p < .05$), supporting the decision to control for baseline scores on the DV in the main study analyses.

In addition, participants who scored higher in Knowledge after the training also tended to do significantly better in their post-training ability in Rating Risk Factors ($r = .503$, $p < .001$), and in Determining Overall Risk ($r = .556$, $p < .001$). However, the magnitudes of these correlations suggest these measures did not fully overlap in their construct coverage.

With respect to prior training and experience, both participants who had received more hours of prior training in suicide risk assessment, and participants who had seen at least six or more suicidal clients in the past were significantly more confident in their ability to perform a suicide risk assessment interview with clients ($r = .257$, $p < .001$ and $r = .432$, $p < .001$, respectively), as well as in their ability to determine the client's overall level of risk for suicide ($r = .305$, $p < .001$, and $r = .396$, $p < .001$, respectively) at baseline. However, participants' self-efficacy was not significantly related to their knowledge or skills before or after the study (see Table 3.2). The single exception was that their self-confidence for Determining Risk was significantly correlated with their Skill in Rating Individual Risk Factors at baseline ($r = .171$, $p < .05$).

Despite providing participants with greater confidence, participants' prior training and experience with suicide risk assessment were not significantly correlated with greater Knowledge or Skills, whether they were measured before or after training (see Table 3.2).

The only exception was that participants who had more hours of prior training scored significantly worse than those with more prior training in Rating Risk Factors at baseline ($r = -.171$, $p < .05$).

A few significant correlations may also help to characterize participants. First, participants who felt more in control of their own ability to learn felt significantly more confident at the end of the study in their abilities to both conduct a suicide risk assessment interview ($r = .279$, $p < .01$), and to determine a client's level of risk ($r = .254$, $p < .05$). Participants who with more positive attitudes towards computer-based trainings (both in terms of comfort and efficacy beliefs) at baseline were significantly more likely to value the opportunity to complete the present training ($r = .230$, $p < .01$ and $r = .379$, $p < .001$, respectively), and to have a stronger belief in their ability to control of their own learning ($r = .336$, $p < .01$ and $r = .541$, $p < .001$, respectively). In addition, participants who liked the Tree of Life training better were also significantly more likely to be satisfied with the model underlying the training (the Decision Tree model), although the magnitude of this correlation also suggests that these scales did not fully overlap ($r = .396$, $p < .001$).

Table 3.2

Correlation Matrix

				Variable Number					
	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. T1 Knowledge	1								
2. T2 Knowledge	0.294**	1							
3. T1 Skill: Rating Risk Factors	0.067	-0.008	1						
4. T2 Skill: Rating Risk Factors	-0.005	0.503***	-0.120	1					
5. T1 Skill: Determining Overall Risk	0.156*	0.105	0.051	-0.004	1				
6. T2 Skill: Determining Overall Risk	0.229*	0.556***	-0.042	0.601***	0.318**	1			
7. T1 Self-Efficacy: Interview	0.171*	0.056	0.047	-0.117	0.117	-0.023	1		
8. T1 Self-Efficacy: Determine Risk	0.067	0.023*	-0.002	-0.100	0.042	-0.121	0.889***	1	
9. T2 Self-Efficacy: Interview	0.132	0.150	-0.061	0.184	-0.02	0.160	0.588***	0.586***	1
10. T2 Self-Efficacy: Determine Risk	0.012	0.127	-0.076	0.229*	-0.08	0.090	0.573***	0.601***	0.832***
11. T1 Attitudes: Comfort	-0.100	0.006	0.111	0.039	-0.011	-0.072	0.127	0.177*	0.184
12. T1 Attitudes: Efficacy	0.077	0.058	0.060	0.055	0.067	-0.053	-0.006	0.038	0.183
13. T2 Attitudes: Comfort	-0.012	0.156	0.124	0.050	0.019	0.038	0.270*	0.256*	0.242*
14. T2 Attitudes: Efficacy	-0.108	0.085	0.191*	0.127	0.128	-0.043	-0.075	-0.012	0.127
15. Satisfaction: Tree of Life Training	-0.109	0.122	-0.122	0.067	-0.119	0.002	0.050	0.127	0.311*
16. Satisfaction: Decision Tree Model	-0.072	0.052	-0.201	0.052	0.017	-0.025	-0.018	-0.105	0.155
17. T1 MSLQ-A Task Value	0.007	-0.043	-0.041	-0.015	0.016	-0.117	-0.019	-0.012	0.065
18. T1 MSLA-A Control of Learning Beliefs	0.007	-0.007	-0.007	0.111	0.03	-0.017	0.088	0.138	0.279**
19. T2 MSLQ-B Critical Thinking	-0.205	0.050	-0.013	-0.249	0.093	0.098	0.010	0.047	0.154
20. T2. MSLQ-B Rehearsal	-0.140	-0.175	0.023	-0.095	0.106	-0.152	0.018	0.156	-0.08
21. T2 MSLQ-B Metacognitive Self-Regulation	-0.054	-0.118	-0.135	-0.20	0.166	-0.042	0.064	0.121	0.166
22. T2 MSLQ-B Organization	-0.215	-0.139	-0.046	-0.175	0.032	-0.077	0.087	0.182	0.08
23. T2 MSLQ-B Elaboration	-0.060	-0.049	-0.049	-0.117	0.173	0.153	0.214	0.243	0.241
24. Training Condition[1]	-0.018	0.353***	-0.076	0.574***	0.161*	0.462***	0.032	0.032	0.178*
25. Prior Training (# Hours)	0.075	-0.065	-0.171*	0.081	-0.061	-0.042	0.257***	0.305***	0.236
26. Prior Exp. (1-5 clients)	-0.103	-0.058	0.076	-0.008	0.036	-0.042	-0.144	-0.116	-0.117
27. Prior Exp. (6+ clients)	0.124	-0.044	-0.028	-0.036	-0.039	-0.006	0.432***	0.396***	0.305***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. [1]Coded 0 = WL, 1 = OLT.

Table 3.2

Correlation Matrix (cont.).

					Variable Number				
	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. T1 Knowledge									
2. T2 Knowledge									
3. T1 Skill: Rating Risk Factors									
4. T2 Skill: Rating Risk Factors									
5. T1 Skill: Determining Overall Risk									
6. T2 Skill: Determining Overall Risk									
7. T1 Self-Efficacy: Interview									
8. T1 Self-Efficacy: Determine Risk									
9. T2 Self-Efficacy: Interview									
10. T2 Self-Efficacy: Determine Risk	1								
11. T1 Attitudes: Comfort	0.176	1							
12. T1 Attitudes: Efficacy	0.186	0.438***	1						
13. T2 Attitudes: Comfort	0.15	0.454***	0.342**	1					
14. T2 Attitudes: Efficacy	0.032	0.373***	0.548***	0.342**	1				
15. Satisfaction: Tree of Life Training	0.273	0.202	0.333*	0.392***	0.592***	1			
16. Satisfaction: Decision Tree Model	0.203	0.155	0.044	0.022	0.252	0.396**	1		
17. T1 MSLQ-A Task Value	0.014	0.230**	0.379***	0.166	0.267**	0.055	0.167	1	
18. T1 MSLA-A Control of Learning Beliefs	0.254**	0.336***	0.541***	0.203	0.338**	0.315*	0.184	0.620***	1
19. T2 MSLQ-B Critical Thinking	0.119	-0.314*	-0.051	-0.07	0.008	0.163	-0.236	0.031	-0.148
20. T2. MSLQ-B Rehearsal	0.031	-0.04	0.083	-0.042	0.058	0.221	-0.072	-0.017	0.178
21. T2 MSLQ-B Metacognitive Self-Regulation	0.227	0.011	0.202	0.096	0.078	0.239	-0.126	0.22	0.114
22. T2 MSLQ-B Organization	0.181	-0.041	0.035	0.088	0.048	0.308*	-0.011	-0.029	0.187
23. T2 MSLQ-B Elaboration	0.281	0.084	0.221	0.326*	0.087	0.354*	0.038	0.123	0.225
24. Training Condition[1]	0.204*	-0.116	-0.144	-0.001	-0.036	n/a	n/a	-0.087	-0.036
25. Prior Training (# Hours)	0.272***	0.124	0.213**	0.054	0.072	0.073	-0.091	-0.02	0.124
26. Prior Exp. (1-5 clients)	-0.088	-0.054	-0.029	-0.077	0.044	0.154	0.091	0.173*	0.170*
27. Prior Exp. (6+ clients)	0.236**	0.065	0.005	0.168	-0.022	-0.150	-0.078	-0.141	-0.08

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. [1]Coded 0 = WL, 1 = OLT.

Table 3.2

Correlation Matrix (cont.).

