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KNITTING AS AN ADJUNCTIVE TREATMENT FOR SUBSTANCE USE DISORDER:
A MIXED METHODS MULTIPLE CASE STUDY

A Dissertation

Presented to the Faculty of
Antioch University Seattle
Seattle, WA

In Partial Fulfillment
of the Requirements of the Degree
Doctor of Psychology

By
Aubriana M. Teeley
September 2018

KNITTING AS AN ADJUNCTIVE TREATMENT FOR SUBSTANCE USE DISORDER:
A MIXED METHODS MULTIPLE CASE STUDY

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DOCTOR OF PSYCHOLOGY

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ABSTRACT

KNITTING AS AN ADJUNCTIVE TREATMENT FOR SUBSTANCE USE DISORDER: A MIXED METHODS MULTIPLE CASE STUDY

Aubriana M. Teeley

Antioch University Seattle

Seattle, WA

Substance abuse disorder is characterized by the presence of cognitive, behavioral, and physiological symptoms from substance use with continued use despite these consequences. It has serious individual and societal implications, such as negative health effects, overdose, poor work and school performance, negative impacts on relationships, and even death. Economic effects include more frequent use of emergency and hospital services as compared to peers without substance use disorder. A variety of treatments for substance use are available, including inpatient and outpatient programs accompanied by behavioral interventions, individual or group psychotherapy, or 12-step programs. However, there is no one treatment that is effective for all patients, and so exploring alternative treatments continues to be important. Although knitting has existed for centuries, there has been a resurgence in popularity since the early 2000s. This mixed-methods multiple case study evaluated the efficacy of individual knitting lessons to reduce the presence of perceived stress and increase mindfulness during knitting sessions. Five adults participated in a series of individual knitting lessons and provided feedback about their experiences through quantitative assessments and qualitative interviews. Quantitative analysis, both overall and by individual, did not show any significant reductions in perceived stress or increases in mindfulness. Post-intervention interviews revealed that all the participants had generally positive experiences and planned to continue knitting after the conclusion of the study.

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Keywords: case study, knitting, mindfulness, mixed methods, stress, substance use

Dedication

This dissertation is dedicated to my knitting instructor, Jamie Andrus, my knitting group, and everyone who has ever helped me with a knitting project.

In the mid-2000s, I was working as a research coordinator for studies that required some independent travel to rural areas. At this time, knitting was gaining popularity and several of my coworkers and friends were already producing an abundance of scarves and hats. Unsure of how I would occupy the hours when alone in remote areas after the working day was over, I persuaded Jamie to teach me how to knit.

Steadily, I produced several basic items with cheap yarn, but to my dissatisfaction my skills eventually became stagnant. I wanted to become a more advanced knitter but Ravelry.com was still being developed and many of my knitting acquaintances had moved away or lost contact after the research job ended.

To further develop my knitting skills and increase my social connections, in 2007 I posted an ad on Craigslist. I wrote that I would be knitting at a café at a certain date and time and invited others to join me. About 15 people showed up and a knitting group was born. Today, only one of those original members still attends the group, and membership has flourished and dwindled throughout the years. However, I still coordinate the meetups and I value the close friendships I have made through my hobby.

In addition to being a social activity, knitting has also been a solitary endeavor. After a long day you might find me knitting in front of a television show, or I might use it to fill time while riding the bus, waiting for an appointment, or during class breaks. Around the holidays I am often knitting around the clock in an attempt to finish gifts in time, and I've only missed the

deadline once or twice. It is extremely satisfying to create something out of almost nothing and either wear it proudly myself or give it to someone to express affection.

Overall, knitting is something that has become an important part of my life over the past decade and I would not have been the same without it. It has helped me make friends, feel a sense of belonging in a community, facilitate conversations, and has given me a healthy way to relax while being productive. In implementing this project, I hope to pass on some of that knowledge that has benefited me so much and contribute to the well-being of others.

Acknowledgements

First and foremost, I thank my dissertation committee for their continued presence and support through this process. My chair, Dr. Mark Russell, had the perfect balance between thoughtfully guiding my work and stepping back to let me figure things out independently. My committee members, Dr. Arthur Lewy and Dr. Maile Bay, were instrumental in editing my writing and providing feedback that challenged my thinking and awareness of things that had never previously occurred to me.

I conducted my research at the Recovery Café, which is something that is somewhat outside of the scope of their services. I want to express my appreciation to them for allowing me to use their space and to be a part of their community. I specifically thank Dr. Ruby Takushi, who was so generous with her time and resources. Thank you to Carolyn Dougherty, who was nothing but positive and supportive of the project, and Emily Tormey, who was a huge help in recruiting and tracking participants.

Brianna Hitt at the University of Nebraska Lincoln Statistics Department was essential in helping me with my statistical analysis. She explained everything in a way that I could understand, and she edited the results section of my manuscript to check for discrepancies and to improve the accuracy and clarity. I am grateful for the assistance she provided.

I spent much of the last year working on the dissertation manuscript while completing an internship out of state. There were some long, lonely weekends where I spent hours writing by myself and I am so appreciative of those in my life who have supported me through this process. I am grateful for my partner, James Dennett, who has been encouraging me daily for the past 18 months. The support from my grandfather (who unfortunately passed away during this process) and Paula Schilling have been invaluable and kept me going during the toughest periods. Brie

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Chapter 1: Introduction to the Study

Relapse rates for people with substance use disorder ranges from 40–60% in the United States (NIDA, 2018a) and is correlated with stress and anxiety (Levy, 2008). Oftentimes patients do not have the skills for coping with unpleasant emotional states as they previously used substances to manage their feelings. Boredom can also be a significant issue for people with a history of substance use disorder because they need to find a way to fill time that was previously occupied by acquiring and using drugs. Completion of substance abuse treatment significantly improves outcomes, such as increased abstinence, lower rates of crime, fewer relapses, and higher levels of employment (Brorson, Ajo Arnevik, Rand-Hendriksen, & Duckert, 2013). However, patients who do not finish treatment have similar outcomes to untreated patients (Kern-Godal, Arnevik, Walderhaug, & Ravndal, 2015).

Although there are a variety of traditional substance use treatments available, such as inpatient, outpatient, and 12-step programs (NIDA, 2016), there has not been much empirical research done on alternative or adjunctive interventions. For example, there is only one known article published on using knitting with individuals in recovery from substance abuse. It was based upon informal observations and did not include any outcome measures (Duffy, 2007). Therefore, the literature review (see Chapter 2) demonstrates a need to explore alternative therapies to support substance use management through reduction of stress and anxiety.

Background

Substance use disorder. Substance use disorder is characterized by problems with substance use as evidenced by cognitive, behavioral, and physiological symptoms and continued use despite these consequences (American Psychiatric Association, 2013). A psychoactive drug or

substance refers to any chemical that is put into the body that changes a bodily function or a mental state. Tolerance, or adaptation of the body, may develop with continued use of a drug and reduce or change the effects of the substance. Withdrawal occurs when the body is unable to function normally without the drug in its system (Kuhn, Swartzwelder, & Wilson, 2011). Cravings, or intense desires or urges for the substance, may arise when substance use is discontinued and can be a sign of impending relapse (American Psychiatric Association, 2013).

Another frequently heard term for substance use disorder is addiction. According to Kuhn et al. (2011), addiction involves repeated and compulsive use of a substance even with the presence of negative outcomes. Biologically, drugs affect circuits in the brain responsible for pleasure. Natural reinforcements include food and water, but drugs can also act as a reinforcement with a rush of pleasant feelings or euphoria. Then the body adapts to the presence of a drug and a physical dependence may be developed creating a cycle of drug taking, pleasure, declining of the drug's effects, withdrawal symptoms, and then taking more of the drug to avoid those unpleasant feelings of withdrawal (Kuhn et al., 2011).

Many theories exist regarding the reasons for which some people become addicted to substances and others do not. Explanations range from lacking morals, differences in brain chemistry, a history of traumatic experiences, mental illness, or simply spending time with the "wrong crowd." Although everyone has the potential to become dependent on substances, not everyone does. However, it is often difficult to determine whether brain differences were present before the onset of substance use disorder or whether they were caused by substance use themselves. What is known is that substance users are more likely to have had a parent who also used substances and were also more likely to experience physical and emotional abuse from a parent. Therefore, disordered substance use may have both environmental and genetic causes

(Kuhn et al., 2011). Although it is challenging to treat the many factors involved in substance use disorder, one thing that can be done is helping people find alternate pleasurable activities.

Knitting. Knitting is the process of creating fabric by looping a continuous piece of yarn. It can be done by hand or with a machine (Riley, Corkhill, & Morris, 2013). For the purposes of this project, the term knitting will refer only to hand knitting. Other terms used in this study are defined in Table 1.

Although knitting has been around for a long time, it has risen in popularity since the turn of the new century (Riley et al., 2013). According to Stannard and Sanders (2015), the number of young women who knit rose dramatically in the first decade of the millennium. As of 2011, there were about 38 million knitters and people who crochet. Online websites such as Ravelry.com, which was founded in 2007, help knitters connect with others to form communities. Many use this social networking site to coordinate knitting groups where they can receive support on difficult projects, teach methods to others, and have a common interest with which to begin friendships with others (Stannard & Sanders, 2015).

An advantage to knitting is that it is a relatively inexpensive and portable creative activity (Riley et al., 2013) that can be done in a variety of locations. Crafters have reported knitting while in the hospital, walking to work, traveling, and even while riding on the back of a motorcycle (MacDonald, 1988). Another advantage is that knitting ranges from simplistic to complex. It can be learned by children as well as adults and continued across the lifespan (Riley et al., 2013).

Table 1

Glossary of Knitting Terms

Term	Definition
Cast off/Bind off	The final row of the finished work. For this study, participants were taught to knit two stitches, slip the first stitch over the second stitch, and repeat until one loop remained. Participants then cut the yarn and looped it through the last stitch to finish the project.
Cast on	To begin the knitting project. Participants were taught the long-tail cast on, which consisted of creating a slip knot on the left needle and weaving the tip of the needle under and over the two strands of yarn to produce additional stitches.
Circular needle	Two knitting needles connected by a cord or cable often used for knitting circular objects but they can also be used for flat pieces of fabric. Participants used a circular needle to make the lower portion of their hat.
Decrease	Participants were taught the “knit two together” decrease, which consisted of knitting two stitches at the same time to reduce the number of stitches by one.
Double-pointed needle	A needle with points on each end used for knitting small items in the round. Participants used double-pointed needles on the crown of the hat.
Knitting in the round	The process of knitting in a continuous loop to make a circular garment, such as a hat. This requires knitting with a circular needle or double-pointed needles.
Knit stitch	A stitch that consists of at least three interconnected loops of yarn.
Purl stitch	The opposite of the knit stitch, or the back side of the knit stitch. A purl is created by placing the right needle into the front of the left needle stitch.
Straight needle	A knitting needle with a point on one end used for making flat items. Participants used straight needles for their scarves.
Swatch	A small piece of knitted fabric typically used to test yarn or stitch patterns. Knitters in this study made swatches to practice the various knitting skills.

Mindfulness. Mindfulness is a concept originating in Eastern Buddhist tradition and is a state that can be achieved through meditation (Gallant, 2016). It is defined as the process of being aware of the present moment or experience (J. D. Creswell, 2017). An individual who is mindful

is open and sensitive to changes and novelty and is aware of the existence of multiple perspectives. It includes a nonjudgmental acceptance of emotions and a continual monitoring of attention. When focus is shifted to distractions, mindfulness practice instructs one to acknowledge these shifts and redirect attention back to the present (Gallant, 2016).

Adopting a mindful lifestyle has been shown to be associated with well-being in the scientific literature. Being mindful grounds attention and can include an increased awareness of sensations in the body, emotions, mental images, self-talk, and perceptual experiences. Having acceptance for one's mental and emotional states as well as one's experiences can be achieved by approaching unfamiliar things with curiosity, openness, and nonjudgment (J. D. Creswell, 2017).

Conversely, typical daily life experience where the mind wanders or runs automatically to suppress unwanted experiences tends to predict unhappiness. Being mindfully aware is in stark contrast to the default of engaging in self-criticism, perseverating on the past, or feeling anxious about the future. Mindfulness exercises can feel difficult and taxing when one is first beginning, but with practice everyone is capable of increasing their ability to be aware of the present and control their attention (J. D. Creswell, 2017).

The results of neuroimaging studies on people who participate in formal meditation practices have shown that mindfulness activates the insula, putamen, somatosensory cortex, portions of the anterior cingulate cortex, and the prefrontal cortex. There is also some evidence that suggests that mindfulness practice may alter brain structures by increasing the gray matter in the hippocampus. These brain changes have the potential to reduce stress and anxiety by increasing the activity and functional connectivity in the prefrontal cortex which is critical for the regulation of stress from the top down. Decreasing the activity in the amygdala and subgenual anterior cingulate cortex can reduce hyperarousal of the sympathetic nervous system, commonly

known as the fight-or-flight response. One study examining a mindfulness meditation retreat demonstrated reductions in stress biomarkers such as cortisol and circulating interleukin four months later (J. D. Creswell, 2017).

There are few risks associated with mindfulness interventions, yet it is still possible for clients to experience an adverse reaction. In extreme cases, mindful awareness can trigger a major depressive episode for a trauma survivor who experiences resurfacing of distressing memories. It has also been speculated that mindfulness could put individuals with epilepsy or schizophrenia at risk for a seizure or exacerbation of symptoms. However, there is little empirical research supporting these outcomes. It is more likely that individuals beginning a mindfulness practice will simply feel depleting as cognitive demands increase (J. D. Creswell, 2017).

Rationale

There is increasing evidence to support the positive impacts of engaging in creative activities, such as improved health and well-being (Riley et al., 2013) and reduced risk of mild cognitive impairment (Geda et al., 2011). According to Riley et al. (2013), knitters reported that the activity was relaxing, engaging, created a sense of accomplishment, and helped facilitate friendships and a sense of belonging.

However, there is a great deal of potential for further studies on the benefits of knitting. Much of the previous research on knitting has either been done with groups (Dominick, 2014; Riley et al., 2013) or using surveys/interviews with individuals who have been knitting prior to the study (Patch, 2007; Stannard & Sanders, 2015; Utsch, 2007). Some of the research has also been conducted with particular group populations, such as patients with eating disorders (Clave-Brule, Mazloun, Harbottle, & Birmingham, 2009) or multiple sclerosis (Fraser & Keating, 2014), and may not be generalizable to other types of groups or diagnoses. The only

article found using knitting with the specific population of people in recovery from substance use was very informal and no outcome measures were administered to participants (Duffy, 2007). This project addressed this gap by focusing on teaching individuals in recovery to knit and assessing the effects using quantitative and qualitative measures.

Purpose of the Study

This study sought to establish that knitting can be a beneficial therapeutic activity for individuals who were struggling with substance use recovery and related or unrelated life stressors. It was developed to meet a need for alternative substance use disorder treatment options. The intent of this project was to determine whether individual knitting lessons would increase mindfulness and reduce stress in individuals who had a history of substance use disorder. Participants may benefit from engaging in a creative, skilled activity and creating an item to wear or give away.

Research Questions

This project used a quantitative and qualitative (mixed methods) multiple case study design (J. W. Creswell, 2014) to understand whether learning and developing the skill of knitting increased mindfulness and reduced stress for people who have had self-reported disordered substance use. There were two qualitative interviews, an open-ended question after each session, and two structured self-report measures. In addition, time spent knitting between lessons, substance use, and progress on projects was monitored throughout the course of the intervention.

Quantitative questions. The specific quantitative questions asked were:

1. Will learning how to knit reduce overall stress by the end of the intervention? This was assessed using the Perceived Stress Scale during the Baseline Interview, prior to each session, and during the Follow-Up Interview.

2. Will the act of knitting increase mindfulness during sessions? This was measured using the Toronto Mindfulness Scale after each session.
3. Is there a relationship between time spent knitting outside of sessions and progress on the projects? This was determined using a self-report question about time spent knitting between sessions and researcher observation of progress on projects.
4. Is there a relationship between substance use and progress on the projects? This was examined using a self-report question about substance use since the previous session and researcher observation of progress on projects.

Qualitative questions. The qualitative portion of the study sought to gain information about the subjective experience of the participants in the intervention. It was hypothesized that participants would experience an initial increase in discomfort in the early learning stages, but that by the final sessions the positive aspects of knitting would outweigh the challenges of acquiring a new skill. Participants were interviewed about their background, history with substance use, and prior experience with creative activities before starting the intervention. After each session, participants had the opportunity to write down comments and feedback so as to give the researcher immediate information about their experience in the session. A few weeks after the end of the intervention, participants completed another qualitative interview. The purpose of this interview was to learn about their overall perceptions of the study, to determine if knitting was an activity that they would keep engaging in, and to receive suggestions for modifications in future research.

Significance of the Study

A variety of interventions exist for individuals in recovery from substance use disorder and other mental health challenges. However, not all interventions work for everyone. If learning

how to knit is shown to be an effective tool for some individuals in easing stress, aiding in recovery, and increasing quality of life, then it may be more widely used as a part of therapy in the field of psychology. It also may be a useful pilot study that could motivate others to contribute further to the research with randomized, controlled trials.

Chapter 2: Literature Review

In this chapter is a review of the literature produced by researchers and writers about knitting as well as substance use, substance use disorder and its effects. The potential for using knitting as an adjunctive therapeutic technique with people in recovery from substance abuse/and substance use disorder will be explored. This literature review revealed a need for researching an alternative therapy for substance abuse patients using knitting to reduce associated stress symptoms.

Adult Substance Use

People use psychoactive substances because they expect some benefit from their use, which could be to either experience pleasure or avoid painful feelings. However, there is also the potential for short- and long-term harm, such as health effects from the drug itself or as a side effect from the method of use, such as the risks from the injection of heroin (World Health Organization, 2004).

The concept of substance dependence was first applied to alcohol and then extended to opioids and other psychoactive substances. The term became commonly used in industrialized cultures beginning in the 19th century, and currently there is substantial variation between cultures about how dependence is defined. Presently, the World Health Organization defines the term substance abuse as the “harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs” (World Health Organization, 2016).

Use and abuse of such substances can lead to substance use disorders, which range from mild to severe, and include cognitive, behavioral, and physiological symptoms. An individual may continue using substances despite negative consequences. Substance use disorder may also be characterized by underlying changes in the brain that can be seen behaviorally in repeated

relapse and intense drug cravings (American Psychiatric Association, 2013). A craving is the subjective experience of an urge to use a substance and may come in the form of intrusive thoughts, an impulsive motivation, or a physical sensation. Cravings are linked to the neurotransmitters gamma-aminobutyric acid (GABA), dopamine, and serotonin (Witkiewitz, Bowen, Douglas, & Hsu, 2013). These changes in the brain may persist even after the individual has ceased substance use (American Psychiatric Association, 2013).

The cycle of addiction is comprised of three stages: bingeing and intoxication followed by withdrawal and negative affect, which then leads to preoccupation and anticipation. The early stages are characterized by impulsivity, which consists of tension or arousal. This state then gives way to committing an impulsive act, such as substance use. The substance use provides pleasure and gratification, which positively reinforces the behavior. During the later stages, the individual shifts from being dominated by impulsivity to compulsivity. Compulsivity is defined by experiencing anxiety and stress before engaging in a compulsive, repetitive behavior. It is associated with negative reinforcement, which is the removal of an aversive stimulus that increases the likelihood of a behavior. Withdrawal and preoccupation are uncomfortable for the individual, and so they will go to great lengths to relieve symptoms. As these three stages interact with each other and become more intense, the individual is more susceptible to meeting criteria for a chronically relapsing substance use disorder (Koob & Volkow, 2010).

There are many criteria for a diagnosis of substance use disorder, including impairments in control, social impairments, risky use, and meeting pharmacological criteria. For example, with control impairments, individuals may have difficulty decreasing drug use and may even take the substance in increasingly larger amounts or use other substances as their tolerance increases. Social impairments may include difficulties fulfilling obligations at school, work, or home and

withdrawing from family and recreational activities. Risky use is defined as using in situations that may be physically hazardous or a failure to stop using substances even when the use is leading to placing oneself in dangerous situations. Pharmacological symptoms include increased tolerance to higher doses of the drug and withdrawal symptoms when use is terminated.

Withdrawal can occur after ceasing heavy use of a substance and vary among drug classes, but often an individual will begin using again at this point to relieve the symptoms (American Psychiatric Association, 2013).

Substance Use Prevalence

Substance use is an issue that affects a large number of people throughout the world, which makes finding more diverse treatment options increasingly important. According to the United Nations Office on Drugs and Crime (2012), in 2010, between 153 and 300 million people worldwide (ages 15–64) used an illicit substance at least once in the previous 12 months. It is estimated that between 15.5 million and 38.6 million people have drug dependence or a substance use disorder. As a result of illicit drug use, there were somewhere between 99,000 and 253,000 deaths due to drug use.

In the past 15 years, changing societal factors may have had an impact on substance use disorder prevalence among adults in the United States. Public attitudes have become more supportive of some drug use and legalization. In addition, stable employment has become more difficult to obtain, and unemployment is often correlated with increased risk for a substance use disorder. For instance, from 2001 to 2002, the rate of those with substance use disorder in the past 12 months was 2.0%, and the rate for lifetime substance use disorder was 10.3%. From 2012 to 2013, those numbers had risen to 4.1% and 15.6%, respectively (Grant et al., 2016).

Furthermore, there have been increases in prescriptions for opioid analgesics and other medications with the potential for dependence, which has led to drug overdoses (Grant et al., 2016). According to the American Psychiatric Association (2013), it is estimated that 0.37% of adults in the United States have opioid use disorder. However, that number is likely to be higher due to incarcerated adults and the aforementioned trends (Grant et al., 2016).