				Variable Number					
	19.	20.	21.	22.	23.	24.	25.	26.	27.
1. T1 Knowledge									
2. T2 Knowledge									
3. T1 Skill: Rating Risk Factors									
4. T2 Skill: Rating Risk Factors									
5. T1 Skill: Determining Overall Risk									
6. T2 Skill: Determining Overall Risk									
7. T1 Self-Efficacy: Interview									
8. T1 Self-Efficacy: Determine Risk									
9. T2 Self-Efficacy: Interview									
10. T2 Self-Efficacy: Determine Risk									
11. T1 Attitudes: Comfort									
12. T1 Attitudes: Efficacy									
13. T2 Attitudes: Comfort									
14. T2 Attitudes: Efficacy									
15. Satisfaction: Tree of Life Training									
16. Satisfaction: Decision Tree Model									
17. T1 MSLQ-A Task Value									
18. T1 MSLA-A Control of Learning Beliefs									
19. T2 MSLQ-B Critical Thinking	1								
20. T2. MSLQ-B Rehearsal	0.230	1							
21. T2 MSLQ-B Metacognitive Self-Regulation	0.638***	0.562***	1						
22. T2 MSLQ-B Organization	0.301*	0.743***	0.437**	1					
23. T2 MSLQ-B Elaboration	0.498***	0.474***	0.595***	0.708***	1				
24. Training Condition[1]	n/a	n/a	n/a	n/a	n/a	1			
25. Prior Training (# Hours)	0.170	0.021	0.115	0.001	0.179	-0.015	1		
26. Prior Exp. (1-5 clients)	0.108	0.259	0.004	0.054	0.007	-0.007	-0.174*	1	
27. Prior Exp. (6+ clients)	-0.108	-0.198	0.072	-0.16	-0.04	-0.048	0.213**	-0.742***	1

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. [1]Coded 0 = WL, 1 = OLT.

Study and Training Completion. *Specific Aim 1: Tree of Life Suicide Risk Assessment Training.* To characterize participants' engagement with the training, the numbers of participants enrolling in the study and completing it were provided in Chapter 2 (see "Missing Scales Scores"). In addition, of the participants assigned to the OLT condition, 49 (61.25%) completed the training. Participants were given two weeks to complete the training; a small number of exceptions were given in the case of technical difficulties outside the control of the participant (e.g., login difficulties; n = 5). Participants took, on average, 9.78 days *(SD* = 6.49) to complete the Tree of Life training (range = 2 – 35).

Tests of Study Hypotheses. *Specific Aim 2. Effect of Training.* As hypothesized, controlling for baseline scores on the applicable DV/T2 measure), training condition significantly predicted participants' scores on T2 Knowledge (with a large effect; d = 1.02), Skill (with large effects both for Rating Individual Risk Factors, d = 2.25, and for Determining Overall Risk, d = 1.59), and Self-Efficacy (with small effects both for Interviewing and for Determining Risk; both $d's$ = .33, all p's < .05; see table 3.3).

For all these measures, participants in OLT scored significantly higher than those in WL. On average, participants in OLT scored higher than those in WL by 10.32 points in Knowledge, 20.26 points in Skill – Rating Individual Risk Factors, 18.83 points in Skill – Determining Overall Risk; possible scores on these measures ranged from 0-100. For Self-Efficacy (range 1-7), participants in OLT scored higher than those in WL by .401 points (Interviewing item) and .470 points (Determine Risk item), controlling for baseline scores on the DV.

However, contrary to hypotheses, Training Condition did not significantly predict T2 differences in attitudes (CBTAS – Comfort and CBTAS – Efficacy; see Table 3.3).

Table 3.3

Group Differences: Effect of Training Condition on Knowledge, Skill, Self-Efficacy, and Attitudes

Outcome Scale Name Variable	B	SE b	*t*	*p*	*d*
Knowledge					
Intercept	42.150	1.702	24.763	.000	
T1 Knowledge (centered)	.424	.124	3.420	.002	
Condition[1]	10.323	2.669	3.868	.001	1.015
Skill: Rating Individual Risk Factors					
Intercept	16.277	2.017	8.070	.000	
T1 Skill – Rating Individual Risk Factors	-.189	.150	-1.261	.212	
Condition	20.256	2.451	8.266	.000	2.256
Skill: Determining Overall Risk					
Intercept	44.207	2.807	15.749	.000	
T1 Skill – Determining Overall Risk	.472	.183	2.573	.021	
Condition	18.832	3.607	5.222	.000	1.586
Self—Efficacy: Interviewing					
Intercept	4.920	.115	42.682	.000	
T1 Self-Efficacy – Interviewing	.472	.054	8.686	.000	
Condition	.401	.183	2.187	.032	0.330
Self—Efficacy: Determining Risk					
Intercept	4.646	.115	40.348	.000	
T1 Self-Efficacy – Determine Risk	.531	.058	9.164	.000	
Condition	.470	.182	2.582	.012	0.330
Attitudes: Comfort					
Intercept	3.762	.071	52.972	.000	
T1 CBTAS - Comfort	.031	.036	.858	.420	
Condition	.016	.102	.157	.875	0.028
Attitudes: Efficacy					
Intercept	4.479	.051	87.196	.000	
T1 CBTAS - Efficacy	.035	.023	1.488	.145	
Condition	-.016	.066	-.247	.805	-0.036

Note. [1]Coded 0 = waitlist (WL), 1 = Tree of Life Training (OLT).

H2e. Training Satisfaction. To determine how satisfied OLT participants were with the training, two-tailed t-tests were used to determine whether satisfaction differed significantly from a "neutral" rating (coded "4"). For the Satisfaction – Tree of Life Training scale, one outlier was detected in a boxplot. Inspection showed that the case had accurate data, and that this particular user experienced technical difficulties with navigating the Tree of Life training. Therefore, it was deemed that the participant's level of satisfaction with the training was likely legitimate, and deletion of the outlier was not appropriate. Therefore, a sensitivity analysis was conducted to determine whether keeping this outlier had a large impact on findings. Results were nearly identical when the outlier was present ($M = 4.34$, $SD = 0.52$), vs. absent ($M = 4.72$, $SD= 0.48$). Satisfaction with the didactic training was significantly higher than "neutral" when the outlier was present, $t(45) = 4.41$, $p < .001$, and when it was absent, $t(44) = 5.22$, $p < .001$, consistent with study hypotheses. Because no pooled results are produced for datasets resulting from multiple imputation, and because no guidelines for doing so are available, results for all datasets (including the outlier) are given in Table 3.4.

Table 3.4

Training Satisfaction t-tests: Tree of Life Training

Dataset	*M*	*s.d.*	*t*	*p*	*d*
Original Data	4.340	.522	4.412	.000	0.651
Imputation 1	4.140	.761	1.650	.103	0.184
Imputation 2	4.065	.733	.789	.432	0.088
Imputation 3	4.120	.706	1.517	.133	0.170
Imputation 4	3.966	.776	-.395	.694	-0.044
Imputation 5	4.169	.593	2.556	.013	0.286

However, the Shapiro-Wilk test was significant ($.918$, $p = .003$), suggesting that this variable was not normally distributed. Although one-sample t-tests are fairly robust to

violations of the normality assumption, given both these violations, a post-hoc one-sample

Wilcoxon signed-rank test was conducted, comparing the observed Satisfaction – Tree of

Life Training data to a median value of 4 (the "neutral" Likert scale response). Similarly to

the t-test conducted in the original dataset and consistent with study hypotheses, this test was

also significant, with $p < .001$, both for the original dataset and for the majority of the

imputed datasets (see Table 3.5).

Table 3.5

Training Satisfaction Wilcoxon Signed Rank tests[1]: Tree of Life Training

Dataset	Sign. Level	Suggested Decision[2]
Original Data	.000	Reject the null hypothesis
Imputation 1	.007	Reject the null hypothesis
Imputation 2	.192	Retain null hypothesis
Imputation 3	.021	Reject the null hypothesis
Imputation 4	.765	Retain null hypothesis
Imputation 5	.005	Reject the null hypothesis

Note. [1]One-sample tests, observed data compared to hypothesized median value of 4.
[2]Significance level for recommendation: .05.

For the Satisfaction – Decision Tree scale, assumption checking showed no outliers.

However, the Shapiro-Wilk test was also significant, suggesting the data were not normally

distributed (.873, $p < .001$). Given that the one-sample t-test is fairly robust to violations of

normality, it was conducted, and found to be statistically significant, $t(46) = 4.27, p = .007$

in the original dataset. However, results were not significant in any of the imputed datasets

(see Table 3.6), contrary to hypotheses.

Table 3.6

Training Satisfaction t-tests: Decision Tree Model

Dataset	M	s.d.	t	p	d
Original Data	4.271	.656	2.810	.007	0.414
Imputation 1	4.014	.861	.148	.883	0.017
Imputation 2	3.829	1.031	-.1399	.116	-0.016
Imputation 3	4.037	.887	.370	.712	0.041
Imputation 4	3.868	.950	-1.249	.215	-0.140
Imputation 5	4.134	.745	1.607	.112	0.180

A post-hoc one-sample Wilcoxon signed-rank test was also conducted, and although results from the original dataset supported that the Satisfaction – Decision Tree median was also statistically significantly higher than a median of 4 (the "neutral" Likert scale response), $p = .012$, results from the imputed datasets were consisted with t-tests results in that they were not statistically significant (see Table 3.7).