In general, substances are used more frequently by males and by younger people (World Health Organization, 2004), yet the use of tranquilizers and sedatives is higher for females. There is a sharp decline in drug use with age, which suggests that most people stop using drugs as adults (United Nations Office on Drugs and Crime, 2012). In a survey of 36,309 adults in the United States, Grant et al. (2016) found that use was also greater among white and Native American individuals, adults who were previously or never married, and those living in the western part of the country. Substance use was also more commonly used by individuals who had lower education and income.

Individual and Societal Effects

The World Health Organization (2004) identifies four categories of harmful effects to the individual from substance use. The first category is chronic health effects, which include liver cirrhosis from long-term alcohol use or lung cancer and emphysema from smoking nicotine cigarettes. In addition, infections from risky consumption practices may occur, such as HIV or hepatitis from sharing injection needles. There are about 16 million people globally who inject drugs, and about 3 million of them are infected with HIV (United Nations Office on Drugs and Crime, 2012).

The second category, acute biological effects, consists of overdoses or casualties. This may be from taking more of the substance than the body can handle or it may be from

participating in an activity that is unsafe while physical coordination and concentration are impaired, such as driving a car. Suicide and assault also fall under this category (World Health Organization, 2004).

The final categories are acute and chronic social problems. This includes relationships ending, difficulties with social obligations such as work or school, and undergoing arrest for illegal activities (World Health Organization, 2004).

In addition to individual effects, substance use has societal and economic effects as well. According to Ferri, Amato, and Davoli (2009), alcohol dependence contributes to accidents, violent behaviors, suicide, loss of working days, work-related accidents, and low work productivity. Furthermore, percentages of drug treatments are funded by local, State, and Federal governments (NIDA, 2018b). Although many people are able to achieve long-term sobriety with treatment, many others do continue to relapse despite repeated treatments (Ferri et al., 2009).

People in and out of substance abuse treatment also are using emergency and hospital services at greater rates than those who do not have a history of substance abuse (Cederbaum, Guerrero, Mitchell, & Kim, 2014). According to Cederbaum et al., out of 136 million Los Angeles County, California, emergency department visits in 2009, over 45% included some form of drug use or misuse. Reasons for the visits included chest pain, overdose, accidents, drug-seeking behavior, or mental health needs such as depression or substance-induced psychosis.

In 2007, 41% of mental health or substance use patients who presented at the emergency department were hospitalized. These patients are taking up beds, using more services, and contributing to hospital costs. They are less likely to be in good health and have higher rates of mental illnesses and substance use disorders. However, Cederbaum et al. (2014) found that increasing treatment options can help decrease some of the costs and rates of hospitalization.

They recommended integrating medical and substance abuse programs as well as offering more outpatient treatments to have a positive impact on this issue.

Table 2

Costs of Substance Abuse (NIDA, 2017)

Substance	Health Care Costs	Overall Costs
Tobacco	\$168 billion	\$300 billion
Alcohol	\$27 billion	\$249 billion
Illicit Drugs	\$11 billion	\$193 billion
Prescription Opioids	\$26 billion	\$78.5 billion

Permission was granted by the National Institute of Drug Abuse to include the information from this table in this dissertation as per email dated 9/27/2018. Retrieved from <https://www.drugabuse.gov/related-topics/trends-statistics>.

Substance Use Disorder Treatment and Relapse

This section discusses several types of substance use disorder treatment. Traditional substance use disorder treatment usually includes detoxification, followed by outpatient, inpatient, or residential psychological treatment (NIDA, 2018b). This may include 12-step programs or evidence-based contingency management based on learning theory (Prendergast, Podus, Finney, Greenwell, & Roll, 2006).

Once treatment has begun, relapse prevention is important. This can take several forms, such as a cognitive-behavioral model (McGovern, Wrisley, & Drake, 2005), or mindfulness-based relapse prevention, which adds mindfulness to the cognitive behavioral model (Witkiewitz, Marlatt, & Walker, 2005).

For a less traditional approach to substance use treatment, a variety of approaches are available with varying amounts of empirical support for their effectiveness. Horse-assisted therapy (Kern-Godal et al., 2015) art therapy (Liggett, 1999), and music therapy (Aletraris, Paino, Edmond, Roman, & Bride, 2014) are a few options discussed in this review. There is also one informal study using knitting with patients in recovery from substance use (Duffy, 2007).

Traditional substance use disorder treatment. Typically, traditional outpatient substance use disorder treatment programs consist of various forms of counseling (individual, group, and family), psycho-educational groups, and often the inclusion of a 12-step program (Breslin, Reed, & Malone, 2003), with counseling and other behavioral therapies being the most commonly used form of treatment (NIDA, 2016). In the United States, there are more than 14,500 drug treatment facilities, although substance use disorders may also be treated in mental health clinics and physicians' offices. Providers include counselors, physicians, psychiatrists, psychologists, nurses, and social workers (NIDA, 2018b).

Standard treatment characteristically begins with some type of detoxification, helping the body clear the drugs. Often, this process needs to be overseen by a medical professional due to the potentially dangerous physiological effects of stopping use of the substance (NIDA, 2018b). For instance, alcohol withdrawal can cause fatal seizures (Kuhn et al., 2011).

Although the detoxification processes rid the body of the substances, it does not address the other factors that often contribute to addiction, such as the psychological, social, and behavioral problems. Further treatment can be delivered in outpatient, inpatient, or residential settings. Long-term residential treatment offers 24-hour care in a non-hospital setting, usually for several months and up to a year. Services include safe housing, medical attention, and can use a variety of therapies. For example, a therapeutic community is a highly structured program involving the whole community in supporting the patient's recovery for six to 12 months (NIDA, 2016).

There are also less-intensive programs available with briefer durations. Shorter-term residential treatment often offers detoxification services and intensive counseling to prepare the patient for further treatment in more of a community-based or outpatient setting. Recovery

housing provides short-term housing with supervision after inpatient or residential treatment as a transition to independent living. Educational programs may be offered, such as learning to manage money, finding employment, or utilizing community support services (NIDA, 2016).

Outpatient treatment often has a behavioral focus and may involve individual therapy, group therapy, or a combination of both. Therapy may take a variety of theoretical approaches and use different techniques, such as cognitive-behavioral, family therapy, or motivational interviewing. In addition, the intensity may vary from several meetings a week, particularly in the beginning, and decreasing to fewer sessions as the patient progresses in recovery (NIDA, 2016).

Another type of outpatient treatment is the 12-step program, such as Alcoholics Anonymous (AA). AA is an international organization that offer support through self-help groups. It uses an abstinence model and members are supported by others in recovery (Ferri et al., 2009). Three key ideas incorporated in the 12-step model are acceptance, surrender, and active involvement. The patient must accept that one has no power over the disease of addiction and must surrender to a higher power. To stay actively involved, one is required to attend meetings and related activities (NIDA, 2018b).

A type of adjunctive treatment supported by vigorous theoretical and empirical scientific literature is contingency management, which is based in learning theory. These interventions view substance use disorder as a form of operant conditioning in which behavior is controlled and shaped by the results. Therefore, the premise of such treatment is that substance use behavior is influenced by context in which it occurs. If alternative non-drug reinforcements are available in quantities that are incompatible with drug use, then in theory the substance use behavior decreases (Prendergast et al., 2006).

Contingency management includes a variety of specific interventions. One example is voucher-based reinforcement therapy in which patients receive vouchers for negative urine or breath samples. The vouchers can then be exchanged for goods or services that are incompatible with using substances. Another type of contingency management is the fishbowl procedure that allows participants to earn opportunities to enter a drawing. Prizes range from a slip of paper reading, “Good job!” to big-ticket items. Regardless of the design, using a reinforcement on a variety of schedules can make it more effective (Prendergast et al., 2006).

Traditional substance use disorder treatment outcomes. Project MATCH remains the largest multicenter United States trial on the effectiveness of alcohol treatment programs (Cutler & Fishbain, 2005). The project was conducted over nine different sites with nearly 2,000 patients, following most of them for at least three years (Glaser, 1999). Individual patient characteristics were matched with three different types of treatment: Cognitive Behavioral Therapy (CBT), Motivational Enhancement Therapy (MET), and Twelve Step Facilitation (TSF). CBT focused on thoughts around alcohol and urges. MET provided feedback around problems related to alcohol use and attempted to motivate the patient take responsibility and commit to change. TSF was based on the 12-step AA model and promoted participation in AA (Cutler & Fishbain, 2005).

Although all the treatments showed some positive outcomes (Glaser, 1999), the overall results were disappointing. No statistical significance was found in the differences between the individually matched programs. All three programs reported nearly identical outcomes (Cutler & Fishbain, 2005).

Following the Project MATCH study, Gifford, Ritsher, McKellar, and Moos (2006) examined another model of behavior change in substance use disorder treatment. They used the Acceptance and Relationship Context (ARC) model, which included treatment program alliance

(TPA), acceptance-based responding (ABR), and social relationship quality (SRQ). TPA related to the social climate of the treatment setting and how satisfied patients are with treatment. ABR referred to acceptance of internal experiences and approach coping, which has been shown by previous studies to predict better outcomes for substance use disorder. SRQ indicated that friendships and outside relationships can have a positive or negative impact on substance use disorder and abstinence, depending on their quality.

Gifford et al. (2006) tested this model on 2,549 participants in 15 residential substance use disorder programs and found that TPA, ABR, and SRQ were all related and that TPA predicted ABR and SRQ. They found that patients had better outcomes from substance use disorder treatment programs when they had supportive, ongoing social relationships that promoted acceptance and appropriate responses to internal states. However, social relationships did not directly predict positive treatment outcomes. Patients from programs that offered an engaging environment with acceptance-based responding tended to promote the social relationships which then predicted better outcomes at two- and five-years post-treatment.

Glass et al. (2015) reviewed nine randomized, controlled trials to examine the effectiveness of brief alcohol interventions, which are targeted towards those with mild to moderate alcohol problems. The investigators wanted to find out whether these brief interventions helped link patients with more intensive services for disordered alcohol use. The trials were completed in healthcare settings with both adults and adolescents. Overall, there were 993 participants in the intervention groups and 937 participants in the control groups.

Glass et al. (2015) did not find any significant evidence that the brief alcohol interventions were effective in increasing utilization of further care. In general, studies with participants who had higher alcohol severity or those recruited from more severe setting such as inpatient treatment

had higher numbers utilizing services as compared to studies with lower alcohol severity or recruitment from general healthcare settings. These results were limited by their exclusion of drug use, attrition, and possible publication bias. However, because there were no significant results and studies with positive results tend to be published, it is unlikely that unpublished studies would affect the findings.

Previous research has shown that completion of a treatment program significantly improves outcomes. Finishing a program is linked with higher rates of abstinence, lower rates of crime, fewer relapses, and higher levels of employment (Brorson et al., 2013). However, early drop-outs have similar outcomes to untreated patients, and the rate of failure to complete treatment is often over 50% (Kern-Godal et al., 2015). In a review of previous studies, Brorson et al. (2013) reported that 23 to 50% drop out of outpatient treatment and between 17% and 57% leave inpatient treatment prematurely. After dropping out, patients are more likely to relapse, have legal and financial difficulties, poor health, and readmission. According to Kern-Godal et al. (2015), many patients leave and then re-enter treatment programs after periods away. It can be challenging for patients to find treatment modalities that are sufficiently motivating and enabling of change.

Brorson et al. (2013) conducted a meta-analysis examining 122 studies on treatment completion published in peer-reviewed journals from 1992 to 2013. There was a total of 199,331 participants across all the studies. Studies were excluded based on a variety of factors, such as the terms used to define drop-out rate. If the study was written in a language that was not English, was not published in a peer-reviewed journal, or was based only on alcohol treatment, it was not included. Studies involving animals or coercion/mandatory treatment were also excluded.

Brorson et al. (2013) concluded that deficits in cognitive function were correlated with higher rates of withdrawal from treatment. In particular, deficits associated with memory, attention, abstract reasoning, and verbal skills are commonly found among patients in treatment. Younger age is also a small risk factor, as adolescents tend to be more prone to risk taking and impulsivity due to the incompletely formed prefrontal cortex. For both younger patients and those with cognitive deficits, programs that focus on cognitive skills can be more challenging and thus lead to drop-out.

The meta-analysis by Brorson et al. (2013) was limited by the search engines (Medline and PsychINFO) and search terms used. As with the other meta-analyses, the Brorson et al. review is susceptible to publication bias, coding errors, and heterogeneity between the studies in the definition of variables. However, these results may be able to help practitioners identify more vulnerable patients by assessing cognitive functioning at baseline and providing a more supportive program that reduces risk of drop-out.

In an outcome study of 191 patients at a community mental health center, 52 patients did not complete treatment (Allen & Olson, 2016). Allen and Olson (2016) found that lack of social support plays a statistically significant role in attrition. Contrary to the “rock-bottom” hypothesis that people with more severe substance use disorders would be more motivated to complete treatment, the findings showed that people with more severe disorders were more likely to leave treatment early. Allen and Olson (2016) recommended that the patients at high risk for withdrawing from treatment be directed into programs that promote a strong therapeutic alliance. Those who are not completely ready for treatment could be identified and strategies such as motivational interviewing should be used to increase their readiness. Ideally, this would then increase their likeliness to complete the prescribed treatment.

Patients who had more extended episodes of outpatient care tended to have better short-term outcomes. They were also less likely to be in treatment at two years post-discharge than patients who had shorter outpatient treatments. Moos and Moos (2006) surveyed patients who had at least 27 weeks of treatment in the first year and found that they had better outcomes over a 16-year follow-up. This was also consistent for patients who participated in AA for at least 27 weeks. Self-help groups can have a positive effect on outcomes, as demonstrated by Ritsher, Moos, and Finney (2002), who found that they were more likely to be in remission after two years. However, there was no significant correlation between treatment type and remission status after two years, which was consistent with the results of the Project MATCH study.

Prendergast et al. (2006) reviewed 75 studies on contingency management published in English between 1970 and 2002. Both experimental and quasi-experimental studies were included, but all were required to have a treatment-control group design and quantitative data to calculate the effect size on a minimum of one variable. Prendergast et al. found that the mean effect size of contingency management was positive. However, the magnitude of the effect size did show declines over time. Contingency management was also more effective for opiate use and cocaine than tobacco and multiple substances.

The Prendergast et al. (2006) meta-analysis was limited by the differences in the studies and the researchers acknowledged that if different definitions or terms had been used, the findings could have been altered. Decisions regarding eligibility criteria of studies, variables coded, and rules used during coding can all influence outcomes. There also could have been a publication bias as 15 studies were not included due to not having been published. Moreover, studies with significant results are more likely to get published, which can skew results. However, the Prendergast et al. report suggests that contingency management may improve the ability of clients

to remain abstinent, thus making it one of the more effective abstinence-promoting adjunctive treatments for substance use disorder.

Dutra et al. (2008) reviewed studies that used contingency management as well as other psychosocial interventions such as relapse prevention, cognitive-behavioral therapy, and treatments that combined cognitive behavioral therapy and contingency management. Thirty-four studies published between 1840 and 2005 were examined, with five for cannabis, nine for cocaine, seven for opiates, and 13 for multiple substance users. The total number of participants was 2,340, although over one-third (35.4%) withdrew before completion of their study. About half of the participants also met criteria for alcohol use disorder or dependence, although alcohol was not the targeted substance in this study. In over 43% of the studies patients also received medication maintenance, such as methadone.

Effects ranged depending on the substance used and the treatment. In general, the average patient achieved outcomes better than 67% of patients not receiving interventions in the control conditions. Effect sizes varied between type of substance and treatment, but overall there was a moderate effect size for psychosocial treatments, with treatments for cannabis being the most effective and treatments for poly-substance use being the least effective. The most significant effect among the treatment types was for contingency management interventions, particularly when combined with cognitive behavioral therapy. As a whole, almost one-third (31%) of intervention participants attained abstinence while only 13% in the control groups were able to achieve abstinence (Dutra et al., 2008).

Moggi, Giovanoli, Strik, Moos, and Moos (2006) compared treatment programs in Switzerland and the United States. The Swiss programs studied were about five times longer than the United States programs, which also were more likely to focus on the disease model of

addiction. The disease model states that brain structures and behaviors are affected by chronic exposure to alcohol and substance use, which explains why their use is associated with loss of control, inflexible behavior, negative emotional states, and compulsive drug use (NIDA, 2015). U.S. programs are also more likely to use AA as part of treatment (Moggi et al., 2006). Moggi et al. (2006) found that the Swiss patients were four times more likely to have individual therapy as part of their treatment, while the U.S. patients had more groups and 12-step meetings.

Overall, both programs had comparable abstinence and remission rates at one-year post-discharge. However, the patients from the United States were more likely to have experienced emotional distress and psychotic symptoms at the one-year point, which was associated with attending more 12-step meetings. The exception to this was that patients who stayed in treatment longer, had more individual sessions, and who were in programs with less emphasis on a 12-step model had lower emotional distress. A cognitive-behavioral and 12-step approach seemed to be correlated with more emotional distress, while programs with higher individual involvement were associated with less distress (Moggi et al., 2006).

Therapeutic mechanisms of treatment and relapse prevention. Relapse, or returning to substance use after cessation, is a complex process and often nonlinear in nature. It is not a one-time event or simply a breakdown of willpower (McGovern et al., 2005). According to Marlatt and Gordon (1985), the main reasons for relapse for alcoholics, smokers, heroin users, compulsive gamblers, and overeaters were coping with negative emotional states or physical/physiological states, enhancing positive emotional states with or without an interpersonal context, and testing personal control. Participants also reported relapse due to giving in to temptations/urges, coping with interpersonal conflict, and social pressure. Consistent with this, Witkiewitz, et al. (2013) reported that one of the strongest predictors of relapse is craving.

Levy (2008) surveyed 335 clients in various levels of care in a large substance abuse treatment program and found that the most common reasons for relapse with both men and women were feeling bored, feeling anxious or stressed, wanting to use and get high, believing that one could use without being re-addicted, and relationship problems or a breakup. Men reported additional reasons of anger, having too much money, and no longer attending 12-step meetings. Depression, loneliness, and the emotional pain of withdrawal were among the top reasons for relapse for women.

Boredom is a particularly significant issue for clients when they first stop using substances because they often do not know how to fill the time that was previously spent acquiring and using drugs. Previous leisure activities may have been dropped in favor of drug use. Boredom can be especially difficult for clients who have started using at a young age because they may have never learned how to cultivate other interests. Clients have reported feelings of emptiness and not knowing what to do with themselves, which can contribute to relapse. Boredom can also result from changes in the social support system since often old friends are associated with using. It is important to develop new relationships as well as finding new activities that are not compatible with substance use (Levy, 2008).

Another one of the common reasons for relapse found by Levy (2008) was stress and anxiety. It is not unusual for clients to have little knowledge of how to cope with unpleasant emotional states without using drugs. They may have never learned coping skills, or previous coping skills may have been lost after substance use began. Learning to regulate emotions can take time, but activities such as meditation, relaxation training, learning to accept painful feelings, and modifying cognitive distortions may help (Levy, 2008).

Relapse prevention treatment. Typically, relapse prevention is an evidence-based form of therapy using a cognitive-behavioral model (McGovern et al., 2005). This model is based on the premise that the pathological use of substances is a behavior and so interventions are based on identifying the situational, social, affective and cognitive causes of the substance use disorder. Once the triggers are identified, cognitive and behavioral techniques are implemented (Witkiewitz et al., 2005). These include reducing exposure to substances, increasing motivation, self-monitoring, recognizing and coping with cravings and negative moods, identifying thought processes that have the potential for relapse, and developing and utilizing a crisis plan (McGovern et al., 2005).

According to the cognitive-behavioral model, the most important predictor of relapse is the client's ability to cope with high-risk situations. Coping is a cognitive or behavioral approach that minimizes danger or helps to achieve gratification in a situation. There are several different types of coping, which include stress coping, temptation coping, approach coping, and avoidance coping. The function of stress coping is to lessen the impact of stressors while temptation coping is to resist temptation to use substances. Approach coping is the attempt to accept, confront, or reframe cravings. Avoidance coping is using distraction to engage in other activities (Moos, 1993).

According to Witkiewitz et al. (2005), the cognitive-behavioral model views relapse as a linear progression of responses. If effective coping mechanisms are used, the client will experience more self-efficacy and is less likely to relapse. If ineffective coping strategies are used, self-efficacy will be lower and there will be an increased likelihood of relapse. Gwaltney et al. (2002) reported that lower situational self-efficacy, which is the individual's belief in their capacity to execute specific behaviors in certain situations, was correlated with higher rates of

relapse and cravings.

The development of cognitive-behavioral coping skills has had conflicting success rates (Witkiewitz et al., 2005). In a meta-analysis of psychosocial interventions for substance use, Dutra et al. (2008) found that relapse prevention had low moderate effect sizes. Overall, it is more effective than no treatment, but has a similar effectiveness to other treatments such as 12-step programs, interactional and interpersonal therapies, and nicotine gum (Witkiewitz et al., 2005).

In a comparison of 242 heroin users, 60% used heroin at least once after treatment at a residential facility and 95% of all relapse occurred within 30 days post-treatment. The 40% who remained abstinent after treatment were more likely to have: (1) used cognitive avoidance; (2) used distraction; and (3) completed their treatment program (Gossop, Stewart, Browne, & Marsden, 2002). Other studies showed the opposite effect where clients with alcohol use disorder who had decreased avoidance coping reported fewer problems with alcohol as well as fewer psychological and interpersonal problems. Conversely, clients who used approach coping had a lower severity of alcohol issues (Chung & Lagenbucher, 2001). Therefore, this demonstrates the limitations of traditional substance use disorder relapse prevention treatment.