Table 3.7

Training Satisfaction Wilcoxon Signed Rank tests[1]: Decision Tree Model

Dataset	Sign. Level	Suggested Decision[2]
Original Data	.012	Reject the null hypothesis
Imputation 1	.398	Retain null hypothesis
Imputation 2	.627	Retain null hypothesis
Imputation 3	.381	Retain null hypothesis
Imputation 4	.402	Retain null hypothesis
Imputation 5	.089	Retain null hypothesis

Note. [1]One-sample tests, observed data compared to hypothesized median value of 4. [2]Significance level for recommendation: .05.

Specific Aim 3. Moderators of Training Outcomes. Possible moderators of the main training outcomes (Knowledge, Skill – Rating Individual Risk Factors, and Skill – Determining Overall Risk) were examined. Candidate moderators included Prior Suicide Risk Assessment Training (measured in number of hours) and Experience (measured by the number of suicidal clients seen), examined for their possible effect on Knowledge, Skill in

Rating Risk Factors, and Skill in Determining Overall Risk. As detailed in Tables 3.8 and

3.9, contrary to hypotheses, prior training and experience did not moderate the effect of

training group on these outcomes and effects were very small.

Table 3.8

H3a: Moderators of Group Differences: Prior Suicide Risk Assessment Training

Outcome Scale Name Variable	b	SE b	*t*	*p*	ΔR^2 *Range*[1]
Knowledge					
Intercept	42.973	1.847	23.262	.000	
T1 Knowledge	.431	.127	3.402	.002	
Condition	10.143	2.958	3.429	.002	
Prior Training - # Hours	-.066	.085	-.772	.442	
Interaction: Condition x Prior Training (# Hours)	.012	.107	.110	.912	.000 - .001
Skill: Rating Risk Factors					
Intercept	14.672	2.788	5.263	.000	
T1 Skill – Rating Individual Risk Factors	-.147	.162	-.908	.370	
Condition	21.311	2.892	7.368	.000	
Prior Training - # Hours	.111	.104	1.067	.291	
Interaction: Condition x Prior Training (# Hours)	-.076	.125	-.605	.546	.000 - .006
Skill: Determining Overall Risk					
Intercept	44.572	2.973	14.992	.000	
T1 Skill – Determining Overall Risk	.469	.181	2.596	.019	
Condition	18.716	4.047	4.625	.000	
Prior Training - # Hours	-.028	.145	-.193	.848	
Interaction: Condition x Prior Training (#Hours	.009	.173	.052	.959	.000 - .002

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]$p < .05$.

Table 3.9

H3a: Moderators of Group Differences: Prior Suicide Risk Assessment Experience

Outcome Scale Name Variable	b	SE b	*t*	*p*	ΔR^2 *Range*[1]
Knowledge					
Intercept	43.971	4.698	9.360	.000	
T1 Knowledge	.435	.126	3.450	.002	
Condition	14.310	6.376	2.244	.030	
Prior Experience					
1-5 clients seen[1]	-1.401	4.770	-.294	.769	
6+ clients seen[1]	-2.922	5.244	-.557	.579	
Interaction: Condition x Prior Experience					.003 - .008
1-5 clients seen	-5.619	6.389	-.879	.380	
6+ clients seen	-4.225	7.155	-.590	.557	
Skill: Rating Risk Factors					
Intercept	14.213	5.574	2.550	.014	
T1 Skill – Rating Individual Risk Factors	-.189	.153	-1.239	.220	
Condition	24.461	7.602	3.218	.003	
Prior Experience					
1-5 clients seen[1]	3.061	6.772	.452	.655	
6+ clients seen[1]	1.527	6.710	.228	.821	
Interaction: Condition x Prior Experience					.003 - .009
1-5 clients seen	-6.069	8.008	-.758	.451	
6+ clients seen	-3.597	9.098	-.395	.695	
Skill: Determining Overall Risk					
Intercept	40.701	7.028	5.791	.000	
T1 Skill – Determining Overall Risk	.469	.186	2.523	.023	
Condition	27.903	8.615	3.239	.001	
Prior Experience -					
1-5 clients seen[1]	3.873	7.689	.504	.616	
6+ clients seen[1]	4.130	8.023	.515	.608	
Interaction: Condition x Prior Experience					.006 - .018
1-5 clients seen	-12.179	9.591	-1.270	.205	
6+ clients seen	-8.844	10.093	-.876	.382	

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]$p < .05$.

In addition, contrary to study hypotheses, how much participants valued the opportunity to train (H3b), and how much they felt in control of their beliefs (H3c) also did not moderate the effect of training condition on Knowledge or Skills gains (see Tables 3.10 and 3.11, respectively).

Table 3.10

H3b: Moderators of Group Differences: MSLQ-A – Task Value

Outcome Scale Name Variable	b	SE b	t	p	ΔR^2 Range[1]
Knowledge					
Intercept	42.115	1.674	25.161	.000	
T1 Knowledge	.428	.122	3.521	.001	
Condition	10.315	2.651	3.891	.001	
MSLQ-A Task Value	.255	2.319	.110	.913	
Interaction: Condition x MSLQ-A - Task Value	-1.202	3.831	-.314	.757	.001 - .011
Skill: Rating Risk Factors					
Intercept	16.128	2.051	7.864	.000	
T1 Skill – Rating Individual Risk Factors	-.185	.151	-1.229	.224	
Condition	20.394	2.459	8.294	.000	
MSLQ-A Task Value	1.463	2.545	.575	.566	
Interaction: Condition x MSLQ-A - Task Value	-1.418	5.199	-.273	.790	.000 - .017
Skill: Determining Overall Risk					
Intercept	44.332	2.766	16.029	.000	
T1 Skill – Determining Overall Risk	.482	.182	2.648	.017	
Condition	18.516	3.543	5.226	.000	
MSLQ-A Task Value	-1.646	3.404	-.484	.630	
Interaction: Condition x MSLQ-A - Task Value	-2.117	6.308	-.336	.742	.000 - .020[2]

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]For one of the five imputed datasets, $p < .05$.

Table 3.11

H3c: Moderators of Group Differences: MSLQ-A – Control of Learning Beliefs

Outcome Scale Name Variable	b	SE b	*t*	*p*	ΔR^2 Range[1]
Knowledge					
Intercept	42.038	1.693	24.825	.000	
T1 Knowledge	.438	.123	3.576	.001	
Condition	10.366	2.649	3.914	.001	
MSLQ-A - Control of Learning Beliefs	2.327	2.674	.870	.387	
Interaction: Condition x MSLQ-A - Control of Learning Beliefs	-4.339	3.666	-1.184	.240	.002 - .016
Skill: Rating Risk Factors					
Intercept	16.160	1.995	8.100	.000	
T1 Skill – Rating Individual Risk Factors	-.184	.150	-1.228	.225	
Condition	20.425	2.412	8.467	.000	
MSLQ-A - Control of Learning Beliefs	3.193	2.780	1.149	.251	
Interaction: Condition x MSLQ-A - Control of Learning Beliefs	1.081	5.239	.206	.839	.000 - .012
Skill: Determining Overall Risk					
Intercept	44.240	2.791	15.854	.000	
T1 Skill – Determining Overall Risk	.476	.187	2.539	.023	
Condition	18.786	3.606	5.209	.000	
MSLQ-A - Control of Learning Beliefs	-1.397	4.196	-.333	.741	
Interaction: Condition x MSLQ-A - Control of Learning Beliefs	1.989	5.555	.358	.721	.000 - .004

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]$p < .05$.

Specific Aim 4. Predictors of gains among OLT participants. Among OLT participants, the learning strategies participants reported using while training were examined as possible predictors of training outcomes (H4a). However, contrary to hypotheses, the MSLQ-B subscales did not significantly predict Knowledge, or either of the Skills subscales (Tables 3.12, 3.13, and 3.14).

Table 3.12

H4a: Predictors of OLT Gains (Knowledge): Self-Regulated Learning (MSLQ-B)

Candidate Predictor Scale Name Variable	b	SE b	*t*	*p*	ΔR^2 Range[1]
Critical Thinking					
Intercept	57.036	2.079	27.430	.000	
T1 Knowledge	.294	.219	1.343	.187	
MSLQ-B - Critical Thinking	1.497	1.876	.798	.425	.009 - .023
Rehearsal					
Intercept	57.167	2.071	27.603	.000	
T1 Knowledge	.248	.214	1.156	.254	
MSLQ-B - Rehearsal	-.929	1.650	-.563	.575	.000 - .027
Metacognitive Self-Regulation					
Intercept	57.135	2.091	27.329	.000	
T1 Knowledge	.259	.220	1.178	.247	
MSLQ-B Metacognitive Self-Regulation	-.894	1.818	-.491	.623	.000 - .015
Organization					
Intercept	57.156	2.087	27.384	.000	
T1 Knowledge	.248	.219	1.134	.263	
MSLQ-B - Organization	-.441	1.125	-.392	.695	.000 - .009
Elaboration					
Intercept	57.126	2.100	27.199	.000	
T1 Knowledge	.262	.222	1.181	.246	
MSLQ-B - Elaboration	-.297	1.798	-.165	.869	.000 - .001

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]$p < .05$.

Table 3.13

H4a: Predictors of OLT Gains (Skills – Rating Individual Risk Factors): Self-Regulated Learning (MSLQ-B)

Candidate Predictor Scale Name Variable	b	SE b	t	p	ΔR^2 Range[1]
Critical Thinking					
Intercept	43.553	1.970	22.106	.000	
T1 Skill – Rating Individual Risk Factors	-.085	.216	-.392	.695	
MSLQ-B - Critical Thinking	-3.701	2.238	-1.653	.111	.024 - .158[2]
Rehearsal					
Intercept	43.606	2.034	21.439	.000	
T1 Skill – Rating Individual Risk Factors	-.103	.226	-.457	.647	
MSLQ-B - Rehearsal	-1.551	1.544	-1.005	.317	.009 - .053
Metacognitive Self-Regulation					
Intercept	43.705	2.006	21.788	.000	
T1 Skill – Rating Individual Risk Factors	-.138	.225	-.615	.539	
MSLQ-B – Metacognitive Self-Regulation	-2.626	1.867	-1.407	.162	.027 - .087[3]
Organization					
Intercept	43.659	1.994	21.896	.000	
T1 Skill – Rating Individual Risk Factors	-.136	.223	-.608	.543	
MSLQ-B - Organization	-1.836	1.148	-1.598	.113	.042 - .099[4]
Elaboration					
Intercept	43.667	2.023	21.588	.000	
T1 Skill – Rating Individual Risk Factors	-.125	.228	-.547	.585	
MSLQ-B - Elaboration	-1.948	2.030	-.960	.340	.003 - .050

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]For four of the five imputed datasets, $p < .05$. [3]For one of the five imputed datasets, $p < .05$. [4]For two of the five imputed datasets, $p < .05$.

Table 3.14

H4a: Predictors of OLT Gains (Skills – Determining Overall Risk): Self-Regulated Learning (MSLQ-B)

Candidate Predictor Scale Name Variable	b	SE b	t	p	ΔR^2 Range[1]
Critical Thinking					
Intercept	71.486	2.993	23.886	.000	
T1 Skill – Determining Overall Risk	.440	.225	1.957	.050	
MSLQ-B - Critical Thinking	1.775	3.039	.584	.560	.000 - .017
Rehearsal					
Intercept	71.257	2.905	24.532	.000	
T1 Skill – Determining Overall Risk	.494	.220	2.250	.025	
MSLQ-B - Rehearsal	-3.738	2.375	-1.574	.118	.024 - .097[2]
Metacognitive Self-Regulation					
Intercept	71.282	2.975	23.964	.000	
T1 Skill – Determining Overall Risk	.488	.226	2.159	.031	
MSLQ-B – Metacognitive Self-Regulation	-2.569	2.939	-.874	.384	.003 - .047
Organization					
Intercept	71.380	2.986	23.907	.000	
T1 Skill – Determining Overall Risk	.459	.225	2.042	.041	
MSLQ-B - Organization	-1.195	1.703	-.701	.483	.004 - .025
Elaboration					
Intercept	71.500	3.002	23.819	.000	
T1 Skill – Determining Overall Risk	.436	.228	1.910	.056	
MSLQ-B - Elaboration	1.174	2.915	.403	.687	.000 - .012

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]For two of the five imputed datasets, $p < .05$.

Among OLT participants, candidate predictors of satisfaction with the Tree of Life Training and with the Decision Tree Model were examined. Neither was significantly predicted by how many hours of prior training the person had in suicide risk assessment, or by how much prior experience they had seeing clients at risk for suicide (H4b; Table 3.15).

Contrary to expectations, satisfaction with the training or its underlying model were also not

predicted by how much participants valued the training task (MSLQ-A Task Value; H4c;

Table 3.16), nor by how much they felt in control of their ability to learn (MSLQ-A Control

of Learning Beliefs; H4d; Table 3.17).

Table 3.15

H4b: Predictors of Satisfaction with the training: Prior Suicide Assessment Training and
Experience

Outcome Scale Name **Candidate Predictor Name** Variable	b	SE b	*t*	*p*	ΔR^2 *Range[1]*
Training Satisfaction: Tree of Life Training					
Prior Suicide Assessment Experience (# Clients)					
Intercept	4.071	.245	16.613	.000	
Prior Suicide Assessment Experience					.003 - .016
1-5 Clients Seen	.026	.283	.092	.928	
6+ Clients Seen	.025	.321	.077	.939	
Training Satisfaction: Tree of Life Training					
Prior Suicide Assessment Experience (# Hours)					
Intercept	4.071	.139	29.382	.000	
Prior Training - # of Hours	.002	.004	.422	.673	.001 - .008
Training Satisfaction: Decision Tree Model					
Prior Suicide Assessment Experience (# Clients)					
Intercept	3.952	.341	11.576	.000	
Prior Suicide Assessment Experience					.009 - .016
1-5 Clients Seen	.021	.391	.053	.958	
6+ Clients Seen	.045	.402	.113	.911	
Training Satisfaction: Decision Tree Model					
Prior Suicide Assessment Experience (# Hours)					
Intercept	3.993	.177	22.548	.000	
Prior Training - # of Hours	-.001	.005	-.244	.808	.000 - 007

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation
function does not pool these values. [2]$p < .05$.

Table 3.16

H4c: Predictors of Satisfaction with the training: MSLQ-A Task Value

Outcome Scale Name **Candidate Predictor Scale Name** Variable	b	SE b	*t*	*p*	ΔR^2 *Range*[1]
Training Satisfaction: Tree of Life Training					
MSLQ-A Task Value					
Intercept	4.092	.120	34.020	.000	
MSLQ-A Task Value	.009	.154	.061	.952	.000 - .029
Training Satisfaction: Decision Tree Model					
MSLQ-A Task Value					
Intercept	3.986	.166	24.061	.000	
MSLQ-A Task Value	.224	.190	1.182	.252	.013 - .081[2]

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]For two out of five imputed datasets, $p < .05$.

Table 3.17

H4d: Predictors of Satisfaction with the training: MSLQ-A Control of Learning Beliefs

Outcome Scale Name **Candidate Predictor Scale Name** Variable	b	SE b	*t*	*p*	ΔR^2 *Range*[1]
Training Satisfaction: Tree of Life Training					
MSLQ-A Control of Learning Beliefs					
Intercept	4.096	.119	34.386	.000	
MSLQ-A - Control of Learning Beliefs	.227	.154	1.473	.151	.004 - .093[2]
Training Satisfaction: Decision Tree Model					
MSLQ-A Control of Learning Beliefs					
Intercept	3.982	.168	23.652	.000	
MSLQ-A - Control of Learning Beliefs	.235	.185	1.273	.210	.011 - .071[3]

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]For three out of five imputed datasets, $p < .05$. [3]For two out of five imputed datasets, $p < .05$.

It was also hypothesized that, among OLT participants, participants who were better able to regulate their own learning while training might feel more satisfied with their training experience. Supporting this hypothesis, the MSLQ-B Organization subscale significantly predicted Satisfaction with the Tree of Life Training; however, this effect was small (b = .095, p = .032; R^2 *change* = .095; see Table 3.18). The MSLQ-B Elaboration subscale also significantly predicted Satisfaction with the Tree of Life Training, again with a small effect (b = .184; p = .012; R^2 *change* = .125; see Table 3.19). However, none of the MSLQ-B subscales significantly predicted satisfaction with the Decision Tree model.

Table 3.18

H4e: Predictors of Satisfaction with the Tree of Life Training: Self-Regulated Learning (MSLQ-B)

Candidate Predictor Scale Name Variable	b	SE b	t	p	ΔR^2 *Range*[1]
Critical Thinking					
Intercept	4.340	.077	56.488	.000	
MSLQ-B - Critical Thinking	.085	.078	1.094	.274	.026
Rehearsal					
Intercept	4.340	.076	57.145	.000	
MSLQ-B - Rehearsal	.091	.061	1.501	.133	.049
Metacognitive Self-Regulation					
Intercept	4.340	.076	57.393	.000	
MSLQ-B – Metacog. Self-Regulation	.119	.073	1.630	.103	.057
Organization					
Intercept	4.342	.074	58.601	.000	
MSLQ-B - Organization	.095	.044	2.146	.032	.095[2]
Elaboration					
Intercept	4.340	.073	59.599	.000	
MSLQ-B - Elaboration	.184	.073	2.512	.012	.125[2]

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]p < .05.

Table 3.19

H4e: Predictors of Satisfaction with the Decision Tree Model: Self-Regulated Learning (MSLQ-B)

Candidate Predictor Scale Name Variable	b	SE b	*t*	*p*	ΔR^2 Range[1]
Critical Thinking					
Intercept	4.272	.095	44.959	.000	
MSLQ-B - Critical Thinking	-.156	.096	-1.614	.107	.056
Rehearsal					
Intercept	4.272	.098	43.798	.000	
MSLQ-B - Rehearsal	-.037	.078	-.477	.633	.005
Metacognitive Self-Regulation					
Intercept	4.272	.097	44.035	.000	
MSLQ-B – Metacog. Self-Regulation	-.079	.094	-.842	.400	.016
Organization					
Intercept	4.272	.098	43.683	.000	
MSLQ-B - Organization	-.004	.058	-.074	.941	.000
Elaboration					
Intercept	4.272	.098	43.717	.000	
MSLQ-B - Elaboration	.025	.099	.253	.800	.001

Note. [1]Range of ΔR^2 values obtained across datasets, as the SPSS multiple imputation function does not pool these values. [2]$p < .05$.