Mindfulness-based relapse prevention. Mindfulness-Based Relapse Prevention (MBRP) is the addition of a mindfulness intervention to the cognitive-behavioral model. Like cognitive-behavioral relapse prevention, MBRP includes teaching effective coping skills, increasing self-efficacy, challenging positive outcome expectancies, and educating the client about the abstinence violation effect. The “abstinence violation effect” is what happens after a client consumes a substance, feels guilt, and then is more likely to relapse again (Witkiewitz et al., 2005).

MBRP differs from traditional cognitive behavioral models with the addition of regular mindfulness practice. The goal is to increase awareness and acceptance of thoughts, feelings, and sensations. Clients are taught to observe both pleasant and unpleasant sensations, thoughts, or feelings and accept them without judgment. By increasing an individual's ability to control attention, mindfulness training can actually lead to changes in the brain which can help with alertness and relaxation, increase levels of dopamine, and assist in managing cravings (Witkiewitz et al., 2005).

As discussed earlier, cravings are often a predictor of relapse. Craving and attachment can cause suffering as humans tend to want to cling to positive states and avoid negative ones (Witkiewitz et al., 2013). According to Witkiewitz et al. (2013), addiction is the attempt to hold onto or avoid specific cognitive, affective, or physical experiences. Practicing mindfulness includes observing the craving without reacting or judging. Learning to sit with the sensations in the present moment while having awareness that cravings are transitory can help reduce the likelihood of relapse.

Evidence suggests that greater levels of mindfulness are associated with improved treatment outcomes and reduced alcohol use for individuals with alcohol use disorder (Marlatt & Marques, 1977; Marlatt, Pagano, Rose, & Marques, 1984; Murphy, Pagano, & Marlatt, 1986). Westbrook et al. (2013) found that mindfulness decreases the neural aspects of craving. The regions of the brain associated with cravings, including the subgenual anterior cingulate cortex, had reduced activity when an individual looked at images of people smoking while participating in mindful attention as compared to looking at the photos without using mindful attention.

An MBRP program was developed as an aftercare treatment program with the goal of reducing the risk and severity of relapse after substance abuse treatment. In this study by Bowen

et al. (2009), 168 clients participated in either an 8-week MBRP intervention or treatment as usual. The MBRP program included formal mindfulness practices and exercises to bring those skills into daily life. The first three sessions focused on raising awareness of environmental triggers and the subsequent physical, affective, and cognitive reactions. Clients were encouraged to approach cravings with gentle curiosity and are assisted in staying with the experience without attempting to suppress it or giving in to the temptation. Formal meditation practice was also used to help clients tolerate discomfort.

Participants in the MBRP group showed reductions in the number of days of substance use and cravings. There was an increase in awareness and acceptance and not in other aspects of mindfulness (observing, describing, non-judgment, and non-reactivity). However, no significant difference was found in the relapse rates between the control group and the intervention group as both had similarly decreased relapse. Overall, client participation and compliance were good, and over half of the sample was still meditating at the four-month follow-up. There were no adverse events or side effects reported by the participants (Bowen et al., 2009).

In another study conducted between 2009 and 2012, participants received either “treatment as usual” or MBRP for eight weeks. The “treatment as usual” condition was abstinence-based, process oriented, and focused on the 12-step model. The MBRP program included guided meditation and addressed topics such as mindfulness in high-risk situations, leading a balanced lifestyle, self-care, and compassion. Participants also tracked their cravings and mood on a daily basis. At three months post-intervention, there were no significant differences between the groups. However, at six months the MBRP group had a significantly reduced rate of relapse as compared with the treatment as usual group (Bowen et al., 2014).

Summary of evidence-based practice and relapse prevention effectiveness. As discussed in the previous sections, a variety of interventions have been supported by evidence. Treatment types range from outpatient 12-step programs to intensive inpatient recovery centers (NIDA, 2016) and evidence-based contingency management (Prendergast et al., 2006). There is also moderate support for cognitive based relapse prevention. Overall, patients tend to do better when treatment is completed and when a robust therapeutic alliance is present (Allen & Olson, 2015).

However, relapse and drop-out rates are still often high for substance use disorder treatment. According to the NIDA (2018a), between 40–60% of people with drug addiction relapse, which is similar to the rates of mental illness. One of the risk factors for treatment drop-out is deficits in cognitive functioning, which is associated with higher rates of withdrawal from treatment (Brorson et al., 2013). According to a focus group of clinicians, patients were more likely to drop-out due to motivation and lack of alliances with staff. The patients agreed that the staff's lack of alliance was often a reason for leaving treatment, along with social support issues. Therefore, developing an early therapeutic alliance (Palmer, Murphy, Piselli, & Ball, 2009) and early detection of cognitive needs (Brorson et al., 2013) may be the keys to treatment adherence and more positive outcomes.

Alternative substance use disorder treatments. In addition to the typical residential, outpatient, or 12-step treatment models, some research has been done on alternative substance use disorder treatments. In general, the longer patients stay in treatment, the better the outcomes. Therefore, finding treatment modalities that motivate patients to continue treatment needs to be a priority (Kern-Godal et al., 2015). Most of these approaches are intended as supports to the traditional models and are not meant to be replacements for more intensive treatments.

Holistic treatment approaches emphasize emotional, physical, and social well-being by encouraging growth through self-exploration, appropriate expression of feelings, recognition of challenging emotional states, and figuring out healthier ways of self-soothing. The goals of a holistic program include abstinence from psychoactive substances and improving psychosocial functioning. These programs can help the patients develop their self-identity, self-esteem, and self-confidence while managing stress and increasing body awareness (Breslin et al., 2003).

“Holistic therapy” might include dance or movement, which can help patients express themselves nonverbally. Tai Chi might also help with connecting the mind, body, and spirit as well as teaching the patient how to be more mindful and internally focused. Art therapy can also improve self-esteem and promote positive feelings while the patient develops their sense of empathy and processes the pain, deconstruction, and loss that often accompany substance use (Breslin et al., 2003).

In another type of supplemental alternative therapy, Kern-Godal et al. (2015) used “equestrian therapy” as a complementary treatment with young adults (ages 16 to 35) in inpatient and outpatient day treatment centers. The patients were divided into two groups: one group volunteered for the equestrian therapy and one group had typical treatment. Patients were followed from the beginning of treatment until discharge over a period of 18 months. Although the samples were not randomized, Kern-Godal et al. (2015) found that those who participated in the equestrian therapy remained in treatment longer and were more likely to complete treatment.

Although several of these studies did not employ empirical research techniques, positive outcomes were reported. For instance, Breslin et al. (2003) did not have any empirical data to support improved treatment outcomes with holistic therapy, but the researchers did note that staff at treatment centers reported increased patient participation in treatment when these alternative

therapies were available.

Liggett (1999) used art expression as part of two-week and four-week inpatient addiction programs. After an introduction and five minutes of relaxation/breathing, patients were instructed to draw based on a given theme. Some of the themes included “What my addiction looks like,” “Vision of recovery,” and “Vision of a sober city.” Afterward patients shared what they had produced with the other participants.

Liggett (1999) stated that art expression can be an important part of recovery and can help motivate patients to continue in programs. Art can also help with visualizations of a future without substances and can help people who are lacking in the verbal skills to express themselves emotionally. Finally, many patients have lost families, friends, homes, and possessions as a result of their substance use, and so creating something in a nonjudgmental environment may help with those feelings of loss.

Developing leisure and recreational skills may be particularly beneficial to substance use disorder patients. It is important to find ways to spend time that are relaxing and low-cost to fill the time that was once occupied with obtaining and using substances. Development of this skill is an important aspect of recovery and it can be challenging for patients to find activities that are the right fit (Breslin et al., 2003).

Nevertheless, alternative treatments, whether augmenting or replacing conventional treatments, remain relatively rare. Aletraris et al. (2014) randomly selected treatment centers throughout the United States. Upon completing in-person interviews with 299 administrators or clinical directors, they found that 36.8% of the programs offered art therapy and only 14.7% offered music therapy. A limitation of their findings, however, was that their data do not include

information as to whether the art and music therapy programs were a part of or in place of traditional treatments.

Table 3

Review of Alternative Substance Use Disorder Treatment

Author(s) & Publication Date	Therapy Type	Sample Size (N)	Sampling Method	Research Design	Description of Results	Limitations
Aletraris et al. (2014)	Art and music	299	Random	Correlational	36.8% of treatment programs offer art therapy and 14.7% offer music therapy	<ul style="list-style-type: none"> • Veterans' Health Administration and correctional facilities excluded • Data not cross-sectional • Unknown whether therapies are complementary or alternative to traditional treatment
Duffy (2007)	Knitting	20-25 variable group members	Convenience	Qualitative	Knitting was useful for facilitating discussions, creativity, increasing self-esteem, and moderating stress through self-soothing. Also used as a replacement for substance use.	<ul style="list-style-type: none"> • Qualitative clinical illustrations • No measures or quantitative data • Variable group membership
Kern-Godal et al. (2015)	Horse-assisted therapy (HAT)	108	Self-selected	Quantitative Correlational	The intervention group remained in treatment longer and were more likely to complete treatment.	<ul style="list-style-type: none"> • Non-random assignment to intervention group • Correlational • Novelty of HAT
Liggett (1999)	Art expression	Not specified	Convenience	Observation	Author found art expression to be useful in substance use treatment and relapse prevention	<ul style="list-style-type: none"> • No data collection • Subjective observations

History of Knitting

Contrary to most assumptions, it is unlikely that the art of knitting was developed in a single time and place (Rutt, 1987), although it is generally thought to have originated in the Middle East (Nargi, 2011). For the first four or five hundred years, knitted items were made of cotton and silk in the Middle East, and later wool was used in Europe. These fibers decay over time, so accurate information about the origins of knitting is difficult to obtain. However, the oldest knitted item found was socks from Egypt dating back to about 1000 CE with Khufic, a decorative Arabic script (Theaker, 2006). Another one of the oldest pieces of knitting was discovered by L.J.A.M. Van der Hulk and probably dates back to the second century. The fabric appeared to be ornamental and was from the grave of a woman at Esch in southern Holland (Rutt, 1987).

Relatively speaking, knitting appears to be a recent invention. There are no ancient legends that mention knitting in the same way that there are about spinning and weaving. The term “to knit” was not added to the Oxford Unabridged English Dictionary until the 1400s and was not found in any European language before the Renaissance.

In England, the first items knitted were caps. Coventry cappers were established by 1424 and were mentioned in the roll of the Hundred Court at Monmouth in 1449. These caps were brown and had a button on top. They were knitted in the round using coarse, dark wool and felted so that the individual stitches were obscured (Rutt, 1987).

The next item to be widely knit were stockings. Mention of stockings were first found in fragments of French documents from the late 1300s, although it is unclear if they were hand knitted. The oldest knitted stockings were coarse knee-stockings and were likely only worn by children. Adults at the time wore cloth hose. By the 1500s, knitting had entered high fashion and

women's stockings became dyed various colors such as red, green, white, and russet. Knitting stockings remained popular until the 1950s when it was overtaken by the cheapness of machine-knit socks. By 1970 hand-knit socks had all but disappeared (Rutt, 1987).

After the 15th and 16th centuries, knowledge of knitting spread around the world on trade routes. Sailors knitted on long voyages because it was portable and gave them something to do. Over the centuries, knitting periodically shifted from a high-demand luxury activity to a low-demand folk craft. For example, in the Victorian era beadwork was introduced to knitting and people made exquisite laces, bags, and baby clothes (Theaker, 2006).

Knitting in America. Early colonial knitting was carried out both by women who lived in the city and those who lived in the rural areas. Many women in the city could buy yarn already carded, spun and dyed, while rural women did not have that luxury. They would separate the wool by hand before cleaning and carding it. Next, it would be spun on wheels imported from England and dyed. The yarn was then knitted into stockings or mittens (MacDonald, 1988).

Some women around this time knitted as a way to earn money. Stockings were very desirable and could earn the knitter half a crown by the end of the 17th century. Women could earn a living mending the stockings as well. By the end of the 19th century, a knitter could get \$5 for an intricately beaded bag. These bags were carried by both men and women and were also used to memorialize departed loved ones (MacDonald, 1988).

When World War I began, knitters were encouraged to make items or at least buy wool so the soldiers could stay warm. However, due to the acute need many pairs of socks were made more quickly on machines in spite of the argument that handmade socks lasted longer. Knitting teas were held where knitters gathered in patriotic red, white and blue to knit for "Sammy" (MacDonald, 1988).

By the time the Depression hit and the economy worsened in the 1930s, knitters were doing everything they could to save money. Instead of buying expensive European-designed sweaters, they copied the patterns and made them by hand. There was still a bias against women working, but some were able to earn money by selling their knitting. Additionally, universities as well as yarn stores launched classes to teach knitting and help knitters increase their skills. Knitting continued in the 1940s as in the form of relief knitting for World War II and in the 1950s women knitted sweaters and Afghans for homeless children in Korea (MacDonald, 1988).

By the end of the 1970s, three women had written books that would greatly influence American knitters. Barbara Walker wrote *A Treasury of Knitting Patterns* in 1968 and followed it with a second volume in 1971. Elizabeth Zimmerman, also an influential knitter, published *Knitting without Tears* in 1971 and *Elizabeth Zimmerman's Knitter's Almanac* in 1974. The third was Mary Walker Phillips, who published *Step by Step Knitting: A Complete Introduction to the Craft of Knitting* in 1967. These women encouraged experimentation with color, texture, and stitchery as well as teaching classes and conducting workshops and camps. They promoted the enjoyment of knitting and using high-quality materials (MacDonald, 1988).

According to Stannard and Sanders (2015), the number of young women who knit rose dramatically in the first decade of the new millennium and ceased to be viewed as a hobby only for “grannies” (p. 99). According to the Craft Yarn Council (2014), as of 2014, about 38 million people knit or crochet. Knitters began taking their projects out in public and may knit in coffee shops, pubs, and parks. Lighthearted books that made knitting appeal to a younger demographic began to be published, such as *Stitch 'n Bitch* by Debbie Stoller in 2000 (Myzelev, 2009). Celebrities such as Julia Roberts, Russell Crowe, and Winona Ryder have also been seen knitting, increasing its popularity among younger people (Parkins, 2004).

In 2007, a fiber arts social media website called Ravelry.com was founded by Casey and Jessica Forbes. As of January 2016, the site had close to six million members. Their goal was to create a space on the web for fiber artists including knitters, crocheters, weavers, spinners, designers, and dyers. Members can access patterns, log their yarn stashes, chat and organize meetups in forums, post photos of finished items, and sell or trade yarn (Forbes, n. d.).

Knitting in non-Western cultures. While there is not much literature on the history of knitting in Western cultures, even less information is available about non-Western cultures. For instance, in India, knitting was never an important part of the culture and only traces of the craft have been found. There is also little information on knitting in China as hand knitting was not common until after World War II (Nargi, 2011).

Japan has a richer relationship with knitting, although it is still difficult to find information on the craft due to its isolation from Western cultures. Wool was imported because sheep were not available in Japan, which made acquiring yarn more challenging. However, by 1890 hand knitted items such as shawls, mittens, gloves, and socks began appearing in shops. Women began knitting more frequently during World War II to send items to the front. The popularity of knitting continued into the 1920s. In 1923 an earthquake in the Kanto area damaged the wool industry but that did not affect the rising numbers of knitters as shawls became fashionable. It was around this time that the value and variety of yarn skyrocketed (Nargi, 2011).

Knitting in Japan slowed down in the 1950s and 1960s as machine-made garments started to come into fashion. A brief revival occurred in the 1970s when acrylic yarn became widespread, but the wool industry began to downsize after the energy crisis in 1973. Since then, the popularity of knitting has waxed and waned. Today some interest in knitting still exists,

facilitated by the availability of websites to assist in reading patterns written in English, knitting groups, and knit cafes. However, many people do not admit to knowing how to knit unless they are highly qualified. Because of the high standards for professional knitted products, many novice knitters do not confess to being a knitter (Nargi, 2011).

In contrast to Japan, young boys in South America start making a very specific item as soon as they are old enough to knit: a hat called a *ch'ullu*. Men may also make hats for themselves, their sons, and occasionally their daughters. In some locations, women knit them as well (Nargi, 2011).

The *ch'ullu* usually has ear flaps but styles and shapes vary widely between regions in Bolivia and Peru as well as between neighboring communities. It is often possible to tell where someone is from by differences in color, patterning, size, height, and how pointy the top is. Sometimes embellishments are added such as tassels or pompoms. In addition to information about the regional origin, one can also learn about the individual wearer, such as marital status. Girls may wear a feminine version at festive occasions until they are married. Sometimes people will even work their name, age, or birthday into the hat's design (Nargi, 2011).

Clinical Research on Knitting

Much of the previous research with knitting has been done with groups. For instance, Dominick (2014) used knitting with at-risk fourth graders who were experiencing social or behavioral problems at school or in the home. The ten female participants were randomly assigned to one of two groups: a knitting intervention group and a delayed intervention control group. For eight weeks, the investigator met with the students and taught the intervention group how to knit. Although she did obtain medium and large effects on social skills variables, the group format was challenging. Participants required a great deal of individualized attention to

stay on task and behavior management was a significant issue for the investigator. In addition, knitting often requires sitting next to the student to guide them through the steps and close monitoring for mistakes until they reach a point of relative independence. This can make group knitting lessons extremely challenging.

Along with the limitation of a small sample size, Dominick (2014) reported that the students had wavering interest and participation rates declined as the study progressed. All participants were present for only the first five of the eight experimental sessions, and one participant was absent three weeks in a row. By the end of the sessions, several students were more interested in having a finished product than actually learning to knit and requested that the researcher knit for them.

Some potentially confounding variables were outside the author's control, such as the fact that the sessions did not occur in the same classroom for the duration of the study due to interference from one of the teachers at the school. Dominick (2014) suggested that this, combined with low attendance, may have had a negative impact on the Social Skills Improvement System measure.

Rebmann (2006) addressed this challenge of teaching multiple people to knit by instructing an unspecified number of homeless teen mothers individually. Once they had mastered the basics of knitting, the teen mothers then recruited others to join in the activity with them. Eventually, they were able to establish an informal group of knitters and crocheters. To reduce the burden on the facilitator, the members were at a point in their learning where they could often turn to each other when in need of assistance with their project.

This was not an empirical research study, but Rebmann (2006) did report that the activity of knitting helped the teen mothers to gain a sense of mastery over their environments and they

felt a sense of empowerment from learning a new skill. Gaining the knowledge of knitting helped some of the mothers navigate their communities in a new way as others turned to them as the “expert” and they collaborated with each other. However, because Rebmann did not use any quantitative or qualitative measures during this informal project, it is difficult to infer generalizable results from her observations.

Knitting has been used with other groups to assess the effect on a specific disease or disorder. Fraser and Keating (2014) used a quantitative pre-test/post-test design with a small convenience sample of 14 women with multiple sclerosis. Participants were enrolled in a creative arts program with a duration of four weeks. The first three weeks were visual arts or beading, and during the final week participants knitted. The women were surveyed before and after the intervention on self-esteem, hope, perceived social support, and self-efficacy. Fraser and Keating (2014) found that all variables had increased significantly after completion of the creative art program. However, knitting was only one component of the larger creative arts intervention, so it is impossible to know if the effects were due to knitting, one of the other arts activities, or something relating to the combination of art mediums.

Knitting has also been used with people experiencing eating disorders. In a study by Clave-Brule et al. (2009), a non-randomized convenience sample of 38 women with anorexia nervosa were given knitting lessons and access to free supplies. After the duration of the study, participants completed a self-report qualitative questionnaire that consisted of open-ended items relating to the effects of knitting on their eating disorder.

Patients reported reductions in stress and thoughts and feelings related to their eating disorder as well as increased relaxation/comfort, accomplishment, and positive experiences from the meditative movements of the hands. Some also reported less tension when meeting and

connecting with others. Overall, the time spent knitting per day ranged from zero to five hours, and many stated that knitting was “easy to learn, not overwhelming, low pressure, and portable” (Clave-Brule et al., 2009, p. e2). However, a limitation is the self-report, non-quantitative measures and the non-random convenience sample. Further randomized controlled trials are needed to support the findings (Clave-Brule et al., 2009).

Other research with knitting groups has been conducted on already established social groups. Tracey (2010) attended and participated in three separate knitting groups over eight months in Chicago, Illinois. She reported on her observations and interviews with members about small group culture and inclusion/exclusion dynamics. Tracey (2010) estimated that she interviewed between 15–20% of the group members.

While this was an informative project, it is difficult to analyze the findings due to the ethnographic method used (Tracey, 2010). Tracy often joined in the groups she was observing, which was a deliberate decision on her part and not without limitations. Although this may have reduced bias due to the Hawthorne effect (J. W. Creswell, 2014), her presence still altered group dynamics and may have affected her observations. She also reported not taking notes at certain times when group members were clearly noticing and discussing it, so there were instances where she had to rely on her memories later (Tracey, 2010).

Tracey (2010) initially contacted five groups and three gave permission to attend their meetings. One group did not respond and one group declined her request. It is not known if the non-participating groups differed in some significant way from the ones who did. Of the people who did participate, the sample was very homogeneous. The groups consisted of mostly white, college-educated women in their 20s with full-time employment, which also could have affected the findings.

Jauh (2014) tracked the psychological well-being and stress of five typically functioning participants over four meetings of their ongoing knitting groups. They were recruited through a craft store or online knitting chapters. Measurements included the OQ-45.2, which is a measure of symptom distress, interpersonal relationships, and social roles, Ryff's Psychological Well-Being Scale, and the Stress Check app.

Jauh (2014) found that knitting did have a positive effect on stress and well-being, although she found no self-reported changes in in distress symptoms, interpersonal functioning, social roles, and psychological well-being. However, because the groups had already been established, it was difficult to determine whether the results were due to knitting or the existing social relationships between the group members. All participants had been knitting for quite some time, so no baseline information about symptoms prior to learning to knit was available.

Another limitation was that the groups were not conducted consecutively. There was a week off between sessions two and three. Finally, because the study participants were typically functioning adults without prior symptoms of clinical significance, it is not surprising that there were no dramatic changes in scores on the questionnaires.

Table 4

Review of Clinical Research on Knitting

Author(s) & Publication Date	Sample Size (N)	Sampling Method	Research Design	Description of Results	Limitations
Clave-Brule et al. (2009)	38	Convenience Non-randomized	Qualitative Survey	Participants reported distraction from eating disorder thoughts and feelings, increased relaxation, stress reduction, accomplishment, prevention of ruminating thoughts becoming actions, and positive physical and sensory experiences.	<ul style="list-style-type: none"> • Non-randomized • Findings based on self-report • Findings were preliminary
Dominick (2014)	10	Convenience Randomized	Quantitative Between subjects	Statistically significant results for Social Skills and Engagement.	<ul style="list-style-type: none"> • Small sample size • Single location • Change in room environment • Low participation and wavering interest
Ferber (2005)	62	Self-selected Non-randomized	Mixed Survey Interview	Participants reported themes of well-being, joy, contentment, self-soothing, relaxation, creative self-expression, enhanced self-efficacy and competence.	<ul style="list-style-type: none"> • Single location • Homogeneous sample • Researcher bias • Findings based on self-report
Fraser & Keating (2014)	14	Convenience Non-randomized	Quantitative Within subjects	Significant increases in self-esteem, hope, social support, and self-efficacy to function with and control multiple sclerosis.	<ul style="list-style-type: none"> • Knitting part of other art interventions • Small sample size
Jauh (2014)	5	Self-selected Non-randomized	Quantitative Survey	Knitting had a positive effect on stress, overall well-being and had minimal effect on symptom distress, interpersonal functioning, social role, and psychological well-being.	<ul style="list-style-type: none"> • Small sample • Groups not conducted consecutively • Group members knew each other prior to study
Patch (2007)	10	Convenience Non-randomized	Qualitative Interview	Participants reported importance of the act of knitting as well as creating an object, a sense of belonging, relaxation, self-indulgence, and connecting to traditions.	<ul style="list-style-type: none"> • Homogeneous sample • Researcher bias
Rebmann (2006)	Not specified	Convenience Non-randomized	Qualitative Observation	Author observed increase in feelings of empowerment, mastery, and control over environment for participants.	<ul style="list-style-type: none"> • Client-initiated activity • Not empirical
Riley et al. (2013)	3,545	Self-selecting Non-randomized	Quantitative Survey	Knitting has significant psychological and social benefits, contributes to well-being and quality of life, and has therapeutic potential.	<ul style="list-style-type: none"> • Homogeneous sample • Online survey • Issues with coding some questions
Stannard & Sanders (2015)	15	Self-selecting Non-randomized	Qualitative Interview	Participants were motivated to knit by incentives such as creativity, creation of a product, social aspects, and the ability to multitask. They also knitted for tension release and positive reactions from others. Barriers to knitting included expense, negative reactions, and mistakes.	<ul style="list-style-type: none"> • Homogeneous sample
Tracey (2010)	15	Convenience Non-randomized	Qualitative Interview Observation	Researcher observed and reported on group dynamics, culture, and relationships within three knitting groups.	<ul style="list-style-type: none"> • Researcher was participant-observer • Homogeneous sample
Utsch (2007)	225	Self-selected Non-randomized	Quantitative Survey	Therapeutic knitters report more stress reduction than non-therapeutic knitters.	<ul style="list-style-type: none"> • Homogeneous sample • Self-report • Did not address or measure stressors

Potential therapeutic mechanisms of knitting. MacDonald (1988) gathered informal qualitative data on the benefits of the craft. While researching the social history, she found that respondents reported many reasons for knitting. For instance, one woman stated that she knitted for the feeling of accomplishment and that she enjoyed it both alone and with friends. Another knitter reported experiencing satisfaction from never being without something to do while simultaneously creating a useful item for family and friends. For some, knitting reduced anxiety or other mental health indicators. Crafters also knitted for gifts, to help others, or even for profit.

To learn more about the current benefits of knitting, Riley et al. (2013) administered a quantitative online survey to 3,545 self-selected knitters through a popular website. At the time of the survey in 2010, the site had estimated over one million members of different sexes, ages, nationalities, ethnicities, socioeconomic groups, and disability status.

Riley et al. (2013) gathered all data in a period of two weeks and did not issue reminders or prompts to potential participants. However, as with many of the other studies discussed in this literature review, the self-selected respondents were mostly female (98.8%), white (90%), and living in North America (59%). Ages ranged from under 20 years to over 60, but the modal age group was 21–30. This may have been due to the younger crafters' increased proficiency with technological formats.

The knitters reported that their reasons for knitting included relaxation and stress relief as well as creativity. Knitting was viewed as a way to be productive during passive or leisure times, such as while waiting for an appointment or watching television. Most of the knitters (72%) reported knitting at least three times per week. The more often knitters engaged in knitting activities, the calmer and happier they felt.

Knitting also helped with gaining or improving cognitive abilities in areas such as mathematics, planning, organizing, and visual and spatial skills. For example, calculating stitches and measurements and altering patterns helped with math skills. Planning and organizing skills were improved by preparing materials for a project and following a budget. Conceptualizing a finished product required visual/spatial awareness (Riley et al., 2013).

Utsch (2007) surveyed 225 adult knitters, mostly female and Caucasian, about knitting's effects on stress reduction. Although her findings were limited to the self-report of self-selecting respondents, there was some evidence to suggest that a large proportion of knitters feel better after knitting, which may provide the preliminary evidence to support further controlled trials.

Utsch (2007) found that knitting had a positive effect on the four domains of stress, with the impact greater for reducing cognitive and emotional symptoms as compared to physical and behavioral symptoms. Knitters were also divided into two categories. One group reported that the purpose of knitting was therapeutic and it was an activity they turned to in times of stress. The second group did not endorse using knitting therapeutically. Comprehensibly, the latter type of knitters did not knit more during times of high tension or anxiety.

Ferber (2005) recruited female knitters from knitting groups, shops, classes, and other sources to complete the Hand Knitting Questionnaire. The 62 participants (ages 26 to 84) were self-selected volunteers. Fifty-nine identified as Caucasian. Twelve of the 62 were chosen for a more in-depth interview to share knitting stories, memories, thoughts, attitudes, feelings, and experiences. The knitters reported that knitting increased feelings of well-being, joy, and contentment. Themes from the interviews were self-soothing, relaxation, creative self-expression, enhanced self-efficacy and competency. These findings suggested that knitting may have a positive impact on mental health and overall well-being.

Stannard and Sanders (2015) conducted 15 semi-structured, qualitative interviews with female knitters ages 18–30. The participants were initially recruited through flyers at yarn stores and messages posted on Ravelry.com. From the initial respondents, a “snowball sampling” method was used where existing participants recruited future participants from among their friends, family and acquaintances until theoretical saturation was met.

One of the main research questions was, “What are the motivations for knitting among young women, and what benefit do they derive from it?” (Stannard & Sanders, 2015, p. 102). Participants were asked about when they learned to knit, the types of items made, whether they were involved in a knitting group or community knitting activities online, and their reasons for knitting as opposed to other types of hobbies. All interviews were transcribed verbatim and analyzed using a constant comparison method, which is a method of comparing concepts to see how they relate to a similar phenomenon (Stannard & Sanders, 2015).

Three major themes emerged from the data. Incentives included the reasons participants had for knitting, such as creativity, and the ability to multitask while doing something else, such as watching television or waiting for an appointment. Different types of knitters were also identified, such as process knitters who enjoyed knitting for its own sake, while product knitters found the final result more rewarding. Participants reported that a barrier to knitting was the expense of materials, particularly when knitting a large garment. Beneficial outcomes of the knitting process included the finished object, stress and tension relief, and positive feedback from others (Stannard & Sanders, 2015).

Patch (2007) attended public knitting events and interviewed 10 knitters in Newfoundland to learn about why young, urban people chose to knit. She also wanted to document their experiences as well as discover how contemporary knitting connected to knitting

in the past. Half of the participants were recruited through her attendance at a regular meeting of knitters, and the other half were from chance encounters at other community events. Unlike many of the other studies, one of her respondents was male. The other nine participants were female and ages ranged from 21 to 55 years old.

Patch (2007) found that the activity was as important to the knitters as the creation of a functional object. Some knitters reported that being able to contribute a tangible object to society gave them a sense of accomplishment and increased self-confidence. Knitting for others was a way to express affection as well as to evoke positive feelings associated with appreciation from others. Many of the respondents learned to knit in childhood and then resumed the activity during a period of transition or identity formation. Creating this link to personal memories of growing up and to the traditions of knitting was a way to help cope with challenging or uncertain circumstances.

Relational aspects of knitting. According to the Riley et al. (2013) online survey of over three-thousand knitters, about half of respondents (50.3%) reported that they knitted in a knitting group and stated that knitting with others helped them experience a sense of belonging and increased confidence. Some knitters engaged in the activity to connect with an elderly relative who taught them and they reported that knitting helped them find a common topic to discuss with the older family members to bridge generational gaps (Patch, 2007). Consistent with this, Riley et al. (2013) found that many knitters made friends through knitting and found it easier to talk to other knitters. Knitting was a great conversation starter which could then lead to connecting over other topics.

Furthermore, knitting was a means to socialize in online communities through sharing patterns and projects and conversing on other subjects related to fiber arts. Respondents in the

Riley et al. (2013) study who knitted with others virtually or in person reported that it helped them learn new knitting skills (72%) and other non-knitting skills (41%) as compared to those who knitted alone. Consistent with the Riley et al. (2013) findings, Stannard and Sanders (2015) confirmed that knitting can be a part of social identity formation for individuals. Few people are able to create handmade items, and so this ability may be valued by others.

Knitting as an Adjunctive Treatment for Substance Use

The review of the literature suggested that knitting may help to lessen symptoms of various mental and physical health issues, such as substance use disorder (see Table 4). People often use substances because they want to experience pleasure (World Health Organization, 2004), so when patients are in recovery it can be important to engage in other activities and develop skills that also induce pleasurable feelings. Additionally, knitting is an activity that may reduce boredom and stress, which is often a factor in relapse (Levy, 2008). It can be a mechanism for facilitating relationships (Riley et al., 2013), which can support abstinence similarly to a strong therapeutic alliance (Allen & Olson, 2016).

To date, only one publication has been found using knitting with participants who have problematic or disordered substance use. Duffy (2007) used knitting with a group of women who were in recovery from drug and alcohol abuse. She incorporated knitting into a group therapy program at a rehabilitation center and found it to be helpful in facilitating discussions and improving the environment. According to Duffy (2007), the skill of knitting was also useful for moderating stress and emotions by self-soothing as well as a replacement for less healthy behaviors.

While this was an informative study, the lack of measures and comparisons over time, either between or within participants, indicates a need for more empirical research. Therefore,

this literature review supports the need for continued research on the potential therapeutic mechanisms of knitting with people who have substance use disorder.

Chapter 3: Methodology

The goal of this research project was to find evidence of the potential therapeutic effectiveness of teaching knitting as an adjunctive treatment for substance use disorder. By the end of the study, participants were expected to have the skills to knit a scarf and a hat. This chapter outlines the setting, participants, study design, and methodology for this project.

Setting

The setting for this study was the Recovery Café in Seattle, Washington. The Café was founded in 2003 as a response to the unmet need of long-term recovery support. The objective of the Café is to break the cycle for individuals who have experienced addiction, trauma, homelessness, and other mental health challenges. The Recovery Café seeks to provide a safe space for members to engage in an ongoing supportive community where they can eat free meals, take classes through the School of Recovery, participate in creative workshops, and meet with their weekly peer support Recovery Circle. Although not specifically affiliated with the Recovery Café, 12-step meetings are available on site including AA and Narcotics Anonymous (Recovery Café, 2016b).

The Recovery Café uses a model that is compatible with the Washington State Department of Behavioral Health called the Recovery Oriented System of Care (ROSC). A ROSC supports people in managing their disorder in a holistic manner through establishing a healthy lifestyle, creating a sense of belonging in the community, and adopting other lifelong coping skills. In the 2014 Member Survey, 84% reported that the Café has increased their hope and 75% stated that they have become a more effective self-advocate. Seventy percent reported that the Café has helped prevent relapse. Of those that have relapsed, 69% stated that they were able to go longer between relapses with the support of the Café, and 45% said they were able to

get back into recovery more quickly after relapse. In addition, 31% of members with a history of hospitalization due to suicide ideation or attempts reported fewer trips to the emergency department since joining the Recovery Café (Recovery Café, 2016a).

Participants

The participants were selected through non-random, convenience sampling of members of the Recovery Café, which resulted in eight members approached. The study was explained to them, and five of the eight members signed the consent form and agreed to participate. Four of the five enrolled participants were referred by a Café staff member, and the final participant witnessed the ongoing study and was self-referred. Participants were active members of the Café with a self-reported history of drug, alcohol, or cigarette use who were currently in recovery and had little to no previous knowledge of knitting. The participants ranged in age from 30 to 60, with the youngest participant turning 31 shortly after enrolling. Three were males and two were females. Two self-identified as Hispanic, one as African American, one as Asian, and one as mixed (Caucasian and Native American). Participants were not asked about their sexual orientation, political or religious beliefs, or trauma history.

Participant inclusion criteria. Participants had a self-reported history of problematic drug, cigarette, or alcohol use. Participants were at least 18 years of age and able to complete written subjective evaluations of their experiences in English. Participants also were able to communicate orally in English, were free from any mobility issues affecting their hands and arms that prevented being able to knit and had little to no prior experience knitting. At the beginning of the study, they committed to a baseline interview, eight sessions once or twice a week for 60 minutes, and a follow-up interview, with the understanding that they could withdraw from the study at any time with no penalty. Participants were also expected to not currently be in

crisis or under the influence of substances, of which the latter was consistent with Café requirements. Participants were notified prior to starting the study that if they should arrive to a session visibly intoxicated, the session would be rescheduled. None of the participants had an issue with this requirement, either prior to or during the study.

Participant exclusion criteria. The Recovery Café required members to attend weekly Recovery Circle meetings, to be free from substances for the 24 hours prior to attendance, and to contribute to taking care of the community by occasionally volunteering for simple tasks. Potential participants were excluded if they did not meet Café membership requirements.

Participants were screened by both the Café staff and the researcher. They were not approached if they were less than 18 years old, incapable of completing written questionnaires, non-English speaking, or if they had physical disabilities that did not permit for the hand and arm movements necessary for knitting. Individuals with other significant developmental or intellectual disability were also excluded, as well as individuals demonstrating symptoms of severe psychological disorders such as psychosis, aggression, or traumatic brain injury. Finally, participants who were unable to provide informed consent for any other reason were also excluded.

Participants were not excluded on the basis of gender, race, ethnicity, or housing status. Two Café members were excluded after being approached because they reported that they were unable to commit to attending the interviews and eight sessions. One other person referred by Café staff was excluded because she reported that she did not have a history of substance use.

Informed consent. Interested members of the Recovery Café were provided information about the study design, including procedures and timeline. Once the study had been explained to them and they had a chance to read the consent form and ask questions, they were given the

opportunity to choose whether to participate. Participants were also notified that they could cease participation at any point during the study for any reason without penalty. If they chose to participate, they signed the consent form (Appendix D) and received a copy for their records.

Recruitment. Initially, the researcher presented the study to staff and managers at the Recovery Café at a team meeting. Flyers were distributed to the staff outlining the purpose of the study along with inclusion and exclusion criteria. Potential participants were referred from staff through the Volunteer Coordinator, who screened them before recommending them to the researcher. One participant referred himself after seeing others participating in the study, but he was then approved by the Volunteer Coordinator prior to consenting. Participant selection was non-random, and all participants enrolled voluntarily.

Materials

Participants were provided with acrylic yarn in worsted (medium weight) for both projects. The researcher offered several color choices and participants selected the color of their preference. Straight knitting needles had been donated from the community for this project, so some participants received a US size 8 (5.0 mm) and some received US size 9 (5.5 mm) made of either metal, plastic, or wood. Participants received a 16-inch US 8 (5.0 mm) circular knitting needle and the same size double-pointed needles for making the hat. Extra supplies required to complete projects such as stitch markers, a tape measure, and a darning needle to weave in ends were also provided.

Study Approval and Ethical Considerations

A dissertation committee, the Institutional Review Board of Antioch University Seattle (IRB), and the Director of Programs at the Recovery Café approved this study. The dissertation committee consisted of three psychologists with experience and specialization in clinical

psychology, assessments, trauma and war stress injuries, immigrant and refugee issues, sexual abuse trauma, cross-cultural psychology, disability, and injured worker issues. One committee member also had expertise in knitting. The committee provided supervision, feedback, and participation in the formal dissertation prospectus, proposal, and defense meetings. Preliminary approval for this project was given on January 13, 2017, and final approval to begin the IRB application process was given on March 24, 2017, by the committee chair.

The study design and data collection procedures were reviewed with Ruby Takushi, the Director of Programs at the Recovery Café. She granted permission for data collection to commence at the Café on April 14, 2017. See Appendix C for the Recovery Café Letter of Cooperation.

The purpose of the IRB at Antioch University Seattle is to protect the rights and welfare of human subjects participating in research. It is required by law that all studies at the university involving human participants are reviewed and approved. This study was reviewed by the Antioch IRB and approved on April 26, 2017. The Antioch University Seattle IRB Application Form and Approval Letter are included as Appendices A and B, respectively.

Although the benefits of the study were expected to outweigh the risks, it was possible that there were some adverse effects to participants. It was made clear to the participants that the primary investigator was available to discuss any concerns and that they may discontinue the study at any time without penalty. One participant did express some mild discomfort regarding the speed at which he was able to learn to knit, which was addressed during sessions, and another participant had some uneasiness when others at the Café interacted with her during sessions. However, both participants completed all eight sessions. Two participants did withdraw early

from the knitting sessions, but it was not believed to be due to distress or discomfort with the study procedures.

All research data were kept confidential through the use of a code number assigned to each participant. Data and links between code numbers and identifiers were stored in a locked filing cabinet in a locked office. Only the primary investigator had access to this information.

Study Design

The design of this study came out of the author's personal experience with knitting. After learning to knit over 10 years ago and experiencing benefits such as feelings of accomplishment, community, and stress relief, the intention to learn more about how it might be used with clinical populations emerged. As an informal pilot study, several high school students were taught to knit at a small private school for children and adolescents with learning disorders, attention-deficit hyperactivity disorder (ADHD), autism spectrum disorder, and other mood disorders. One student in particular connected with the craft and had a great deal of success making various knitted items.

After considering a group format with adolescents, the author realized that it might be challenging to teach several young people to knit at once. Dominick (2014) had difficulty teaching fourth graders to knit because of their behavioral issues and need for individual attention. There was also waning interest and participation in her study. To address these issues, this investigation consisted of teaching adults to knit individually. Private lessons eliminated the distraction of other participants and enabled the speed of the lessons to be individualized based on rate of learning, interest, and motivation.

Instrumentation

This study used both qualitative and quantitative (mixed methods) self-report measures to assess the effectiveness of learning to knit while recovering from substance use. After consenting to the study, participants completed the Baseline Interview, which included demographics and background information. Participants were asked to rate their stress levels at baseline, before each session, and during the Follow-Up Interview. Participants also reported how many days they had used substances and how many days they had knitted independently prior to each session. Level of mindfulness was rated after each session, and participants had the opportunity to provide written feedback about their experience. Refer to the Appendix for copies of the Baseline Interview (Appendix E), Pre-Session Question (Appendix H), Perceived Stress Scale (Appendix F), the Toronto Mindfulness Scale (Appendix I), Post-Session Question (Appendix K), and Follow-Up Interview (Appendix L).

Baseline interview. This recorded interview was conducted in-person at the initial intake to acquire data on the age, gender, race/ethnicity, and duration at the Recovery Café. Information was also collected on substance use and treatment history, other psychological or medical issues, and previous experience with creative arts (Appendix E).

Assessment 1: Perceived Stress Scale. The Perceived Stress Scale was administered at baseline, after all sessions, and at the Follow-Up Interview (Appendix F). This interview is a 10-item, self-report Likert scale that asked about thoughts and feelings related to the perception of stress. The items were developed to determine the degree to which the respondent felt their life was unpredictable and uncontrollable, and how overloaded they felt as a result. The original Perceived Stress Scale asked about experiences in the past month but was adapted with permission from the author to be a measure of experiences in the past week (Appendix G).

The original questionnaire was normed on 2,387 respondents in the United States. Higher scores on the Perceived Stress Scale have been correlated with failure to quit smoking, more colds, failure of diabetics to control blood sugar, and increased risk of symptoms of depression due to situational factors, which is evidence for the validity of the measure. Respondents rated the degree to which they had experienced each item on a 5-point scale ranging from 0 to 4, with 0 indicating “Never,” and four indicating “Very Often.” Scores were then added up, with four positively stated items scored reversely. A score below 13 suggested low stress, a score of 14 to 26 was considered average or moderate stress, and a score of 27 to 40 or above indicated high stress (Cohen, 1994).

Assessment 2: Pre-Session Questions. The Pre-Session Questions were developed by the researcher to gain information on substance use between sessions as well as on time spent knitting independently. The two questions were administered prior to each knitting session (Appendix H) and were included as part of the Follow-Up Interview (Appendix L).