Chapter 4

Discussion

The present study is unique in that it described the development of an online, self-paced training program for suicide prevention that: a) targeted mental health providers; b) focused on the key core competencies of conducting a quality suicide risk assessment interview, and of integrating interview information to determine each specific client's level of risk; and c) was based on an empirically-informed approach to achieving these goals. This effort also sought to contribute to the literature through a randomized controlled trial to investigate initial efficacy of this training program.

Findings show that the Tree of Life training was acceptable to participants: its 61.25% completion rate was higher than the completion rate recorded for TF-CBTWeb (54.30%), a now widely known online training program which has been available for over 10 years (Heck et al., 2015). This completion rate was achieved despite the fact that participants in the present study were given limited time to complete the Tree of Life Training (two weeks, with the exceptions of 5 extensions granted due to technical problems outside a participant's control). In fact, participants completed the training, on average, in slightly under 10 days. Although participants in the present study were referred after having completed TF-CBTWeb, the similarity in these numbers suggests that participants in the present study were not vastly different from TF-CBTWeb completers.

Of primary importance is the finding that, unlike what can be expected from the brief in-person workshops the present training sought to replace or supplement (Beidas & Kendall, 2010; Herschell et al., 2010), the Tree of Life Training did not increase participants' self-confidence in the skills they were taught, nor did it improve their (already

positive) attitudes towards this training modality. Instead, the Tree of Life Training increased more primary and sought after outcomes, including participants' knowledge and skills in suicide risk assessment, including their ability to rate the severity of individual risk factors and to integrate information to arrive at an informed determination of a given client's level of risk - by at least one (and in the case of skill in rating individual risk factors, more than two) standard deviation.

It is also encouraging that participants were satisfied with the Tree of Life training. However, satisfaction with its underlying Decision Tree model did not differ significantly from a "neutral" rating. This could have occurred because the Decision Tree model of suicide risk assessment was originally created for adults, and adapted for use with youth for the purposes of the Tree of Life Training, something that participants were aware of. This could mean that trainees would have preferred an approach designed for youth from the ground up. However, such approaches are rare, with other prominent models of suicide assessment and intervention used with youth also having been originally developed for adults, and adapted subsequently (e.g., Dialectical Behavior Therapy; Linehan, 1993; Miller, Rathus, & Linehan, 2006). To better understand this, future research should consider asking participants what would have made them more satisfied with the underlying training model.

Contrary to expectations, neither previous training nor prior experience with suicidal clients related to knowledge and skills at baseline. Although this could indicate limitations of these measures, it could also support that even trained and experienced mental health providers are not sufficiently versed in assessing protective and risk factors and accurately determining specific clients' levels of risk. This interpretation is consistent with work showing that even fully trained professionals report discomfort with suicide assessment and

management (e.g., Allen et al., 2002), and that classwork in suicide prevention does not necessarily improve knowledge of the topic (Mackelprang et al, 2014). This is also consistent with findings that even seasoned professionals welcomed additional training in suicide prevention skills (deBeurs et al., 2015), and with the present study's findings that prior training and experience did not significantly predict knowledge, skills, or satisfaction at the T2 assessment. On a more positive note, it suggests that self-paced online training such as the Tree of Life Training can be relevant and promising for mental health providers at various stages of their training and career, and at various levels of experience.

Potential moderators of training outcomes were investigated in order to inform to what extent future trainings might need to be altered for various groups of learners. However, results suggest that an online program such as the Tree of Life Training can be equally valuable for providers with varying levels of appreciation for the opportunity to train (Task Value), with various levels of self-efficacy with regards to their own ability to learn (Control of Learning Beliefs), and with various levels of prior training and experience, as well as with diverse abilities to self-regulate their learning. Therefore, at least in the area of suicide risk assessment, an online training such as this may be useful to a wider range of professionals than initially expected (possibly due to the dearth of, and high need for, similar training opportunities).

In a further attempt to identify who might benefit the most from the training, variables only applicable to the training group were also investigated as potential predictors of outcomes. Among those assigned to the training, there was equal benefit in knowledge and skills for learners with a high as well as low ability to regulate their own learning. However, participants who reported being more organized about their learning experience,

and spending more time mentally elaborating on the contents taught also reported being more satisfied with the training.

Limitations

By virtue of training participants to apply the Decision Tree model of suicide risk assessment, the present training assessed knowledge and skills related to this approach. Although the lack of a significant association between prior training and experience with the present study's measures of knowledge or skills could underscore the bleak state of education in this area, it could also mean that familiarity with other methods of assessing suicide risk that were not captured by the study measures.

In addition, to adequately assess learning of the content covered, the primary study measures had to be developed for the present study. Although these measures showed sensitivity to change, the knowledge measure also had low reliability coefficient as measured by Cronbach's alpha. This could indicate both a problem in its psychometric properties, or it could indicate that knowledge of the Decision Tree model can simply not be represented as a unitary construct. To elucidate this issue, further study of this construct and measure is encouraged.

Another potential limitation of the present study is the referral stream; because the present sample was referred upon completing TF-CBT*Web*, they had already gone through a layer of selection upon volunteering. As a result, the present sample may not be fully representative of population of mental health providers at large, or of providers naïve to online training, but could rather represent better represent those already interested in, or being told to, engage in online training, as well as persons who already had at least some pre-existing experience with this mode of delivery.

With respect to representativeness, the time participants were allowed to complete the training was limited by the fact that training was being offered as part of a research study, such that participants who might have completed the training after the allotted two week period were not given an opportunity to finish training (unless granted an extension due to technical issues outside their control). However, given that TF-CBT*Web*'s median time to completion is reported to be 18 days, this is not likely to have significantly impacted the training gains participants would have had if given unlimited time to complete the training (Heck et al., 2015). In addition, the sample also appears representative of U.S. mental health professionals in educational background, as the majority of participants were master's level professionals (Garland, Brookman-Frazee, Hurlburt, Accurso, Zoffness, Haine-Schlagel, et al., 2010).

In addition, it is possible that the findings would have differed in a larger sample. Several of the present study's regression analyses had candidate predictors which did not prove statistically significant, but were associated with small to medium changes in R^2 (ranging from .02 to over .13). However, because this sample was underpowered to detect small effects, it is possible these effects would have been significant in a larger sample. Therefore, it would be helpful to replicate this study with a larger sample.

Finally, the present study was not designed to allow for the collection of follow-up data; therefore, it is unknown to what extent gains in knowledge and skill would persist. This is particularly important since trainings in related subjects for alternate target audiences (e.g., Question-Persuade-Refer) have proven to have difficulties in sustaining gains (Lancaster et al., 2014; Shtivelband, Aloise-Young, & Chen, 2015), as have trainings for a variety of topics geared towards mental health providers, at least when not

closely followed by supervision and feedback (Beidas & Kendall, 2010; Herschell et al., 2010).

Strengths and Summary

Despite these limitations, the present study had several strengths: first, it developed a carefully designed, empirically informed training to improve mental health providers' clinical proficiency in an area of vital importance and great public health need.

Second, it was one of the first efforts to date apply the well studied, theoretically sound, and empirically informed Decision Tree Model of Suicide Risk Assessment, which is based on the Interpersonal Theory of Suicide (Joiner et al., 1999; Joiner et al., 2009) to a training effort for mental health professionals. The present effort was also likely the first study to apply this model to a training program delivered using an online training methodology, which has the potential both to reach professionals who would not have access to such a training in person, as well as to avoid time and resource conflicts with trainee and professionals' time (due to its self-paced nature).

Third, the task of incorporating the Decision Tree Model into a computer-based training led to the realization that the model did not contain a representation of all possible clinical scenarios. Specifically, the first decisions made within the model pertain to the presence or absence of the Acquired Capability for suicide, the presence or absence of clinically elevated Resolved Plans and Preparations for an attempt, and the presence or absence of clinically elevated Desire and Ideation related to suicide. Possibly because of a real need to increase its human usability, the model also summarizes other risk factors numerically, under the label "number of significant findings". However, the deep exploration of the paths identified in the model, which was required to develop the

present training, revealed that there were possible combinations of clinical variables which were not represented in the model. Although these combinations may be unlikely, they are possible – thus, to provide trainees with complete guidance for how to navigate all possible clinical scenarios, these additional paths/clinical scenarios were added to the tree (in consultation with an expert in the Decision Tree Model), resulting in an additional contribution of the present work to the field.