Assessment 3: Toronto Mindfulness Scale. The Toronto Mindfulness Questionnaire (Lau et al., 2006) was administered at the end of every session to determine if there was a change in scores for participants throughout the course of the intervention (Appendix I). This measure was developed to assess the state of mindfulness after participating in meditation. It was selected because it was designed to be administered repeatedly after mindfulness sessions and was validated on adults with no previous meditation experience.

The Toronto Mindfulness Scale (Lau et al., 2006) consisted of 13 items that are rated on a 5-point Likert scale with 0 indicating “Not at All,” to 4 indicating, “Very Much.” Mindfulness was measured on two factors: Curiosity and Decentering. Curiosity is defined as an individual’s ability to inquisitively reflect on their immediate experiences. Decentering is considered a core

component of mindfulness and is defined as having an awareness of one's feelings without being overcome by them (Klein et al., 2015). Responses for the six Curiosity items and the seven Decentering items were totaled up and analyzed separately.

Assessment 4: Post-Session Question. This open-ended question was developed by the researcher to gain information about the participant's experience in the session. It was administered at the end of each session (Appendix K). Responses were written by the participants and not audio recorded.

Assessment 5: Follow-Up Interview. These 12 interview questions were developed by the researcher to gain information about the participant's overall experience of learning to knit and working with the researcher. The Follow-Up Interview was administered once after completion of all sessions, either in person or by phone. The interview was recorded for later transcription and coding (Appendix L).

Knitting Intervention Procedure

After eligible participants were identified and given written informed consent (Appendix D), the researcher began to schedule individual knitting sessions with each Café member at their convenience, at a frequency of one to two times per week. If a session was missed, it was rescheduled until the participant attended or withdrew from the study.

Participants were expected to spend the first four weeks learning the basic knitting skills required to knit a scarf. During the second four weeks, participants were to be taught the skills to make a hat. The following outline of topics to be covered each week was created prior to beginning the sessions. As was anticipated, the exact content of the lessons was customized to each individual participant. For example, participants were given the option of learning how to cast on during Session One, and four of the five chose to do so. Some participants did not

advance through the lessons as quickly as anticipated. Therefore, for these participants, the lessons were repeated as necessary to more effectively match their style of learning. See Chapter 4 for a detailed explanation of the progress of each knitter.

Plan for Session One. Participants are given the opportunity to select yarn from a variety of choices. Participants are also be provided with needles as part of the study. After selecting materials, the researcher casts on for the participant and will teach them how to create a knit stitch. This first project will provide the skills necessary to knit a scarf.

Plan for Session Two. The participant continues to work on the scarf with guidance from the researcher.

Plan for Session Three. By Session Three, the participant is expected to be comfortable with the knit stitch. The participant continues working on the scarf.

Plan for Session Four. The participant may be close to finishing the scarf project. If so, the researcher teaches them how to bind off. If the scarf is not near completion, the researcher creates a smaller swatch for the participant to practice binding off.

Plan for Session Five. The participant learns the purl stitch using a small swatch. If ready, the participant is also instructed how to cast on.

Plan for Session Six. The participant learns how to cast on to knit in the round, which is the beginning of the hat project.

Plan for Session Seven. The participant learns how to decrease to shape the top of the hat.

Plan for Session Eight. The participant finishes up all incomplete projects, reviewing any skills requested, and wraps up the intervention.

Chapter 4: Results

This chapter describes the study's participants (all names have been changed), data gathering, and data analysis. First, the demographics and background information from each case is reviewed. Information for this section was obtained from the Baseline Interview, which was administered in-person prior to all knitting sessions. Then, the quantitative data is analyzed for each case. The quantitative data were obtained from the Pre-Session Question, the Perceived Stress Scale, and the Toronto Mindfulness Scale, which were completed each session. The Perceived Stress Scale was also completed after the Baseline and Follow-Up interviews. Finally, the qualitative data from the Post-Session Question and Follow-Up Interview are summarized.

Participant Identification

Prior to data collection, there were several members of the Recovery Café identified by Café Staff for participation in the study. The participants all had a self-reported history of substance use, which included drugs, alcohol, and cigarettes. They all had no experience knitting but expressed interest in learning how.

Initially, four participants consented to participate in the study and they all began around the same time. While the study was underway, a fifth participant self-referred and was consented. He began the lessons about four weeks after the initial participants.

Participant Demographics and Backgrounds

The information for this section was obtained through qualitative interviews. All participants completed this Baseline Interview prior to beginning knitting lessons. The time between the Baseline Interview and Session One ranged from two to nine days, with an average of 4.6 days apart.

Participant 1 – “Danny.” Danny was a 55-year-old male who self-identified as Hispanic. He reported receiving his high school diploma. He did not receive any further formal education, although he did state that he had some vocational training through an apprenticeship. At the time of the study, he was not married, unemployed, and living independently in permanent housing.

When asked about his medical history, Danny stated that he had been diagnosed with anxiety and posttraumatic stress disorder (PTSD). Other health issues included asthma, back problems, and sleeping issues. He reported being on medication for hypertension and using an inhaler to control his asthma.

Danny’s substance use history included using acid, cocaine, methamphetamine, and mushrooms, which he started in high school. He reported that some consequences of use were his anxiety, PTSD, paranoia, and possible unspecified permanent physical and cognitive damage from the methamphetamine. Danny has been in and out of treatment programs since the age of 25, which included court-ordered programs resulting from DUIs. Two of the programs were inpatient units. Danny currently sees an outpatient psychiatrist regularly.

Danny stated that he had been in recovery for about five years prior to enrolling in this study. He reported that attending the Recovery Café and using services at the U.S. Department of Veterans Affairs has helped him to stay abstinent from drugs. He said that he enjoyed interacting with friendly, understanding people. Thus, for Danny, hanging out with the wrong people was something that he endorsed as not working to help him stay in recovery.

At the time of the study, Danny had been a member of the Recovery Café for about four years. He participated in several Café activities in addition to his Recovery Circle, which was required for membership. He attended classes and particularly enjoyed anything related to art or

music. Danny reported enjoying playing the guitar and drums, art projects such as painting and sculpture, and he was looking forward to getting into knitting. He stated that he wanted to enroll in the study to contribute towards research.

Participant 2 – “Grace.” Grace was a 60-year-old female who identified as Black African American. She had completed high school. Grace reported that she did not have a paying job, although she did some volunteer work a few hours a week. When asked about her marital status, she stated that she had been divorced and that her former spouse was deceased, so she summarized her situation by choosing the term, “Single.” At the time of the study, Grace lived in permanent group housing for women.

Grace reported that she had been diagnosed with anxiety, bipolar disorder, and schizophrenia, which was currently managed by medication. Grace’s other medical concerns included cataracts, gallbladder issues, and osteoporosis.

When asked about substance use history, Grace reported having used pills, such as barbiturates, alcohol, and marijuana as an adolescent. She stated that she experienced substance induced psychosis after smoking a joint, which resulted in psychiatric inpatient hospitalization. Grace has also attended AA, but reported that she did not like it. With the exception of cigarettes, Grace has not used substances since her hospitalization when she was a teenager. Grace quit smoking cigarettes one week prior to the interview, stating that it hurt her throat.

Grace stated that the things that have helped her quit were thinking about the negative consequences and said to the researcher, “You just have to quit.” She did not have much insight as to what has not worked to quit, again stating, “Just don’t smoke.” She elaborated on that statement by saying that it was extremely hard, and she had the most difficulty not smoking

when she was experiencing a panic attack. During those times, her lung pain was a deterrent to picking up a cigarette.

At the time of the interview, Grace had been a member of the Recovery Café for about a month. She did not participate in any activities aside from the required Recovery Circle. Outside of the Café, she enjoyed making jewelry. When asked about her reasons for participating in the study, she stated that she wanted to learn more about knitting and making different things. She said, “I like the Recovery Café and I want to participate in something to keep my mind, you know, keep me from getting panicky, or anxiety, or depressed, you know. That’s why I make jewelry sometimes. That’s all I know. I want to learn how to knit, that’s all I know.”

Participant 3 – “Stephanie.” Stephanie was a 40-year-old female who identified as Asian. She had completed a Bachelor’s Degree in Interdisciplinary Studies. Stephanie described that as, “a combination of Women’s Studies, Ethnic Studies, Sociology, Psychology, and some Business.” At the time of the interview she was single, not employed, and living independently in an “apodment” (extremely small apartment), which she considered to be temporary.

Stephanie reported being diagnosed with anxiety and depression but did not disclose any other medical or health issues. She stated that she was currently taking Prozac and hormonal birth control.

Stephanie’s most significant substance use issue was with marijuana. She reported using alcohol on occasion and trying various other drugs, but repeatedly emphasized that her biggest difficulty was with marijuana. She was introduced to it in high school and reported periods of complete abstinence when traveling internationally. Stephanie stated that it has only been within the past few years that she had become a daily user.

When questioned about the consequences of her marijuana use, Stephanie reported that it affected her “clarity of mind,” exacerbated any emotions she happened to be feeling, and made her paranoid. She said that she often used it as a way to manage anxiety, social anxiety, social phobia, and depression. Stephanie reported that marijuana kept her “stuck in a hole” and that while using she did things she wouldn’t normally do. During the most severe periods of substance use, she would often plan activities around marijuana use and avoid invitations with friends. She reported using it at inappropriate times, such as around family, but still hiding it. During the interview, Stephanie described periods of isolation where the only times she left her residence were to move her car to avoid having it towed.

Stephanie stated that she had not had any formal treatment for her substance use. At the time of the interview, she had been in recovery for about 10 days. She reported that making authentic connections with people helped her to avoid using, and that isolation from others hindered her progress. Stephanie said that the cravings were constant, even while being interviewed, and that it was challenging to stay sober when left to her own thoughts. When alone she tends to do a lot of ruminating, which can lead to self-medicating.

Stephanie had been a member of the Recovery Café for about two months at the time of interview. Stephanie had become involved in quite a few groups at the Café and described herself as, “Really loading up on the self-care activities.” Stephanie participated in art classes, book discussions, meditation, yoga and therapeutic classes on various topics such as Acceptance and Commitment Therapy (ACT), regret, and trauma. She stated that she had loved drawing when she was younger, but creative pursuits were discouraged by her pragmatic family. The last time she remembered being able to express herself creatively was in elementary school, with the exception of some pottery in high school. Stephanie was also participating in Path with Art,

which is a program aimed at adults recovering from substance use, homelessness, domestic violence, mental illness, and trauma. Stephanie reported finding enjoyment from picking up art again after a long hiatus, yet she struggled with guilty feelings that she should be finding other ways to be productive.

When asked about her reasons for participation, Stephanie stated that she wanted to participate because she thought that knitting might help her pay attention to the present moment and avoid ruminating on the past or worrying about the future. She hoped that she might benefit from the meditative aspects of the activity.

Participant 4 – “Jeffrey.” Jeffrey was a 47-year-old male who identified as Hispanic. He reported having a high school diploma and some college. He was employed full-time as a construction worker, which often made scheduling meetings during Café hours challenging. He was divorced and reported an on-again-off-again relationship with his ex-wife, who was also the mother of many of his children. Jeffrey had moved from California, where he had been intermittently homeless since 2012. At the time of the interview, he had been in Seattle for 92 days and had been living in his car for most of that time. However, about a week before starting this study, Jeffrey had found permanent housing in a studio apartment.

When asked about his health history, Jeffrey reported that he had depression, substance use disorder, and was diagnosed with Tourette’s syndrome as a child. He stated that doctors did not know much about Tourette’s when he was younger and that it currently comes and goes. He was not on any medications at the time of the interview, but he noted that he had been on Cymbalta for severe depression in 2014–2015.

Jeffrey began experimenting with drinking beer when he was about 12 or 13 years old. He stated that he didn’t really like beer and only drank to be a part of the “in-crowd,” and

because he saw his cousins and parents drinking. Jeffrey reported that his significant substance use problems began when he started using methamphetamine around the ages of 16 and 17. His drinking increased while in the military, and his use of lysergic acid diethylamide (LSD) led to psychiatric hospitalization.

According to Jeffrey, substance use had many social and psychological consequences. He reported feelings of isolation, alienation, and resentment. Substance use has led to relational difficulties including losing contact or custody of his children, and the end of his marriage. He has also experienced job loss, homelessness and incarceration for domestic violence.

Over the years, Jeffrey has been involved in several treatment programs. He spent time in an inpatient rehabilitation program, and also reported that he was able to stop using while in jail. He was prescribed Antabuse while stationed in Germany after being reprimanded for drinking, but he reported that he kept drinking anyway. Jeffrey has also enthusiastically participated in 12-step programs. Beginning in 2009, he put a great deal of time and energy into “being of service, calling my sponsor, giving people rides and my life went 180 degrees, my whole life changed.” He was able to return to work and resume contact with his children. This turnaround lasted two years before he relapsed. For the next few years he used on and off while entering various treatment programs. Jeffrey reported that he had been in recovery for eight days at the time of the interview.

Working, keeping busy, having a plan, and following a 12-step program helped Jeffrey maintain his sobriety. Jeffrey noted that when he went to meetings there were often people using right in front of building and his strategy was to “just ignore it.” He also reported that being kind and helping others was a positive influence. Jeffrey had trouble identifying what hadn’t worked

to help him stay in recovery, stating, “I don’t know. I guess it depends on the person if they really want recovery.”

At the time of the interview, Jeffrey had been coming to the Café for about three weeks. His only other activity was the required Recovery Circle. Outside of the Café, he reported enjoying a variety of sports, including baseball, boxing, wrestling, and fishing. He also had been a Cub Scout leader and played the role of Santa for toy drives. In the future, he hoped to have a chance to participate in a theater arts program.

When asked about his reasons for participating in the study, he stated that it was, “Just something different.” He looked forward to having someone listen to him and wanted to learn more about himself and his reasons for doing things. One of his main goals for the study was to work on finishing a project that he started. Throughout the study, he repeatedly stated that he had no problem starting things, but it was often tough for him to finish.

Participant 5 – “Marshall.” Marshall was a 30-year-old male who turned 31 shortly after enrolling in the study. He identified as Caucasian and Native American. Marshall had completed some high school and was working on re-enrolling in classes towards his diploma. He was single and unemployed at the time of the interview. He described his living situation as being “in between housing.” Marshall stated that he was “not really homeless because I have places I can go.” In other words, although having no permanent residence, he reported typically locating friends to stay with on a short-term basis.

Marshall reported that he had been diagnosed with bipolar disorder and schizophrenia at age 21, although he was skeptical of the schizophrenia diagnosis. When looking up the symptoms for the disorder, he noted, “I don’t hear voices or see people or talk to walls, inanimate objects, or any of that, so I don’t know where they get the schizophrenia part.” He

was, however, accepting that he had mood shifts characteristic of bipolar disorder. Marshall did not report any other health issues and denied taking any medications.

When asked about his substance use history, Marshall reported first using cocaine and whiskey around age eight or nine but did not start using regularly until he was 16. He stated, “I wouldn’t go anywhere unless I was high. I wouldn’t stay home unless I was high. It was a really, really kind of a bad thing.” For a while, Marshall had a stable job with a car company that allowed him to buy a house. However, he eventually left that job and sold everything he owned to purchase cocaine. Marshall stated that he, “pretty much lost all the life” that he had before his drug use took over. He also had many family members who were no longer in contact with him.

Marshall was in three rehabilitation programs before the final one was successful. Marshall reported that he went to visit his sister in another state, and she “tricked” him into admitting himself into rehab. Marshall stated that he has been in recovery now for about 10 years, and that the family members who were supportive helped keep him off cocaine. His sister told him that she did not want him around while he was using but was willing to help him with his sobriety. Now she has children, which provides additional motivation for Marshall to stay away from substance use.

Marshall also reported that staying busy and staying headstrong helped him stay in recovery. He noted that outside the Recovery Café there were drugs everywhere, even as close as in the alley. Marshall knew it would be easy to obtain if he desired, so it was important to him to keep wanting to be sober because, “If you don’t want to be sober, you won’t be.” When asked about what has not worked to help stay in recovery, he stated that he had tried 12-step programs and decided that they did not work for him. He said:

Reading a book and trying to have a bunch of people telling sob stories about how they used to have fun, because that's what it leads to, is how much fun they used to have. And it doesn't really make you want to stay sober. You get depressed and then you're just like, "Well, that sounds great. I'd rather be doing that."

Marshall has been a member of the Recovery Café on and off for the past seven years. At the time of the interview, he had been back at the Café for approximately one month. Marshall participated in his Recovery Circle as well as art classes, open mike night, and Path with Art. His hobbies included poetry, painting, drawing, music, and in the future, he wanted to learn to play the guitar. Marshall appreciated "pretty much anything to do with art," and was interested in participating in the study because he thought it seemed "artsy." He then added an observation of the knitting research study in the common area of the Café: "One of the things that interested me too was how relaxed you were when you were just doing this [mimed knitting] the entire time."

Analysis Process

The data from each participant were analyzed together to acquire a general picture of the overall experience as well as separately to demonstrate the individual experiences. In addition to the objective measures, the relationship between study participation, substance use, and progress on the knitting projects was examined.

The quantitative analysis included information about how each participant rated each item of Perceived Stress Scale and the Toronto Mindfulness Scale over time, as well as total scores for each participant. Any trends that were found are reported in this chapter. Information from the qualitative portion of the study, the Follow-Up Interview and Post-Session Question, is also discussed with individual responses as well as general themes found across multiple participants.

Quantitative Analysis - Combined

Information for the quantitative portion of the study was obtained from the Perceived Stress Scale, which was completed prior to every session and at the Baseline and Follow-Up interviews. The Toronto Mindfulness Scale was completed after each of the eight sessions. In addition, at each session and during the Follow-Up Interview, participants were asked about the approximate number of days spent knitting and using substances since the last session. All participants completed the questionnaires for each session attended. Occasional questions were skipped, but there were no outright refusals.

Study participation. Stephanie and Grace were the only two participants who completed the Baseline Interview, all eight sessions, and the Follow-Up Interview in person. Danny, Jeffrey, and Marshall did not complete the entire study due to mental health issues, work schedule conflicts, and researcher availability.

Danny completed the Baseline Interview, seven knitting sessions, and the Follow-Up Interview. He missed three appointments for Session Seven due to mental health difficulties. By the time his mental health had improved, the researcher only had availability for one more session due to moving out of state for clinical training. Danny completed the Follow-Up Interview via phone.

After completing the Baseline Interview and five knitting sessions, Jeffrey was hired at a new job that required him to work during all the days and times that the Recovery Café was open. Because he was not able to attend the required Recovery Circle, he was no longer permitted to be a member of the Café, which was also a requirement for the study. It was unfortunate that external circumstances prevented him from finishing because he expressed great

enthusiasm for knitting and wanted to be able to complete the sessions. Jeffrey did end up being available for a phone call and participated in the Follow-Up Interview.

Marshall completed the Baseline Interview and all eight sessions. Many attempts were made by phone to contact Marshall for the Follow-Up Interview, but he was unresponsive. The manager at the Recovery Café was questioned as to his whereabouts, and she reported that he had not been coming to the Café recently and she had no current contact information for him.

A summary of all interviews and sessions completed can be found in Table 5 below.

Table 5

Completed Interviews and Knitting Sessions (S)

Participant	Baseline Interview	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	Follow-Up Interview
Danny	X	X	X	X	X	X	X	X		X
Grace	X	X	X	X	X	X	X	X	X	X
Stephanie	X	X	X	X	X	X	X	X	X	X
Jeffrey	X	X	X	X	X	X				X
Marshall	X	X	X	X	X	X	X	X	X	

One challenge of working with the substance use disorder population was reliability. It was often difficult for participants to make it to scheduled appointments, and there were a number of sessions that were not attended, either due to a cancellation in advance or a no-call, no-show absence. All participants also had at least one late arrival, defined by arriving more than five minutes after the scheduled start time. Table 6 below summarizes this information.

Table 6

Attendance by Participant

Participant	Number of Late Arrivals	Number of Sessions Rescheduled in Advance	Number Unscheduled Absences	Total Number of Late, Rescheduled, and Missed Sessions	Total Number of Sessions Attended	Percentage of Scheduled Sessions Attended
Danny	1	3	2	6	7	58.3%
Grace	1	0	0	1	8	100%
Stephanie	1	0	0	1	8	100%
Jeffrey	3	0	5	8	5	50%
Marshall	1	4	0	5	8	66.7%

Days knitting. At the beginning of every session, participants were asked how many days they had spent knitting since the previous session. A knitting day was defined as any amount of knitting completed during a particular day. The responses ranged from “0 days” (47.5%) to “7 or more days” (7.5%), with the most frequent response being “0 days.” See Table 7 for the number of days spent knitting by percentage.

Table 7

Days Knitting by Percentage

Knitting (Number of Days)	Percentage of Total Responses
0	47.5%
1 – 2	22.5%
3 – 4	12.5%
5 – 6	10.0%
7 or more	7.5%

Knitting progress. Stephanie was the only participant who completed both the scarf and the hat. Both Danny and Marshall chose to work on the scarf for the duration of the study and did not begin the hat. Grace made some progress on her scarf and started the hat. She did not have time to finish the hat, so she casted off during the eighth session and turned it into a headband.

Jeffrey also started both the scarf and hat but did not finish either project during the sessions he completed.

Relationship between days knitting and knitting progress. The null hypothesis states that there is not a relationship between days knitting and progress on the knitting projects. Because this sample size is so small, a Fisher's exact test was used to calculate the p-value with a significance threshold of $p < 0.05$. For the relationship between days knitting and progress on projects, there was not sufficient evidence to reject the null hypothesis ($p = 0.20$), which leads to the conclusion that there is not a relationship between practice and progress.

In addition to the Fisher exact test, a correlation analysis was performed. The most common correlation analysis is the Pearson correlation coefficient, which requires that both variables be continuous and normally distributed. This does not hold because the response is a category. The Pearson correlation coefficient also requires that there is a linear relationship between the two variables and that the variances are approximately equal (B. Hitt, personal communication, February 14, 2018).