In addition, the present study contributes to the literature by employing a carefully controlled trial to test an online training for suicide risk assessment. Although it is somewhat surprising that training did not improve participants' self-confidence in suicide risk assessment or attitudes towards this training modality, at least it also did not seem to unduly inflate participants' self-confidence or merely improve their attitudes in the absence of improved knowledge and skills, a result sometimes seen with in-person workshops (Beidas & Kendall, 2010). It is possible that participants accurately perceived the level of complexity involved in the Decision Tree Model and the tasks they were asked to learn, and did not feel the training offered sufficient opportunities to practice these skills in order for them to feel comfortable with them. On the other hand, the present study found that a self-paced online training such as this one *can* lead to initial improvements in outcomes more proximal to the development of core competencies in suicide prevention, such as participants' knowledge and skills.

Further, the fact that OLT participants were able to improve their abilities to both more accurately rate the severity of individual risk and protective factors, as well as to integrate these data to formulate a well informed level of risk estimate for each client is promising. This is especially important when considering that to date, in this area, even

training guidelines have been mostly vague about how novices are to integrate knowledge to determine a specific client's level of risk (e.g., NAASP, 2014). Because this determination can influence clinical decisions with vast implications, such as the decision to hospitalize a client or to continue outpatient services, the field must attempt to continue to improve providers' ability to make these determinations.

The present findings are also encouraging in that they suggest that an online, self-paced training such as the Tree of Life Training seemed to benefit participants across all levels of experience, appreciation for the training task, and learning styles – all of which, according to NAASP guidelines, should be considered valuable accomplishments (2014).

Future Directions

The present study contributes both to the practice of training mental health providers in suicide risk assessment, and to the field's understanding of what can be expected of an online training in this topic, for this audience.

However, it also suggests several opportunities for further research and practice. First, the core competencies taught here were not exhaustive, so that it remains to be seen to what extent this training modality can be used to teach more intervention-focused skills such as crisis planning and care management (NAASP, 2014; Rudd et al., 2008).

Second, it is unclear with the present design whether the skills participants acquired by completing the Tree of Life training are durable, or whether they would transfer to actual behavior with clients. Prior research on mental health training suggests that durability of gains and behavior transfer may be challenging, and training efforts that include supervised feedback and practice are more likely to yield meaningful benefits over time (e.g., Beidas & Kendall, 2010; Herschell et al., 2010). As a result, it is possible

that self-paced, online efforts such as the Tree of Life training are valuable, but may need to be approached as one element of a "levels of training" approach, with more hands off training being used to introduce topics or to promote repeated practice, while more costly, face-to-face time with experts is reserved for more difficult tasks or to troubleshoot after a period of practice. Although guidelines for training in suicide prevention do encourage multi-modal approaches (NAASP, 2014), the ideal role for each modality within each set of clinical skills is an empirical question, and further work is needed to directly test the *optimal ways* to combine various training modalities in to maximize outcomes and reduce costs.

Further, although the Tree of Life training offers one exciting way to reduce costs and increase the reach of quality training in suicide prevention, it only begins to tap the myriad ways in which technology can facilitate training in mental health. For example, the lack of improvement in self-efficacy for OLT participants, which could have resulted from their accurate perception of the level of complexity of applying the Decision Tree Model, suggests that participants may benefit from additional technology-based supports in applying the model. One such support might be an application (or even an Excel spreadsheet) that could navigate the tree for the clinician, such that once the clinician entered his or her ratings of the level of severity of each risk/protective factor for a specific client, the application then traverses the tree with that information, thereby producing the suggested path in the Decision Tree, as well as the overall suggested level of risk, for that particular client. Such a tool would have the potential to demand burden and cognitive load on the clinician, and ensuing human errors in calculating the suggested level of risk.

With respect to additional supports, even if more intensive behavioral rehearsal may be needed to master certain clinical skills, some researchers are beginning to bring effective live technologies like live standardized role plays (Beidas, Cross, & Dorsey, 2014) to the virtual world, by creating virtual humans and simulations with whom providers can safely practice clinical skills (e.g., Rizzo, Kenny, & Parsons, 2011). Future work should explore their utility for training in suicide assessment and treatment, as virtual humans could help to create a safe environment for clinicians to repeatedly practice suicide prevention skills.

Yet, we must approach the beckoning of bleeding edge technology with a healthy degree of empiricism. It is likely that *which technologies* can achieve high quality clinical outcomes *at the lowest cost* depends on the nature of the clinical task at hand. In a world of increasingly scarce resources, our ability to identify which technology is best for what purpose may determine whether we save or waste resources that could in turn save lives.

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Demographic Characteristics and Previous Training

(Electronic Questionnaire; blue boxes indicate questions displayed only to some participants)

Q1.1 Hi ${m://FirstName}!

Welcome to the SINAPSE Team! And thank you for telling us about yourself.
This questionnaire has 49 questions.

Each person varies in how long they take to complete this assessment, but on average most people take around 45 minutes to finish it. When you finish it, you will find out if we will ask you to start the SINAPSE training now, or 2 weeks from now.

The first few questions ask about your characteristics as a person, and about your training in the area of mental health so far.

Q1.2 Please select your gender:
❍ Male
❍ Female

Q1.3 What is your age, in years, today?

Q1.4 Do you consider yourself:
❍ Hispanic
❍ Not Hispanic

Q1.5 What is your ethnic background? (check all that apply).
❑ African-American
❑ Asian
❑ Caucasian
❑ Native American
❑ Pacific Islander
❑ Other: _____

Q1.6 Please select all prior degrees and licensures you currently hold (check all that apply):

- ❑ BA/BS
- ❑ MA/MS
- ❑ MEd
- ❑ MSW
- ❑ MD
- ❑ PhD
- ❑ EdD
- ❑ RN
- ❑ MFCC
- ❑ MFT
- ❑ LMFT
- ❑ LPC
- ❑ LCSW
- ❑ LSSP
- ❑ Other: _____

Q1.7 As of today: Note: If you already received a graduate degree in mental health in the past, but are currently enrolled to obtain in a second degree in mental health, please answer as a professional.

- ❍ I am a Master's student in a mental health related field
- ❍ I am a Doctoral student in a mental health related field
- ❍ I have graduated and work as a professional in a mental health related field
- ❍ I am retired from working as a professional in a mental health related field
- ❍ Other: _____

Q2.1 Please tell us the area of studies for the graduate program you are currently enrolled in:

- ❍ Marriage and Family Therapy
- ❍ Mental Health Counseling
- ❍ School Counseling
- ❍ Social Work
- ❍ Clinical Psychology
- ❍ Nursing
- ❍ Psychiatry
- ❍ Other: _____

Q2.2 As of today, this is your _____ in your graduate program:
○ 1st semester
○ 2nd semester
○ 3rd semester
○ 4th semester
○ 5th semester
○ 6th semester
○ 7th semester
○ 8th semester
○ Other: _____

Q2.3   How many semesters of clinical practicum have you had?   Count the current semester if you are currently enrolled in practicum. Do not count full time clinical internships in this question.
○ None yet
○ 1
○ 2
○ 3
○ 4
○ More than 4 (how many?): _____

Q2.4 Are you currently completing a full time clinical internship?
○ Yes
○ Not yet
○ I have already completed one

Q2.5 Outside of your graduate program, have you ever worked as a mental health service provider?
○ Yes
○ No

Q2.6   For how many years? (please count all jobs as a mental health service provider, except for graduate school).

Q2.7 Timing
    First Click
    Last Click
    Page Submit
    Click Count

Q3.1 Please tell us the area of studies for the graduate program you completed:
❍ Marriage and Family Therapy
❍ Mental Health Counseling
❍ School Counseling
❍ Social Work
❍ Clinical Psychology
❍ Nursing
❍ Psychiatry
❍ Other: _____

Q3.2 How many years did you complete in your mental health-related graduate program?
❍ 1 year
❍ 1.5 years
❍ 2 years
❍ 2.5 years
❍ 3 years
❍ 3.5 years
❍ 4 years
❍ Other: _____

Q3.3 How many semesters of clinical practicum did you complete during your training program?   Do not count full time clinical internships in this question.
❍ 0
❍ 1
❍ 2
❍ 3
❍ 4
❍ More than 4 (how many?): _____

Q3.4 Did you complete a full time clinical internship?
❍ Yes
❍ No

Q3.5 Outside of your graduate program, have you ever worked as a mental health service provider?
❍ Yes
❍ No

Q3.6   For how many years? (please count all jobs as a mental health service provider, except for graduate school).

Q3.7 Timing
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Answer If As of today: Note: If you already received a graduate degree in mental health in the past,... I am a Master's student in a mental health related field Is Selected Or As of today: Note: If you already received a graduate degree in mental health in the past,... I am a Doctoral student in a mental health related field Is Selected

Q4.1 As of today, how much training about suicide assessment have you had? (please check all that apply).

❑ None

❑ I completed an online or CD-ROM course on it

❑ I attended a training or workshop on it outside of class

❑ I took an entire course on it

❑ I was taught about it in practicum/supervision

❑ I had a lecture about it in a class

❑ I was taught it in my program's clinic orientation (

❑ I have read articles or book chapters about it

❑ I have read the suicide assessment procedures for my program's clinic

❑ I had other in-depth training on it (more than 6 hours) (please specify):
      _____

❑ Other (please specify): _____

Answer If As of today: Note: If you already received a graduate degree in mental health in the past,... I have graduated and work as a professional in a mental health related field Is Selected Or As of today: Note: If you already received a graduate degree in mental health in the past,... I am retired from working as a professional in a mental health related field Is Selected Or As of today: Note: If you already received a graduate degree in mental health in the past,... Other: Is Selected

Q4.2   As of today, how much training about suicide assessment have you had? (please check all that apply).

❑ None
❑ I completed an online or CD-ROM course on it
❑ I attended a training or workshop on it outside of class
❑ I took an entire academic course on it
❑ I was taught about it in practicum/supervision
❑ I had a lecture about it in a class
❑ I was taught it in my program's clinic orientation
❑ I was taught it at my workplace's clinic orientation
❑ I had an in-service training or workshop on it
❑ I have read articles or book chapters about it
❑ I have read the suicide assessment procedures for my program's clinic
❑ I have read the suicide assessment procedures for my workplace's clinic
❑ I had other in-depth training on it (more than 6 hours) (please specify):

   _____

❑ Other (please specify): _____

Q4.3 As of today, how many hours, in total, do you think you have spent receiving suicide risk assessment training?

Q4.4 Think of the last time you received any suicide assessment training. Roughly how many months ago was it?

❍ Number of months: _____
❍ I have never received any training on suicide assessment.

Q4.6 Think of the clients you have you ever worked with (assessed or treated).   How many were you concerned were at risk for suicide? Feel free to report from memory.

❍ N/A - I have not begun seeing clients yet
❍ None
❍ 1-2
❍ 2-5
❍ 6-10
❍ more than 10 (roughly how many?) _____

Q4.7 What is your theoretical orientation?

Q4.8 Timing
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APPENDIX B

Suicide Risk Assessment Knowledge

Q7.1 The questions on this page refer to facts about suicide, and to the Decision Tree model of suicide assessment. Terms from the model are italicized and underlined. If you are not familiar with the model, you may be unsure of how to answer these questions.

Even if you are unfamiliar with the model, that's ok - please just answer all the questions as best you can.

Please do not consult any sources while answering these questions. It is important that we understand what you would say right now, given the training you have received so far.

Q7.2   Which of the following is the strongest predictor of a future suicide attempt?
○ A. Two or more previous attempts
○ B. One or more previous attempt
○ C. Being a victim of sexual abuse
○ D. Impulsivity
○ E. Hopelessness

Q7.3   Acquired Capability refers to the capability to hurt oneself. Which of the following is NOT considered a possible indicator of Acquired Capability?
○ A. Self-injecting drug use
○ B. A previous suicide attempt
○ C. Frequent exposure to, or engagement in, physical violence
○ D. A history of suicide in the family
○ E. An aborted suicide attempt

Q7.4   Which of these clients have current suicidal ideation?
○ A. A boy who often thinks about being dead, but does not have the courage to kill himself
○ B. A boy who feels like being careless so that something fatal might happen to him
○ C. A boy who often talks about killing himself with someone else
○ D. B and C
○ E. All of the above

Q7.5   Which of these clients have elevated Desire and Ideation?
○ A. A girl who is thinking about killing herself, but who says the thoughts are not too strong and don't last very long
○ B. A girl who is thinking about killing herself, and feels she thinks about it a lot
○ C. A girl who is thinking about killing herself, and feels these thoughts are very strong
○ D. B and C
○ E. All of the above

Q7.6   Which of these clients have elevated Plans and Preparations?
○ A. A girl who says she will hang herself with the dog leash next time she and her mom have a fight
○ B. A girl who says she would look for some pills and swallow them
○ C. A girl who says she is not sure how she would do it, but is sure she could come up with something
○ D. A and B
○ E. All of the above

Q7.7   Which of these is an indicator of Perceived Burdensomeness?
○ A. A boy who feels he is a burden to his family
○ B. A boy who feels his little brother is a burden to his happiness
○ C. A boy who feels his new school is extremely difficult and burdensome
○ D. A and B
○ E. A and C

Q7.8   Which of these is an indicator of Thwarted Belonginness?
○ A. A girl who feels she has no one to talk to about feeling depressed
○ B. A girl who feels no one cares about her
○ C. A girl whose dad, whom she was closed to, just passed away
○ D. A and B
○ E. All of the above

Q7.9 Which of these is NOT considered a "Stressor or Other" risk factor for youth suicide?
○ A. Hopelessness
○ B. A diagnosed psychological disorder
○ C. A romantic breakup
○ D. Being bullied at school
○ E. Being a victim of sexual abuse

Q7.10   When therapists are nervous about assessing suicide, they may inadvertently engage in subtle avoidance strategies. Which of these therapist behaviors is least likely to be counterproductive when conducting a risk assessment interview?
○ A. Spending too much time building rapport, avoiding getting to the point
○ B. Talking openly about suicide to try to appear comfortable with the topic
○ C. Minimizing information by telling yourself a given risk factor is not that risky for this particular client
○ D. Deciding the client is ok before asking about all risk factors
○ E. None. All are equally likely to be counterproductive

Q7.11   When you are doing a risk assessment interview, if your client becomes confused or upset:
○ A. You should always repair the alliance before moving on
○ B. You should keep asking about suicide, because that's ultimately more important than the alliance
○ C. It depends. You should repair the alliance if there is time, but move on and finish asking about risk factors if there isn't
○ D. You should change the subject
○ E. You should remind the client that it is important that he cooperates

Q7.12   "Domains of risk" are groups of suicide risk factors that go together. For example, "Plans and Preparations" includes risk factors such as making a plan, and/or making any preparations to kill oneself. When conducting a suicide risk assessment interview, it is best to:
○ A. Ask enough information about each domain to know if it is elevated
○ B. Ask enough information about each domain to know if it is NOT elevated
○ C. Be thorough and ensure complete coverage by asking about every risk factor from every domain
○ D. Be efficient and just ask enough information to figure out if a supervisor needs to be called
○ E. A and B

Q7.13   Which domains can never be ruled out before asking about every risk factor belonging to it? In other words, which domains have NO shortcuts for efficiency?
○ A. Acquired Capability, Plans and Preparations
○ B. Perceived Burdensomeness, Thwarted Belongingness, Desire and Ideation
○ C. Perceived Burdensomeness, Thwarted Belongingness, Stressors/Other
○ D. All of the domains have shortcuts for efficiency
○ E. None of the domains have shortcuts for efficiency

Q7.14 "Decision Tree" also refers to an aid that tells you how to combine information gathered in the risk assessment interview to determine each client's specific level of risk for suicide. When doing a risk assessment:

❍ A. You should consult the Decision Tree only when you are not sure what to do about a particular client

❍ B. You should not consult the Decision Tree; you should have memorized it

❍ C. You should consult the Decision Tree at the end of the interview, once you have all the information gathered

❍ D. You should consult the Decision Tree throughout the interview to make sure you've gathered all the information you need

❍ E. C and D

Q7.15   When interviewing a client about suicide risk, it is best to:

❍ A. Not take any notes during the interview, because taking notes can interfere with rapport

❍ B. Take open-ended notes during the interview - that way you can write as much as you need to

❍ C. Use a checklist to take notes during the interview, to guide you and make sure you don't miss anything

❍ D. Ask the client to take notes, so you can focus on the interview process and on his nonverbals

❍ E. C and D

Q7.16   Giving a paper and pencil measure that asks about suicide is most useful:

❍ A. Before a session or intake, because clients are more likely to endorse suicidal ideation on paper than during the in-person interview, and then you can follow up on it

❍ B. Before a session or intake. That way, if they don't endorse suicidality on the paper measure, you don't have to ask them about it in the interview, making more efficient use of time

❍ C. At the end of a session or intake, because by then the client knows he can trust you and is more likely to endorse it on paper

❍ D. At the end of a session or intake. That way, if they mention it during the interview you can skip the measure and save time, but if they don't, you can give the measure to make sure they are not suicidal before they leave

❍ E. None of the above. Paper and pencil measures of suicidality have been shown to add very little beyond a verbal interview

Q7.17   Even if a client doesn't say she is thinking about suicide, you should always ask a client about suicide in all these situations, except:
❍ A. At intake
❍ B. When an informant is worried the client is suicidal
❍ C. When the client has suffered a new stressor
❍ D. When the client seems very distressed
❍ E. None of the above. All of these situations warrant asking about suicide

Q7.18   When you do a suicide assessment interview, the best sequence to follow when you ask about risk factors is:
❍ A. Whatever sequence the client seems to be following naturally
❍ B. Acquired Capability —> Plans and Preparations —> Desire and Ideation —> less sensitive domains
❍ C. Desire and Ideation —> Acquired Capability or Plans and Preparation —> less sensitive domains
❍ D. Less sensitive domains —> Desire and Ideation —> Plans and Preparation —> Acquired Capability
❍ E. It doesn't really matter; all sequences are about the same so long as you get all relevant information

Q7.19   Which of these are distal risk factors for suicide:
❍ A. History of self-harm and history of being a victim of abuse
❍ B. Being male and homosexual orientation
❍ C. History of self-harm and being male (3)
❍ D. History of being a victim of abuse and homosexual orientation
❍ E. None of the above

Q7.20 Timing
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APPENDIX C

Skill: Rating Individual Risk Factors

Q8.1 The following risk factors can be rated:

0 – posing no additional suicide risk to the patient
1 – posing mild additional suicide risk to the patient
2 – posing moderate additional suicide risk to the patient
3 – posing serious additional suicide risk to the patient

Example: Suppose research has shown the color of a patient's hair may increase the risk of suicide to a certain degree, such that being blonde poses no additional risk, but being a redhead poses serious additional risk of suicide (as far as hair color goes).