Instead, a Kendall's tau-b correlation coefficient was used. This is a nonparametric test that measures the strength of dependence between two variables using the number of concordant and discordant pairs. A correlation coefficient ranges from -1 to +1 and represents the dependence of the two variables. The closer to -1 or +1, the stronger the relationship. The closer to 0, the weaker the relationship (B. Hitt, personal communication, February 14, 2018). The correlation coefficient for the relationship between practice and progress was 0.71 ($p = 0.11$), which indicates a strong relationship yet no statistical significance.

Although the p-values for both the Fisher exact test and Kendall's tau-b correlation coefficient were not statistically significant, it is likely due to the small sample size. When

examining Table 8 in general, the more participants knitted outside of session, the more progress they made on the projects. For example, Danny and Marshall did not practice at all, and neither of them finished the scarf nor the hat. However, Jeffrey, who withdrew from the study early, knitted the most (an average of 4.7 days), yet he did not finish the hat or the scarf. This was likely due to his early withdrawal and not his lack of practice. Had he finished all the sessions, he probably would have completed at least one of the projects, which may have also improved the results of the correlational analyses. Refer to Table 8, Practice by Progress, for more detailed information.

Table 8

Practice by Progress

Participants	Practice (Average Number of Days)	Progress		
		1/2 Scarf 0 Hat	1/2 Scarf 1/2 Hat	1 Scarf 1 Hat
Danny	0 Days	X		
Marshall	0 Days	X		
Grace	1.2 Days		X	
Stephanie	3.9 Days			X
Jeffrey	4.7 Days		X	

Substance use. At the beginning of each session, participants were asked about their substance use since the previous session by reporting the number of days on which any substances were used. Responses ranged from “0 Days” (82.5% of total responses) to “7 Days” (2.5% of responses). See Table 9 for all the rates of substance use.

Table 9

Substance Use by Percent

Substance Use (Number of Days)	Percentage of Total Responses
0	82.5%
1 – 2	10.0%
3 – 4	2.5%
5 – 6	2.5%
7 or more	2.5%

Relationship between substance use and knitting progress. As with the analysis between the frequency of days knitting and knitting progress, the Fisher exact test was used to find a p-value, which tells us the significance of the null hypothesis. In this case, the null hypothesis stated that there is not a relationship between substance use and days knitting. The p-value resulting from this test was 1.0, which is significantly bigger than 0.05. This indicated that there was insufficient evidence to reject the null hypothesis.

Kendall's tau-b correlation coefficient was also performed with a similar finding. The correlation coefficient was 0.35, which suggests a weak positive relationship. However, given that the p-value was 0.42, it is not enough to reject the null hypothesis. Refer to Table 10, Substance Use by Progress, for more detailed information.

Table 10

Substance Use by Progress

Participants	Substance Use (Average Number of Days)	Progress		
		1/2 Scarf 0 Hat	1/2 Scarf 1/2 Hat	1 Scarf 1 Hat
Marshall	0 Days	X		
Jeffrey	0 Days		X	
Danny	0.4 Days	X		
Stephanie	0.7 Days			X
Grace	1.4 Days		X	

Perceived Stress Scale results. The Perceived Stress Scale was administered at every time point: Baseline, at the beginning of all sessions, and at the Follow-Up Interview. Perceived Stress Scale Scores were calculated by adding up the scores of all items. Items 4, 5, 7, and 8 were reverse scored. See Appendix F for the wording of each item. Scores ranging from 0 to 13 suggest low perceived stress. Scores between 14 and 26 indicate moderate perceived stress, and scores ranging from 27 to 40 are considered to be high perceived stress (Cohen, 1994). The mean of all the summed scores for all participants was 19.56, with a standard deviation of 6.73. The total scores ranged from 3.0 to 35.0. Figure 1 shows the total scores for each session, for each participant.

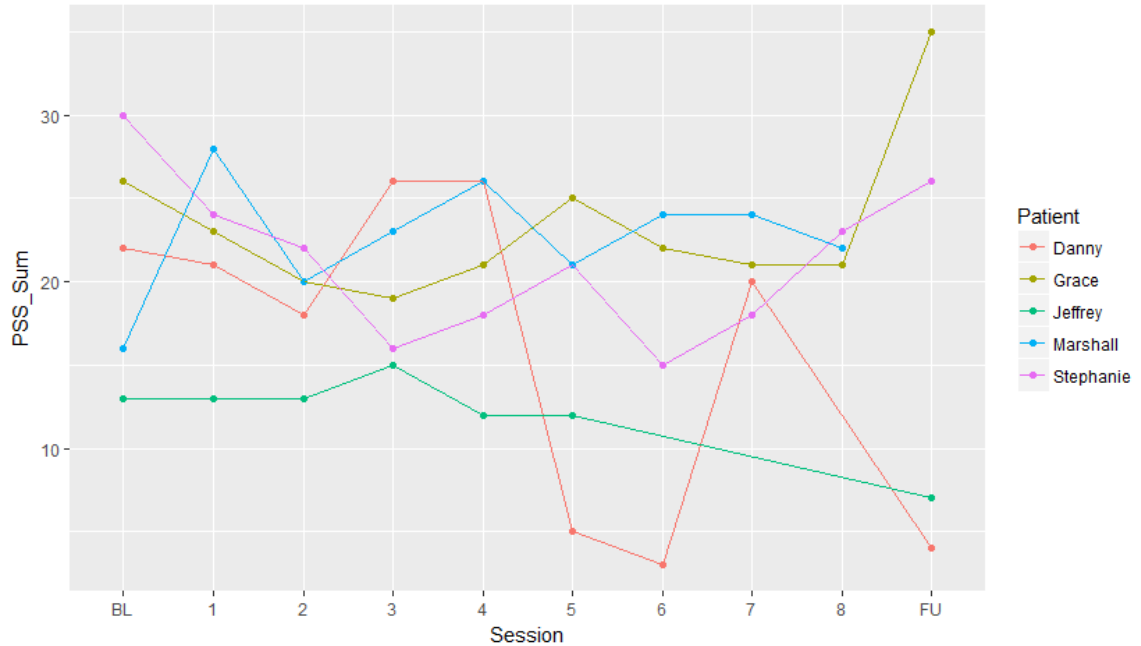


Figure 1. Perceived Stress Scale Total Scores by Participant.

To obtain an understanding of how the participants' scores cumulatively changed over time, the mean total scores were compared for each pair of time points of interest. Table 11 presents all time points and comparisons. When the average Baseline Perceived Stress Scale score ($M = 21.40$) was compared to the average score at Session Four ($M = 20.60$), the difference between the two was 0.80 ($p = 0.85$). Session Four was then compared to the final session, which may have been Session Five, Session Seven, or Session Eight, depending on whether the participant completed the study or withdrew early. The difference between Session Four ($M = 20.60$) and the last session ($M = 19.60$) was 1.0, with a p-value of 0.77. The results were slightly better when Session Four ($M = 20.60$) was compared to the Follow-Up Interview ($M = 18.0$). The difference between those two time points was 2.6 with a p-value of 0.73. However, none of these comparisons yielded significant differences in the total scores between any pairs of time points.

After analyzing perceived stress from the baseline to midpoint and midpoint to last session and follow up, differences from the beginning to the end of the intervention were calculated. The difference from Baseline ($M = 21.40$) to the last session ($M = 19.60$) was 1.8 points, with a p-value of 0.64. From Baseline ($M = 21.40$) to Follow-Up ($M = 18.00$), the difference was 3.4 points, with a p-value of 0.66. Although this was the largest difference in average scores, it still was not a significant finding because p was greater than 0.05. The insignificant findings were likely due to the small sample size and incomplete data from Marshall.

Table 11

Comparison of Perceived Stress Scale Total Scores Between Pairs of Time Points

Comparison	Time 1 Mean	Time 1 Confidence Interval (95%)	Time 2 Mean	Time 2 Confidence Interval (95%)	Difference	Difference Confidence Interval (95%)	P-value
Baseline - Session 4	Baseline: 21.40	(14.73, 28.07)	Session 4: 20.60	(13.93, 27.27)	0.80	(-08.63, 10.23)	0.85
Session 4 – Last Session	Session 4: 20.60	(15.24, 25.96)	Last Session: 19.60	(14.24, 24.96)	1.00	(-06.59, 08.59)	0.77
Session 4 – Follow-Up	Session 4: 20.60	(09.23, 31.97)	Follow-Up: 18.00	(05.29, 30.72)	2.60	(-14.45, 19.65)	0.77
Baseline – Last Session	Baseline: 21.40	(15.38, 27.41)	Last Session: 19.60	(13.58, 25.62)	1.80	(-06.71, 10.31)	0.64
Baseline – Follow-Up	Baseline: 21.40	(09.64, 33.16)	Follow-Up: 18.00	(04.86, 31.14)	3.40	(-14.24, 21.04)	0.66

Toronto Mindfulness Scale results. The Toronto Mindfulness Scale (Lau et al., 2006) was designed to measure mindfulness immediately following a meditative activity. The measure was administered after each knitting session to assess level of mindfulness during the knitting session. Scores were calculated by adding up points on two scales: Curiosity and De-Centering. The Curiosity scale included items 3, 5, 6, 10, 12, and 13, and the Decentering scale consisted of items 1, 2, 4, 7, 8, 9, and 11. Participant total scores on the Curiosity scale ranged from 12 to 30 points, with a median of 22.0. Participant total scores on the Decentering scale ranged from 14 to 35 points, with a median of 24.50. Higher scores were indicative of increased mindfulness during the sessions. See Appendix I for the wording of each item. Figures 2 and 3 show the total scores for each scale by participant.

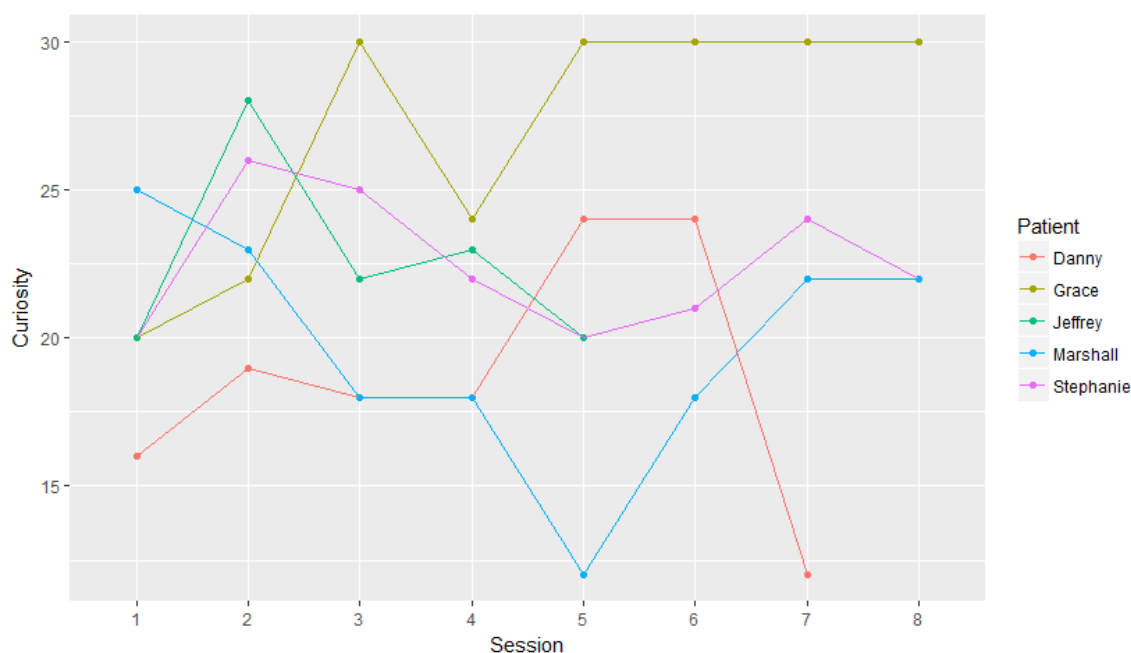


Figure 2. Toronto Mindfulness Scale–Curiosity Scale by Participant.

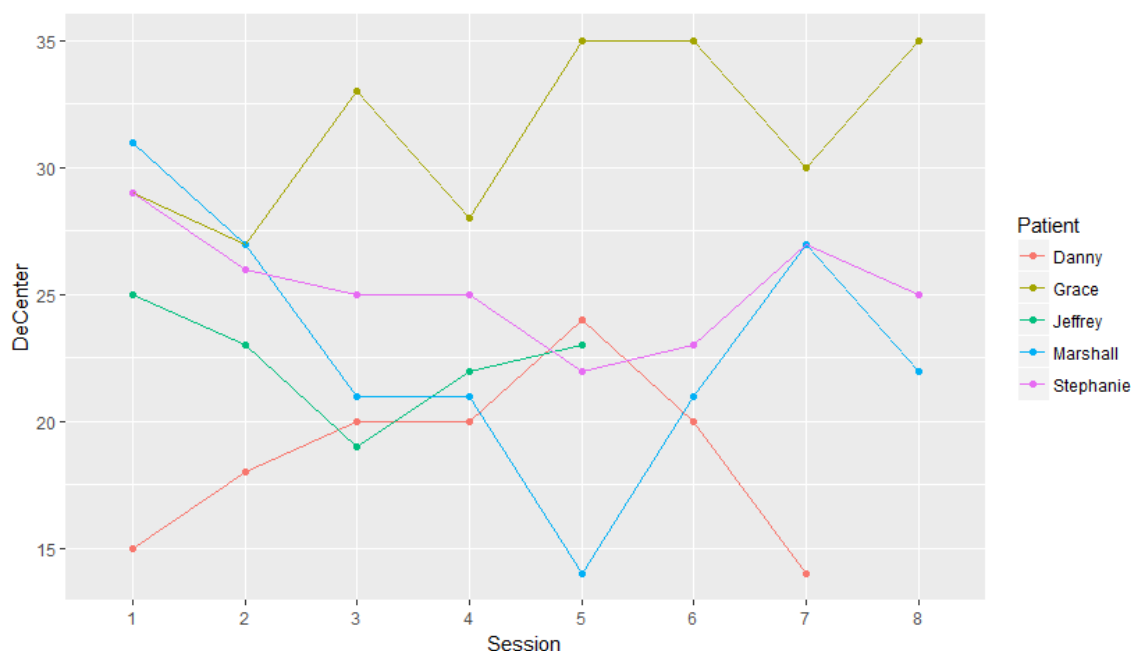


Figure 3. Toronto Mindfulness Scale–Decentering Scale by Participant.

To understand how the participants' scores cumulatively changed over time, an analysis compared various time points. Because the Toronto Mindfulness Scale asked about participant experience during lessons, mindfulness data were not available for the Baseline and Follow-Up interviews. Therefore, the first session was compared to the fourth session and the last session for each of the two subscales. See Tables 12 and 13 for all the time points and comparisons.

When Session One ($M = 20.20$) was compared to Session Four ($M = 21.00$), Curiosity increased 0.80 points ($p = 0.69$). Curiosity increased 1.00 points between Session One ($M = 20.20$) and the last session ($M = 21.20$), with a p-value of 0.76. The difference between Session Four ($M = 21.00$) and the last session ($M = 21.20$) was an increase of 0.20 points with a p-value of 0.95. Although the scores increased slightly across sessions, the average Curiosity did not significantly increase over the course of the intervention for the participants.

Decentering decreased by 2.60 points between Session One ($M = 25.80$) and Session Four ($M = 23.2$), with a p-value of 0.44. Between Session One ($M = 25.80$) and the last session (23.80), there was a decrease of 2.00 points ($p = 0.66$). Decentering increased between Session Four ($M = 23.20$) and the last session ($M = 23.8$), with a p-value of 0.87. In all these analyses, the p-value was greater than 0.05, which was not a significant increase or decrease in Decentering over the duration of the intervention.

Table 12

Comparison of Curiosity Between Pairs of Time Points

Comparison	Time1 Mean	Time 1 Confidence Interval (95%)	Time 2 Mean	Time 2 Confidence Interval (95%)	Difference	Difference Confidence Interval (95%)	P-value Difference
Session One–Session Four	Session One: 20.20	(17.09, 23.31)	Session Four: 21.00	(17.89, 24.11)	-0.80	(-5.20, 3.60)	0.69
Session One–Last Session	Session One: 20.20	(14.97, 25.43)	Last Session: 21.20	(15.97, 26.43)	-1.00	(-8.39, 6.39)	0.76
Session Four–Last Session	Session Four: 21.00	(15.89, 26.12)	Last Session: 21.20	(16.09, 26.32)	-0.20	(-7.43, 7.03)	0.95

Table 13

Comparison of Decentering Between Pairs of Time Points

Comparison	Time1 Mean	Time 1 Confidence Interval (95%)	Time2 Mean	Time2 Confidence Interval (95%)	Difference	Difference Confidence Interval (95%)	P-value Difference
Session One– Session Four	Session One: 25.80	(20.55, 31.05)	Session Four: 23.20	(17.95, 28.45)	2.60	(-4.83, 10.03)	0.44
Session One– Last Session	Session One: 25.80	(18.58, 33.02)	Last Session: 23.80	(16.58, 31.01)	2.00	(-8.20, 12.20)	0.66
Session Four– Last Session	Session Four: 23.20	(17.21, 29.19)	Last Session: 23.80	(17.81, 29.79)	-0.60	(-9.07, 7.87)	0.87

Summary of combined quantitative analysis. The individuals in recovery from substance use disorder who participated in this study had many other outside stressors and commitments that potentially interfered with their attendance and practice outside sessions. Of the five participants, only three completed all eight sessions. One person had to withdraw after Session Five because work conflicts interfered with membership at the Recovery Café, and another participant's mental health issues hindered his participation in the last session. A participant who had completed all eight knitting sessions suddenly left the Café and became unreachable for the Follow-Up Interview. Several participants also had difficulty with scheduling and attendance, and participants often arrived late or not at all.

Prior to each session, participants were asked how many days they had spent knitting. A comparison was made between days spent knitting and progress on projects. The relationship between the two variables was ambiguous and no apparent trend could be determined. Participants were also asked about their substance use between sessions. A comparison was made between substance use and progress on projects. There was no significant relationship between these two variables.

The Perceived Stress Scale was completed at the Baseline Interview, prior to starting all knitting sessions, and at the Follow-Up Interview. Total scores were combined and averaged across all participants, and five comparisons were made: Baseline to Session Four, Session Four to Last Session, Session Four to the Follow-Up Interview, Baseline to the Last Session, and Baseline to Follow-Up. None of these comparisons yielded significant results.

The Toronto Mindfulness Scale was administered after every knitting session. Scores were calculated using two scales: Curiosity and Decentering. Three comparisons were made: Session One to Session Four, Session One to Last Session, and Session Four to Last Session. For

the analyses comparing time points, each participant was kept separate as one of five replicates. Results included both increases and decreases in Curiosity and Decentering, but no statistically significant changes were found.

Quantitative Analysis – By Participant

For each individual participant, the number of days spent knitting and substance use between sessions was summarized by frequency of response. A Perceived Stress Scale total score was obtained by reverse scoring four items and then adding up all the items. Mean total scores, median, minimum, and maximum were calculated across all sessions for each individual. The Toronto Mindfulness Scale had two scales, Curiosity and Decentering. Means and ranges of scores for each scale were analyzed separately.

The researcher used a Wilcoxon signed-rank test to assess for changes in stress and mindfulness over the duration of the study and at Follow-Up (when applicable). It is a non-parametric test that compares the means for two dependent/paired samples. Because the sample size was very small, it was likely that the data did not follow a normal distribution and a parametric t-test would probably not provide valid results. Baseline scores on the Perceived Stress Scale were compared to the participant's last session. Grace, Stephanie, and Marshall's last session was Session Eight, Danny's last session was Session Seven, and Jeffrey's last session was Session Five. Each participant's last session was also compared to the Follow-Up Session for the four participants who completed the interview. Toronto Mindfulness Scale total scores at the first session were compared to total scores at the last session to obtain an understanding of how mindfulness increased or decreased over the duration of the study.

Danny's quantitative analysis. Danny completed the Baseline Interview, seven knitting sessions, and the Follow-Up Interview telephonically. He successfully started his scarf and chose

to work on it throughout the duration of the study. When asked if he would like to move on to learn how to knit a hat, he declined and stated that he preferred to continue with his scarf.

During all seven sessions and at the Follow-Up Interview, Danny reported that he knitted zero days since the previous session. Prior to the first six sessions, he reported using substances zero days. At the seventh session and at the Follow-Up Interview, Danny reported using substances one or two days since the previous session.

Table 14

Knitting and Substance Use by Number of Days – Danny

	# of Days	Frequency of Responses
Days Knitting	0	8
	1-2	0
	3-4	0
	5-6	0
	7+	0
Substance Use	0	6
	1-2	2
	3-4	0
	5-6	0
	7+	0

Danny completed the Perceived Stress Scale at the Baseline Interview, immediately prior to all seven knitting sessions, and at the Follow-Up Interview. The mean of Danny's total scores across all sessions and interviews was 16.10, which suggested moderate stress over the duration of the study. Danny's perceived stress was variable over the course of the intervention. His lowest total score was a 3 at Session Six and he scored a 4 at the Follow-Up Interview. Both of those scores suggest low perceived stress, although at Session Seven, Danny's score was 20, suggesting more moderate stress. This was immediately after the period where he was missing sessions due to intervening variables, so it is not surprising that his score was higher at Session

Seven. His highest score was a 26 at both Session Three and Session Four, which is one point away from the high perceived stress range.

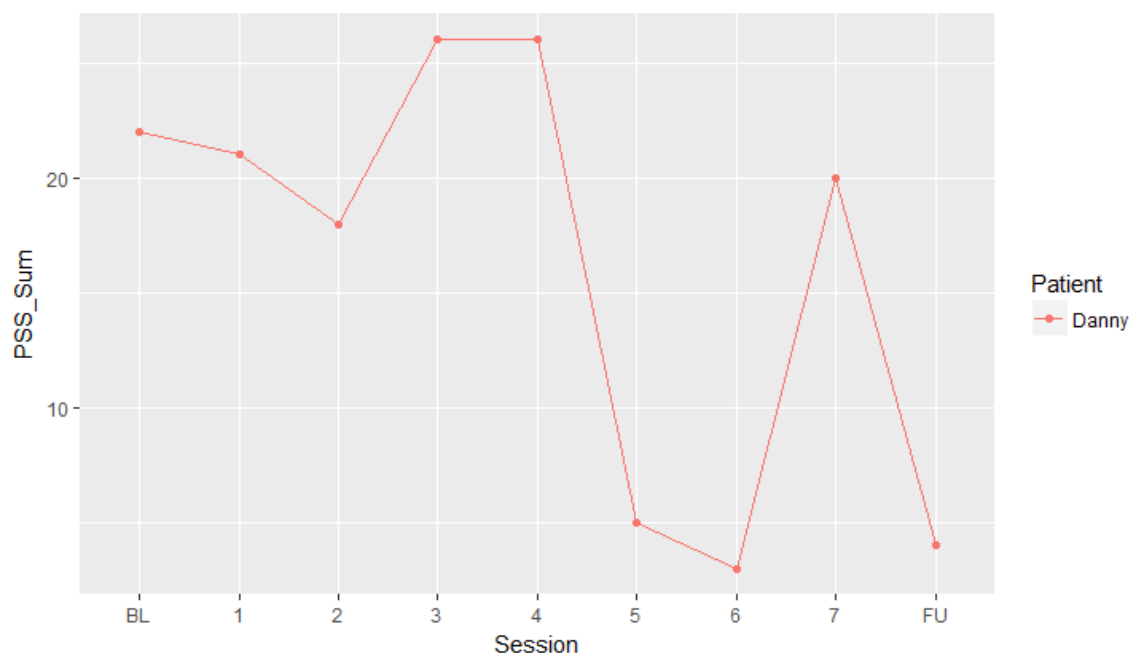


Figure 4. Perceived Stress Scale Total Scores – Danny.

A Wilcoxon signed-rank test compared each item of Danny's Baseline measure to each corresponding item at Session Seven, which was his last session. The p-value was 0.50, which is not a significant reduction in perceived stress at the 0.05 level. Danny's last session scores were also compared to the Follow-Up Interview. The p-value was 0.02, was a significant difference. This was consistent with his self-report of experiencing mental health issues around Session Seven, and then showing improvement several weeks later at the Follow-Up Interview.

Table 15

Perceived Stress Scale – Danny

Perceived Stress Scale		
		Perceived Stress
Mean of Total Scores	16.11	Moderate
Minimum Score	3.00	Low
Maximum Score	26.00	Moderate
Baseline Total Score	22.00	Moderate
Session Seven Total Score	20.00	Moderate
Follow-Up Interview Total Score	4.00	Low
Baseline compared to Session Seven	$p = 0.50$	
Session Seven compared to Follow-Up Interview	$p = 0.02$	

Danny completed the Toronto Mindfulness Scale a total of seven times, after every session. Danny's mean score on the Curiosity scale was 18.70. Curiosity scores ranged from 12 to 24. Curiosity increased from Session One to Session Two, then it decreased slightly and leveled off during Session Three and Session Four before increasing again at Session Five. Curiosity remained high for Session Six and then decreased significantly during Session Seven. His final score showed a decrease as compared to Session One.

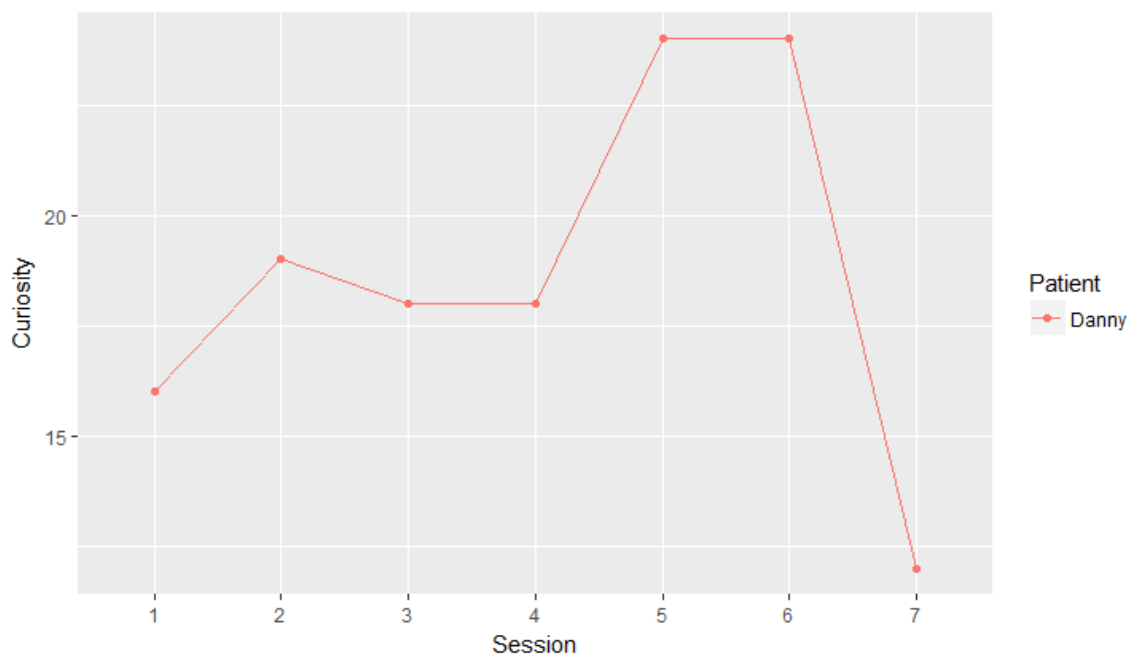


Figure 5. Toronto Mindfulness Scale Curiosity – Danny.

The mean for the Decentering scale was 18.71 and Danny's scores ranged from 14 to 24. Decentering increased for the first three sessions, then leveled off at Session Four. It rose again during Session Five but fell quite significantly during Session Six and Session Seven. Danny's final Decentering score demonstrated a decrease as compared to his Session One score.

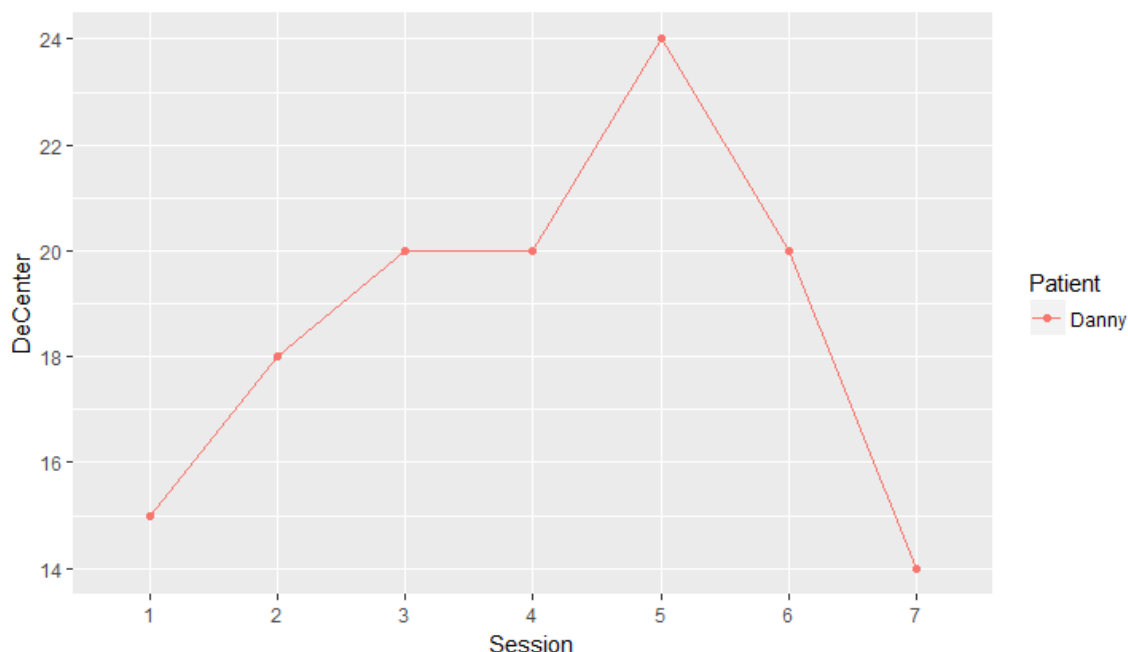


Figure 6. Toronto Mindfulness Scale Decentering – Danny.

A Wilcoxon signed-rank test compared each of Danny's Session One item scores with each of his Session Seven scores. Although his mindfulness increased during Session Two through Session Six, by Session Seven his mindfulness had decreased ($p = 0.25$). There was not a significant change in mindfulness from the beginning of the study to the end.

Table 16

Toronto Mindfulness Scale – Danny

Toronto Mindfulness Scale	
Curiosity	
Mean of Total Scores	18.71
Minimum Score	12.00
Maximum Score	24.00
Decentering	
Mean of Total Scores	18.71
Minimum Score	14.00
Maximum Score	24.00
Overall	
Comparison of Session One to Session Seven	$p = 0.25$

Grace's quantitative analysis. Grace completed the Baseline Interview, all eight sessions, and the Follow-Up Interview in person. She successfully started her scarf and completed about half of it during the study. She also started the hat. Grace knitted in the round for a few inches, but did not have time to complete the hat, so she decided to bind off during our last session and make it a headband.

Typically, Grace spent one or two days knitting between sessions, although twice she reported knitting zero days in between sessions. Grace generally reported not using substances between sessions. At Session Six she reported smoking cigarettes five or six days between sessions, and at the Follow-Up Interview she reported smoking every day in the previous week.

Table 17

Knitting and Substance Use by Number of Days – Grace

	# of Days	Frequency of Responses
Days Knitting	0	2
	1-2	7
	3-4	0
	5-6	0
	7+	0
Substance Use	0	7
	1-2	0
	3-4	0
	5-6	1
	7+	1

Grace completed the Perceived Stress Scale at the Baseline Interview, immediately prior to all eight knitting sessions, and at the Follow-Up Interview. The mean of Grace's total scores across all the sessions and interviews was 23.30, which suggested moderate perceived stress over the duration of the study. Grace's total Perceived Stress Scale scores ranged from 19 at Session

Three to 35 at the Follow-Up Interview. Perceived Stress decreased during the first three sessions, increased at Session Four and Session Five, and then decreased again until the Follow-Up Interview when it increased significantly. Her scores were all in the moderate range for perceived stress, with the exception of the final score, which was in the high range.

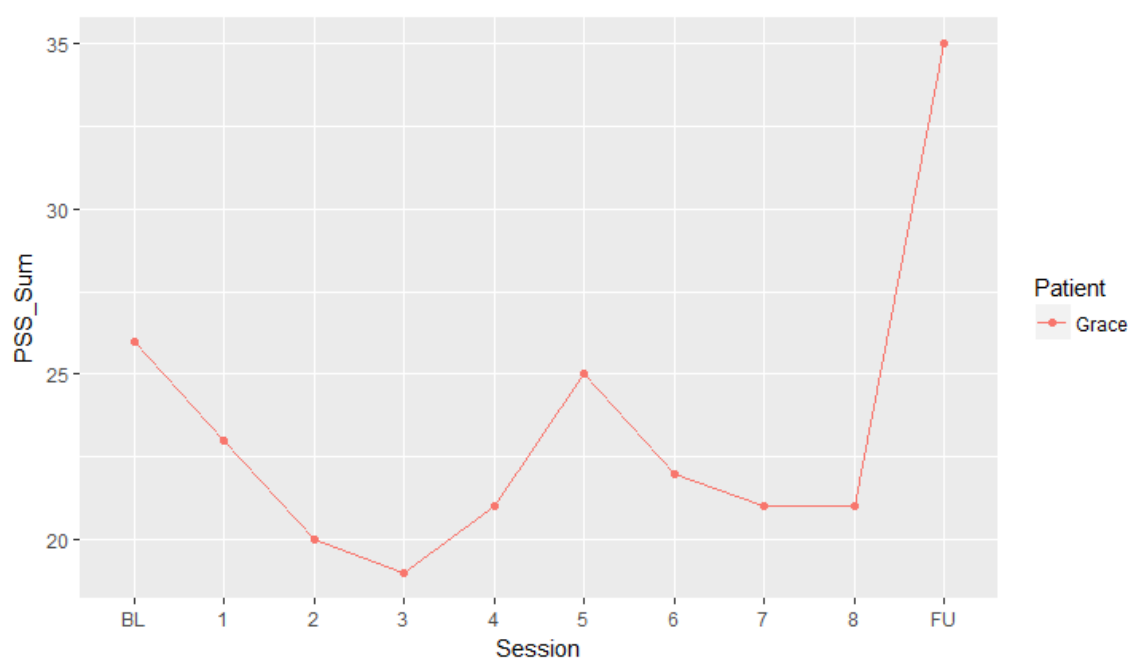


Figure 7. Perceived Stress Scale Total Scores – Grace.

A Wilcoxon signed-rank test compared each of Grace's Baseline scores with each of her Session Eight scores. The p-value was 0.36, which is not a significant change at the 0.05 level. Grace's last session (21) was compared with her Follow-Up Interview total score (35), with a resulting p-value of 0.002. This was a significant increase in perceived stress for Grace.

Table 18

Perceived Stress Scale – Grace

Perceived Stress Scale		
		Perceived Stress
Mean of Total Scores	23.30	Moderate
Minimum Score	19.00	Moderate
Maximum Score	35.00	High
Baseline Total Score	26.00	Moderate
Session Eight Total Score	21.00	Moderate
Follow-Up Interview Total Score	35.00	High
Baseline compared to Session Eight	$p = 0.36$	
Session Eight compared to Follow-Up Interview	$p = 0.002$	

Grace completed the Toronto Mindfulness Scale after every session for a total of eight time points. Her Curiosity mean was 27.00, with scores ranging from 20 to 30. Curiosity rose during the first three sessions, dropped during Session Four, increased during Session Five, and leveled off for the final three sessions. Overall, there was an increase in Curiosity from Session One to Session Eight.

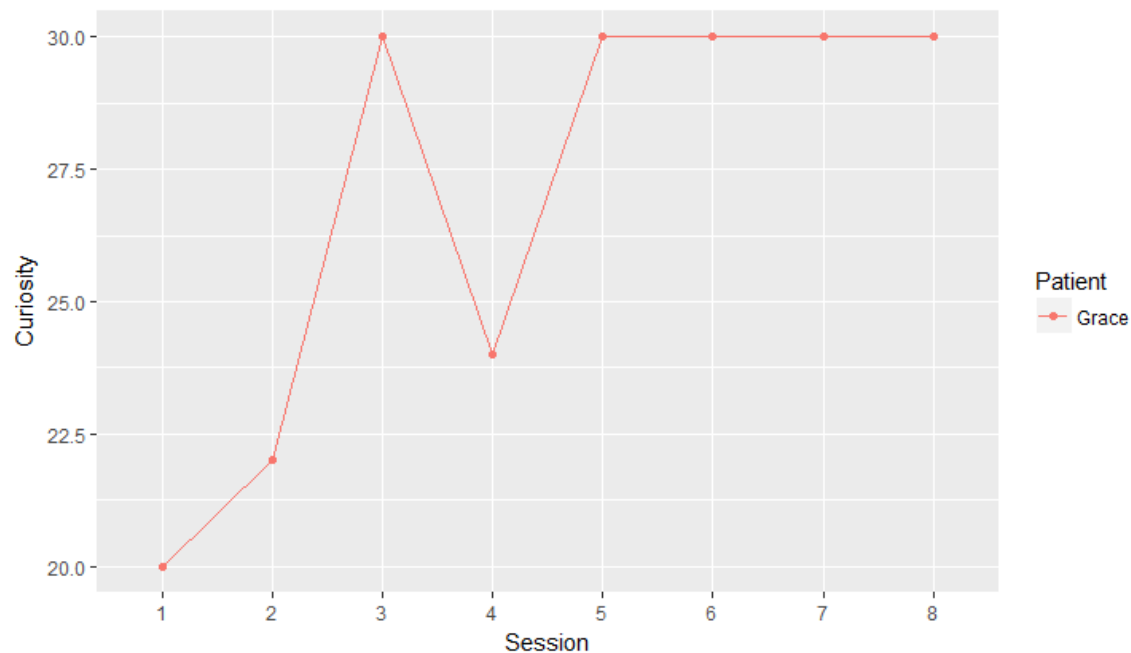


Figure 8. Toronto Mindfulness Scale Curiosity – Grace.

Grace's Decentering mean was 31.50, with scores ranging from 27 to 35. Decentering scores were quite variable from session to session. However, Grace's Session Seven score was higher as compared to her score during Session One, suggesting an overall trend of increased Decentering.

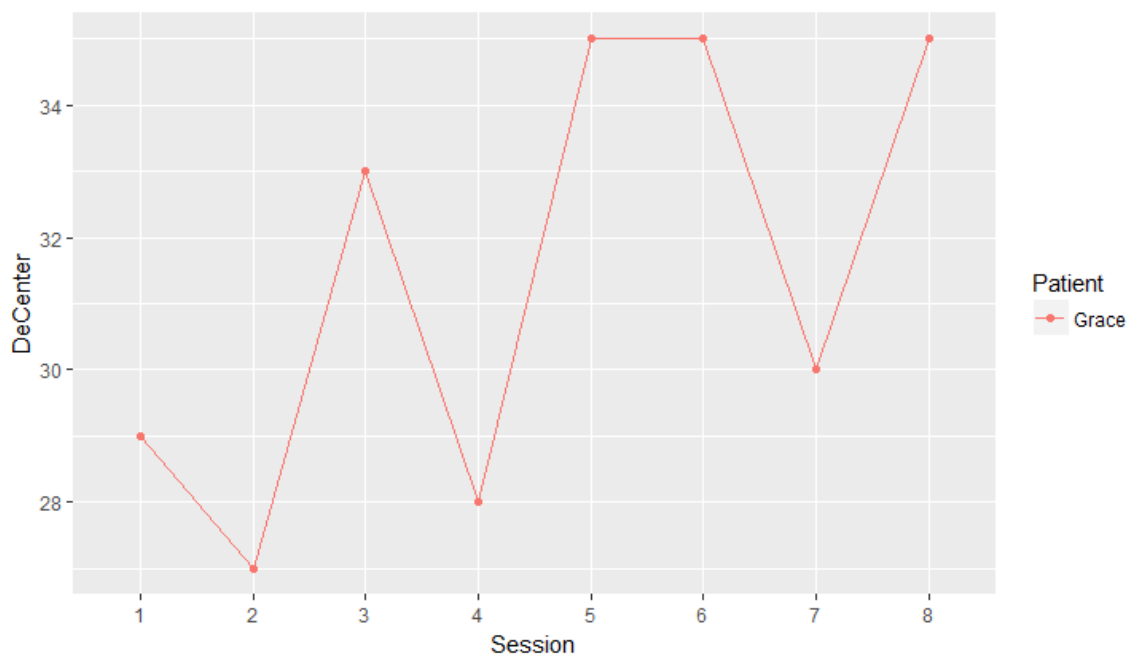


Figure 9. Toronto Mindfulness Scale Decentering – Grace.

A Wilcoxon signed-rank test compared each of Grace's Session One scores with her Session Eight scores. The resulting p-value was 0.001, which was a significant increase in overall mindfulness.

Table 19

Toronto Mindfulness Scale – Grace

Toronto Mindfulness Scale	
Curiosity	
Mean of Total Scores	27.00
Minimum Score	20.00
Maximum Score	30.00
Decentering	
Mean of Total Scores	31.50
Minimum Score	27.00
Maximum Score	35.00
Overall	
Comparison of Session One to Session Eight	$p = 0.001$

Stephanie's quantitative analysis. Stephanie completed the Baseline Interview, all eight knitting sessions, and the Follow-Up Interview in person. She successfully started and finished both the scarf and the hat. Stephanie frequently knitted between sessions. She typically knitted between three and six days, although once she reported knitting all seven days between the sessions. Stephanie reported using alcohol between sessions a few earlier sessions, although she reported abstaining from marijuana. From Session Five onwards, Stephanie did not report any drug or alcohol use between sessions.

Table 20

Knitting and Substance Use by Number of Days – Stephanie

	# of Days	Frequency of Responses
Days Knitting	0	1
	1-2	1
	3-4	3
	5-6	3
	7+	1
Substance Use	0	6
	1-2	2
	3-4	1
	5-6	0
	7+	0

Stephanie completed the Perceived Stress Scale at the Baseline Interview, immediately prior to all eight knitting sessions, and at the Follow-Up Interview. The mean of Stephanie's total scores across all the sessions and interviews was 21.30, which suggested moderate perceived stress over the duration of the study. Stephanie's total Perceived Stress Scale scores ranged from 15 at Session Six to 30 at Baseline. Her perceived stress decreased for the first three sessions, then increased at Session Four and Session Five. Stephanie's perceived stress again decreased at Session Six and rose again at Session Seven and Session Eight. With the exception of the

Baseline score in the high perceived stress range, all her other scores were in the moderate range, and her Follow-Up Interview score was lower than her Baseline Interview score.