You would then rate the hair color items as follows:

Patient is blonde   - 0 no risk
Patient is a redhead - 3 serious risk

Please read each line and rate how much risk you think each item would add to a patient. For this question, please consider each item in isolation.

	0 no risk	1 mild risk	2 moderate risk	3 serious risk
wants to die, may be preoccupied with death	❍	❍	❍	❍
unsure if he wants to live or die	❍	❍	❍	❍
unsure if he wants to make an attempt	❍	❍	❍	❍
wanted to make an attempt at least once in the past couple days	❍	❍	❍	❍
thinks about suicide for several minutes at a time	❍	❍	❍	❍
has thought about suicide once in the past few days	❍	❍	❍	❍

	0 no risk	1 mild risk	2 moderate risk	3 serious risk
has thought about suicide once an hour in the past few days	❍	❍	❍	❍
has reasons for living and occasionally thinks about dying	❍	❍	❍	❍
told a friend he wants to die	❍	❍	❍	❍
said he would use a gun	❍	❍	❍	❍
said he would take his mother's medications this weekend when she is not home	❍	❍	❍	❍
said his father locks the gun cabinet but he knows where the key is	❍	❍	❍	❍
not sure if she has the courage to try suicide	❍	❍	❍	❍
somewhat sure she could pull it off	❍	❍	❍	❍
says there is no chance she would try to kill herself	❍	❍	❍	❍
scouted the library window she is thinking of jumping from	❍	❍	❍	❍
made a "mental note" about what she would write in her suicide note	❍	❍	❍	❍

	0 no risk	1 mild risk	2 moderate risk	3 serious risk
wrote a note, but misplaced it	○	○	○	○
sometimes feels like a burden to others	○	○	○	○
sure someone she loves would be better off if she were dead	○	○	○	○
has many caring relationships, not very meaningful to him	○	○	○	○
has one person he can definitely talk to when feeling suicidal	○	○	○	○
his father moved away, and his girlfriend broke up with him. does not seem very upset by it	○	○	○	○
his grandmother died. he was very close to her	○	○	○	○
feels very hopeless, doubts the future will be better	○	○	○	○
has recently started doing very badly in school, and asked to leave the cheer team. she seems pretty upset about it	○	○	○	○
diagnosed with two mental health conditions	○	○	○	○
fidgeting, speech is a bit tangential	○	○	○	○

Q8.2 Timing
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APPENDIX D

Skill: Determining Overall Risk

Q8.3 Please answer the following questions to the best of your ability. You will learn more about these ideas in the training we will offer you. It is very important for the scientific integrity of this study that you do not consult any outside sources to help you answer these questions. Thank you for your cooperation!

Maria is a 15-year old girl who came to your clinic for an initial assessment. You interviewed her and took the following notes.

Based on your recent interactions with Maria, you noted that she has:

1 past suicide attempt (she tried to hang herself with the dog's leash)
no aborted suicide attempts
no self-harm history
no drug use or use of self-injecting drugs
never said she was sexually abused
been physically abused in the past
not often been exposed to other violence

Your notes also show your own ratings of Maria's risk factors, given below -

Your numbers follow the same rating system as before, namely:

0 – posing no additional suicide risk to the patient
1 – posing mild additional suicide risk to the patient
2 – posing moderate additional suicide risk to the patient
3 – posing serious additional suicide risk to the patient

1   Current agitation
0   Current confusion
1   Current severe distress
2   Your rating of Maria's self-reported courage to attempt suicide
1   Your rating of Maria's self-reported competence to attempt suicide
0   Your rating of Maria's self-reported expectancy of making an attempt
1   Specificity of Maria's plan
2   Availability of her chosen means and opportunity to attempt suicide
0   Preparations to die
1   Suicide note
0   Loss of a significant relationship
1   Recent loss in Maria's sense of self-competence
2   Maria's sense of being a burden to others
3   Duration of Maria's thoughts of suicide
3   Intensity of Maria's thoughts of suicide
2   Your rating of Maria's desire to attempt suicide
1   Frequency of Maria's thoughts of suicide
0   Impulsivity
1   Hopelessness
2   Depression
0   Substance use
1   Other mental illness diagnosis
2   Low wish to live
3   Wish to die
1   Maria's reasons to live and to die
0   Few deterrents to attempt
1   Talk of death
0   Maria's talk of being better off dead
0   Few caring persons in her life
1   Few people to talk to

	yes	no
Does Maria have the Acquired Capability for Suicide?	○	○
Does Maria have "elevated" Desire and Ideation?	○	○
Does Maria have "elevated" Plans and Preparations?	○	○
Does Maria have "elevated" Perceived Burdensomeness?	○	○
Does Maria have "elevated" Thwarted Belongingness?	○	○
Does Maria have "elevated" Other Risk Factors?	○	○

Q8.4 In total, how many "significant findings" does Maria have?

	1	2	3	4	5	6	7	8	9	10
In total, how many "significant findings" does Maria have?	○	○	○	○	○	○	○	○	○	○

Q8.5 Overall, at what level of risk for suicide is Maria?
○ Low Risk
○ Moderate Risk
○ Severe Risk
○ Extreme Risk

Q8.6 Timing
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Q8.7 Which of the following would make you the most concerned about a person's likelihood of attempting suicide?

❍ Self-reported courage to attempt suicide
❍ Self-reported competence to attempt suicide
❍ Chosen means to attempt suicide (e.g., gun, drugs) is available
❍ 1 or more past suicide attempt
❍ 2 or more past suicide attempts
❍ 1 or more aborted suicide attempt
❍ 2 or more aborted suicide attempts
❍ Made preparations to attempt suicide
❍ Self-harm history
❍ Self-injecting drug use history
❍ Any drug use history
❍ Victim of sexual abuse
❍ Victim of physical abuse
❍ Perpetrator of sexual abuse
❍ Perpetrator of physical abuse
❍ Frequent exposure to violence
❍ Impulsivity

Q8.8 Please answer the following questions to the best of your ability. You will learn more about these ideas in the training we will offer you.   It is very important for the scientific integrity of this study that you do not consult any outside sources to help you answer these questions. Thank you for your cooperation!   Which of the following risk factors, when present together, can suggest an Acquired Capability for suicide?

❑ Self-reported courage to attempt suicide
❑ Self-reported competence to attempt suicide
❑ Chosen means to attempt suicide (e.g., gun, drugs) is available
❑ 1 or more past suicide attempts
❑ 2 or more past suicide attempts
❑ 1 or more aborted suicide attempts
❑ 2 or more aborted suicide attempts
❑ Made preparations to attempt suicide
❑ Self-harm history
❑ Self-injecting drug use history
❑ Any drug use history
❑ Victim of sexual abuse
❑ Victim of physical abuse
❑ Perpetrator of sexual abuse
❑ Perpetrator of physical abuse
❑ Frequent exposure to violence
❑ Impulsivity

Q8.9 Timing
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APPENDIX E

Satisfaction – Tree of Life Training

Q4.1 The following items refer to your reactions to the online training you received in the SINAPSE study. Please read the following items and indicate how much you agree with each item by checking the appropriate number.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I learned a lot about issues related to suicide assessment as a result of this training.	○	○	○	○	○
This training was fun.	○	○	○	○	○
This training was useful in prompting me to think about issues related to suicide assessment.	○	○	○	○	○
My graduate program should use this training again in future semesters.	○	○	○	○	○
I learned more about issues related to suicide assessment than if I had not participated in the training.	○	○	○	○	○
This training was a waste of my time.	○	○	○	○	○
Instructors in my program should use this training when they discuss suicide assessment.	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Participating in the training increased my understanding of issues related to suicide assessment.	○	○	○	○	○

APPENDIX F

Satisfaction – Decision Tree Model

Q4.2   The following items refer only to your reactions to the Decision Tree model used in the SINAPSE training. Please read the following items and indicate how much you agree with each item by checking the appropriate number.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The Decision Tree model used in this training is helpful for assessing suicide risk.	❍	❍	❍	❍	❍
The Decision Tree model is easy to understand.	❍	❍	❍	❍	❍
The Decision Tree model is easy to use.	❍	❍	❍	❍	❍
I plan to use the Decision Tree model with my future clients.	❍	❍	❍	❍	❍

Q4.3 What else should we know about your experience with the training?

Q4.4 Timing
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