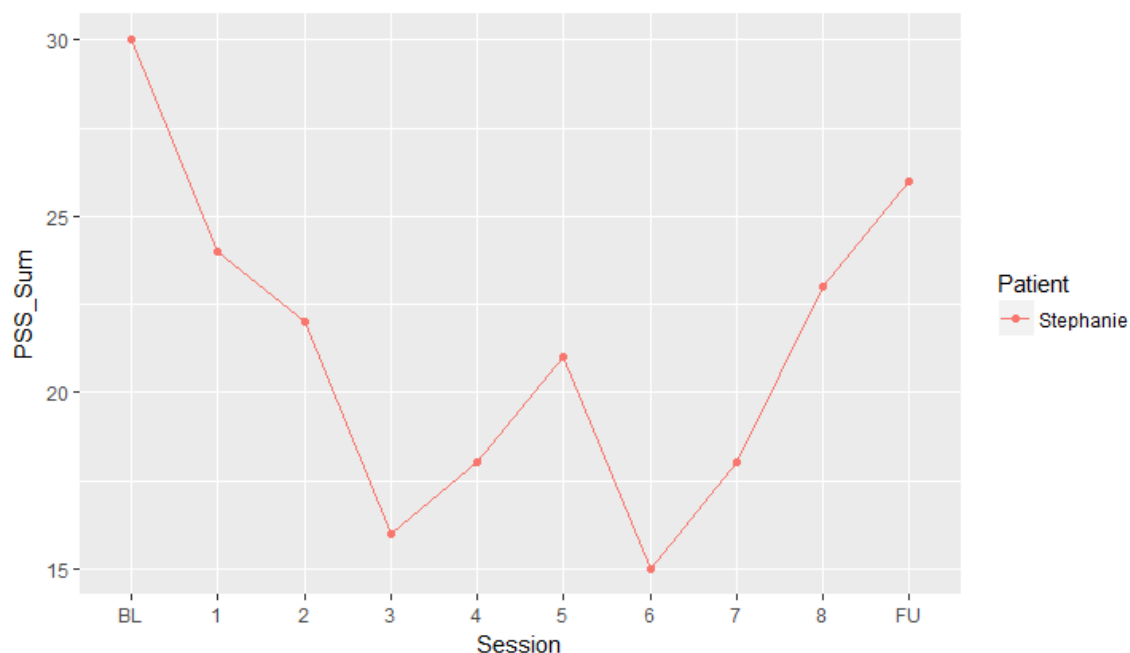


Figure 10. Perceived Stress Scale Total Scores – Stephanie.

A Wilcoxon signed-rank test compared each of Stephanie's Baseline scores with her Session Eight scores. The p-value was 0.06, which is significant at the 0.10 level but not the 0.05 level. Stephanie's last session (23) was compared with her Follow-Up Interview total score (26), resulting in a p-value of 0.38, which is not a significant change in perceived stress.

Table 21

Perceived Stress Scale – Stephanie

Perceived Stress Scale		
		Perceived Stress
Mean of Total Scores	21.30	Moderate
Minimum Score	15.00	Moderate
Maximum Score	30.00	High
Baseline Total Score	30.00	High
Session Eight Total Score	23.00	Moderate
Follow-Up Interview Total Score	26.00	Moderate
Baseline compared to Session Eight	$p = 0.06$	
Session Eight compared to Follow-Up Interview	$p = 0.38$	

Stephanie completed the Toronto Mindfulness Scale after every session for a total of eight time points. Her Curiosity mean was 22.50, with scores ranging from 20 to 26. Curiosity increased from Session One to Session Two, then steadily decreased during the next three sessions. It increased again during Session Six and Session Seven but decreased during Session Eight. Overall there was an increase in Curiosity as compared to Session One, but there was a larger increase between Sessions One and Two.

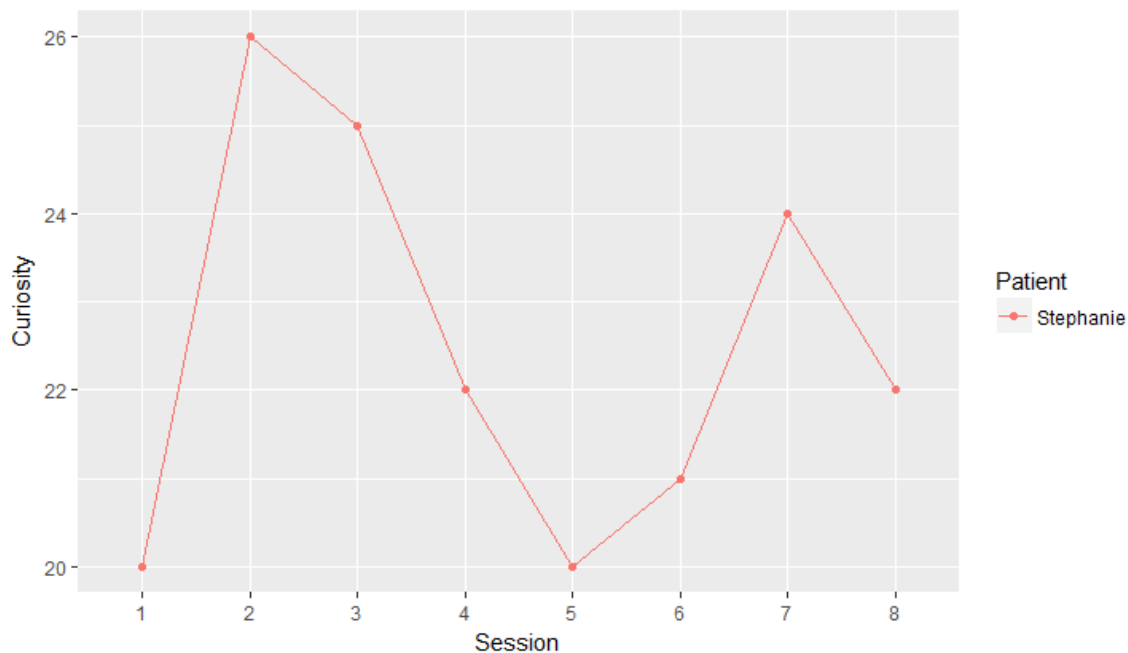


Figure 11. Toronto Mindfulness Scale Curiosity – Stephanie.

Stephanie's Decentering mean was 25.25, with scores ranging from 22 to 29. Her Decentering score was high during the first session and then decreased during the next two sessions. It remained the same for Session Four, and then decreased again for Session Five. Decentering increased for the last two sessions and decreased during Session Eight, which was lower than the initial session.

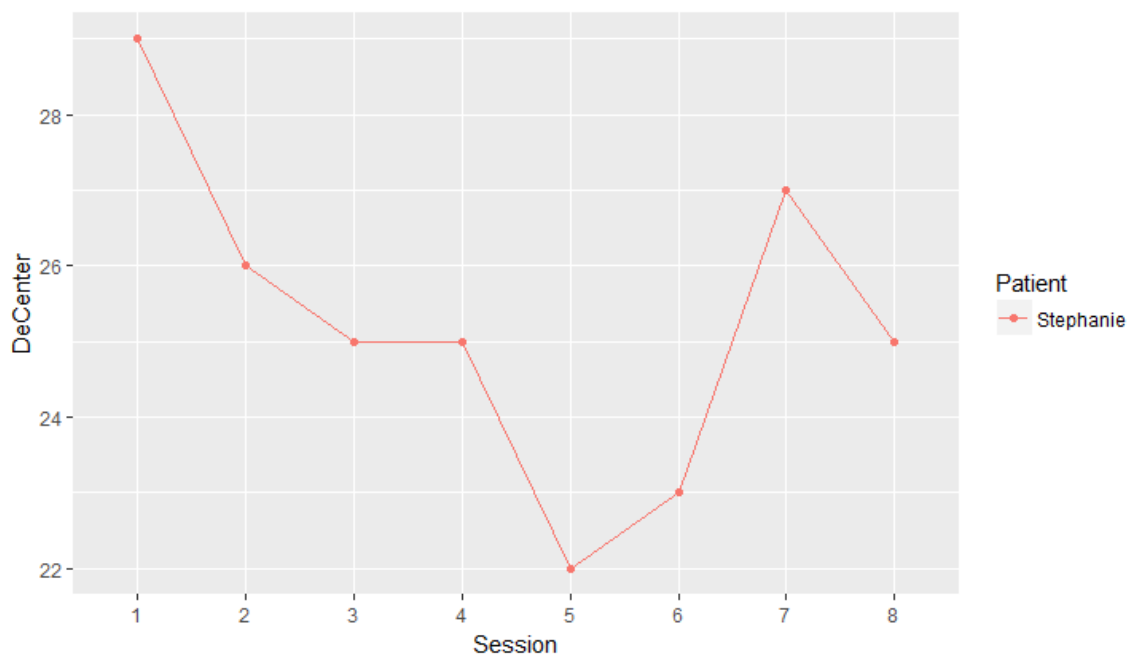


Figure 12. Toronto Mindfulness Scale Decentering – Stephanie.

A Wilcoxon signed-rank test compared each of Stephanie's Session One scores to her Session Eight scores. The resulting p-value was 0.55, which was not a significant change in mindfulness from the beginning to the end of the intervention.

Table 22

Toronto Mindfulness Scale – Stephanie

Toronto Mindfulness Scale	
Curiosity	
Mean of Total Scores	22.50
Minimum Score	20.0
Maximum Score	26.0
Decentering	
Mean of Total Scores	25.25
Minimum Score	22.00
Maximum Score	29.00
Overall	
Comparison of Session One to Session Eight	$p = 0.55$

Jeffrey's quantitative analysis. Jeffrey completed the Baseline Interview, five knitting sessions, and the Follow-Up Interview via phone. Jeffrey had to withdraw from the study early after starting a full-time job that conflicted with Recovery Café membership requirements and caused him to be unavailable to meet for knitting sessions during Café hours. Jeffrey started both his scarf and his hat but did not complete either one during the five sessions in which he participated.

Jeffrey's days knitting ranged from one to seven days between sessions. He was very enthusiastic about his projects, despite having some difficulties. On one occasion he brought in a broken needle to session and asked for a replacement, which was provided. On another occasion, Jeffrey reported that he had been visiting family and had left his project out of state, so he started his scarf again. Despite these setbacks, Jeffrey knitted as much as he was able. He reported zero days of substance use during the study and at Follow-Up.

Table 23

Knitting and Substance Use by Number of Days – Jeffrey

	# of Days	Frequency of Responses
Days Knitting	0	0
	1-2	1
	3-4	2
	5-6	1
	7+	2
Substance Use	0	6
	1-2	0
	3-4	0
	5-6	0
	7+	0

Jeffrey completed the Perceived Stress Scale at the Baseline Interview, immediately prior to all five knitting sessions, and at the Follow-Up Interview. The mean of Jeffrey's total scores

across all the sessions and interviews was 12.14, which was in the low perceived stress range. Jeffrey's scores ranged from 7 at the Follow-Up Interview to 15 at Session Three. His perceived stress remained stable from the Baseline Interview to Session Two, increased at Session Three, and then decreased at Session Four. Session Five remained the same as Session Four, and the Follow-Up Interview score was lower than all the scores during the intervention. Most of Jeffrey's scores were on the border between the low perceived stress and moderate perceived stress ranges.

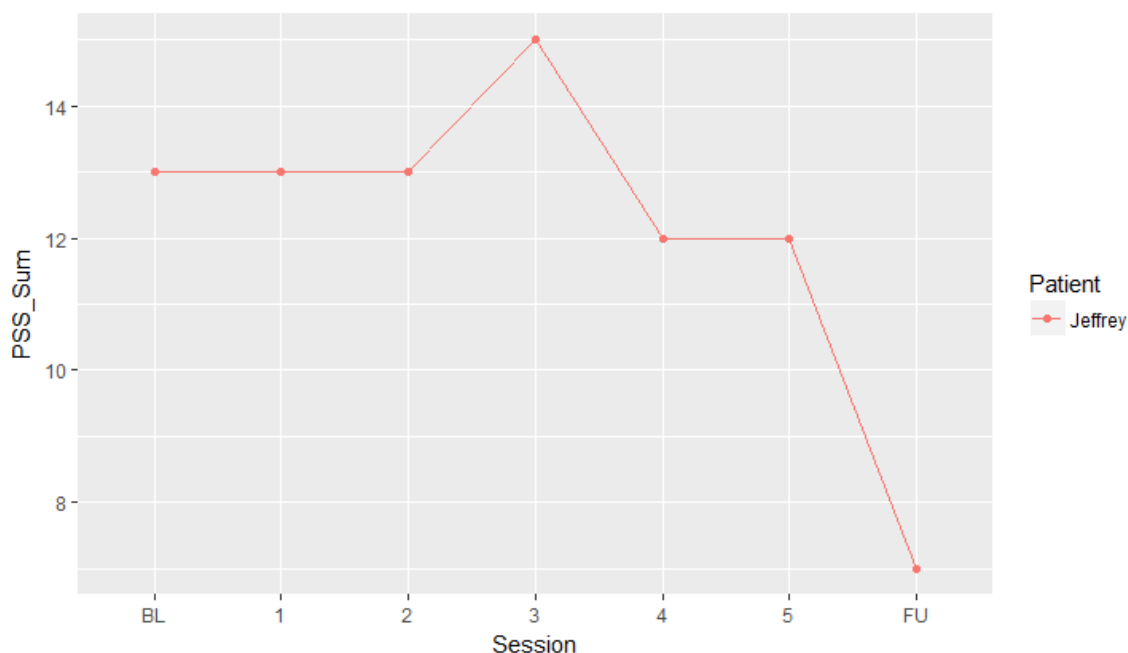


Figure 13. Perceived Stress Scale Total Scores – Jeffrey.

A Wilcoxon signed-rank test compared each of Jeffrey's Baseline scores to each of his Session Five scores, which was his last session. The p-value was 1.00, which indicated that there was not a significant change in scores. When Jeffrey's last session score (2) was compared to his Follow-Up Interview Score (7), the p-value was 0.23, which is not a significant reduction in perceived stress.

Table 24

Perceived Stress Scale – Jeffrey

Perceived Stress Scale		
		Perceived Stress
Mean of Total Scores	12.14	Low
Minimum Score	7.00	Low
Maximum Score	15.00	Moderate
Baseline Total Score	13.00	Low
Session Five Total Score	12.00	Low
Follow-Up Interview Total Score	7.00	Low
Baseline compared to Session Five	$p = 1.00$	
Session Five compared to Follow-Up Interview	$p = 0.23$	

Jeffrey completed the Toronto Mindfulness Scale after every session for a total of five time points. His mean score for Curiosity was 22.60, with scores ranging from 20 to 28. Curiosity increased during Session Two as compared to Session One, but then decreased during Session Three. It increased slightly during Session Four and decreased again during Session Five. There was no change in Curiosity between Session One and Session Five.

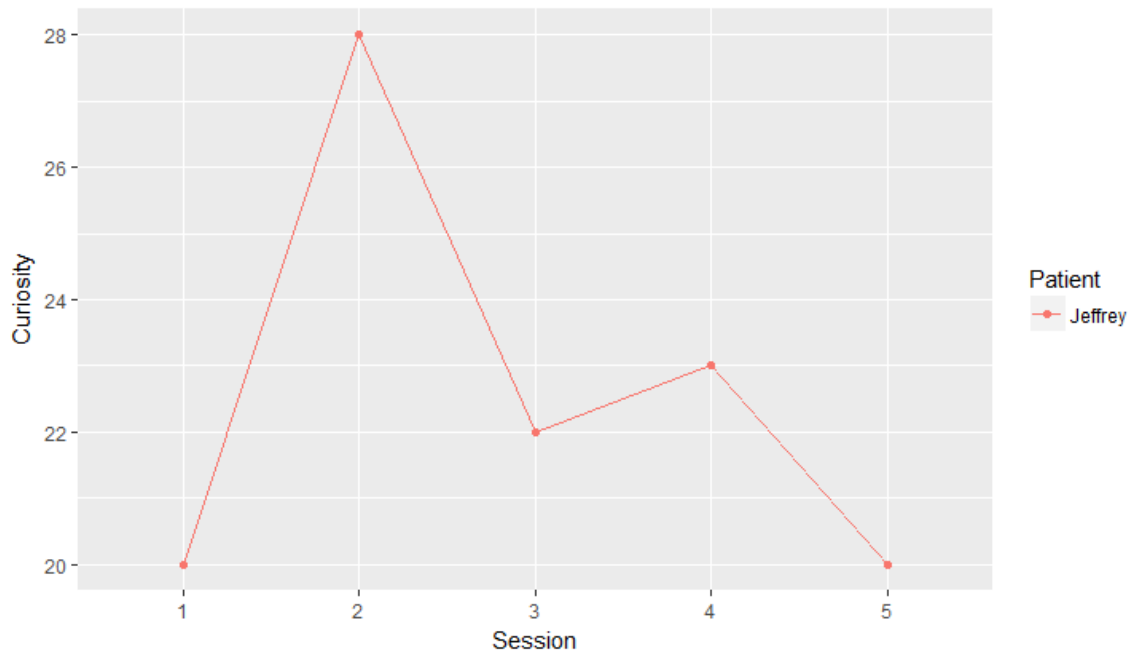


Figure 14. Toronto Mindfulness Scale Curiosity – Jeffrey.

The mean of Jeffrey's Decentering score was 22.40, with scores ranging from 19 to 25. Decentering decreased during Session Two and Session Three. It increased again at Session Four and Session Five. Jeffrey's Session One score was the highest as compare to all the subsequent sessions.

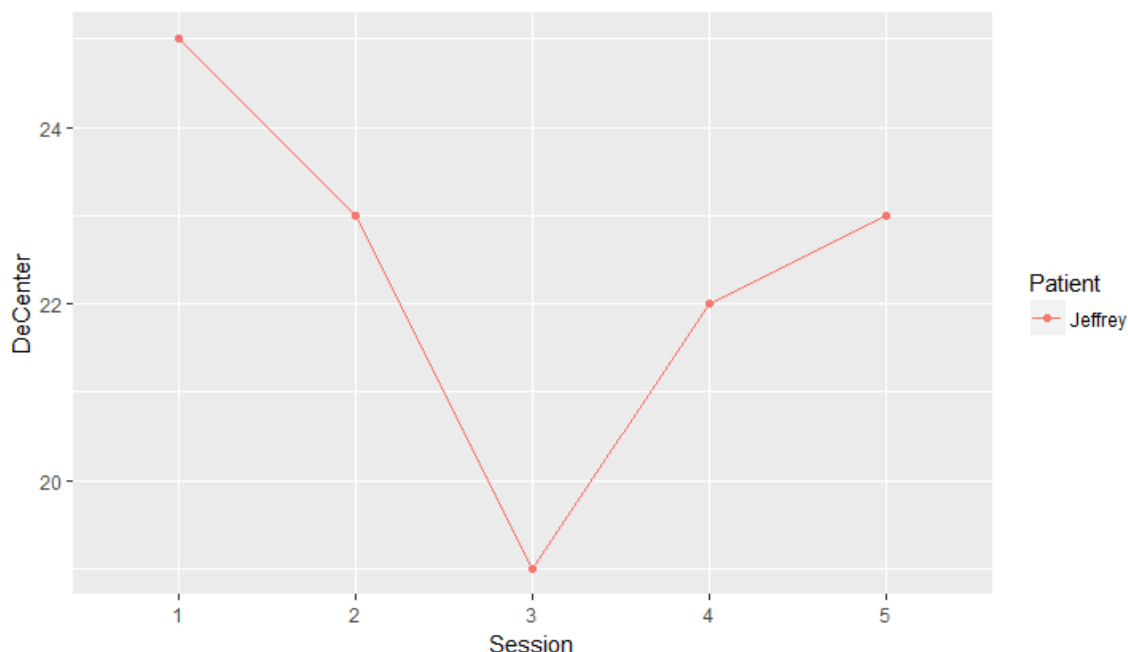


Figure 15. Toronto Mindfulness Scale Decentering – Jeffrey.

A Wilcoxon signed-rank test compared each of Jeffrey's Session One scores to his Session Five scores. The resulting p-value was 0.73. Jeffrey's mindfulness decreased slightly between the beginning and end of the study, and this difference was not enough to be significant at the 0.05 level.

Table 25

Toronto Mindfulness Scale – Jeffrey

Toronto Mindfulness Scale	
Curiosity	
Mean of Total Scores	22.60
Minimum Score	20.00
Maximum Score	28.00
Decentering	
Mean of Total Scores	22.40
Minimum Score	19.00
Maximum Score	25.00
Overall	
Comparison of Session One to Session Eight	$p = 0.73$

Marshall's quantitative analysis. Marshall completed the Baseline Interview and eight knitting sessions. After many attempts, he was unable to be reached for the Follow-Up Interview. Marshall successfully started his scarf and chose to work on that project for the duration of the study. When asked if he would like to learn the skills required to begin his hat, Marshall declined. Marshall did not knit between sessions, and he did not report using any substances during the intervention.

Table 26

Knitting and Substance Use by Number of Days – Marshall

	# of Days	Frequency of Responses
Days Knitting	0	8
	1-2	0
	3-4	0
	5-6	0
	7+	0
Substance Use	0	8
	1-2	0
	3-4	0
	5-6	0
	7+	0

Marshall completed the Perceived Stress Scale at the Baseline Interview and immediately prior to all eight knitting sessions. The mean of Marshall's total scores across all sessions and Baseline Interview was 22.67, which was in the moderate perceived stress range. Marshall's scores ranged from 16 at Session Eight to 28 at Session One. His perceived stress scores were variable through the study and his Session Eight score increased as compared to the Baseline Interview, although Session One was the highest perceived stress. All of Marshall's scores fell in the moderate perceived stress range.

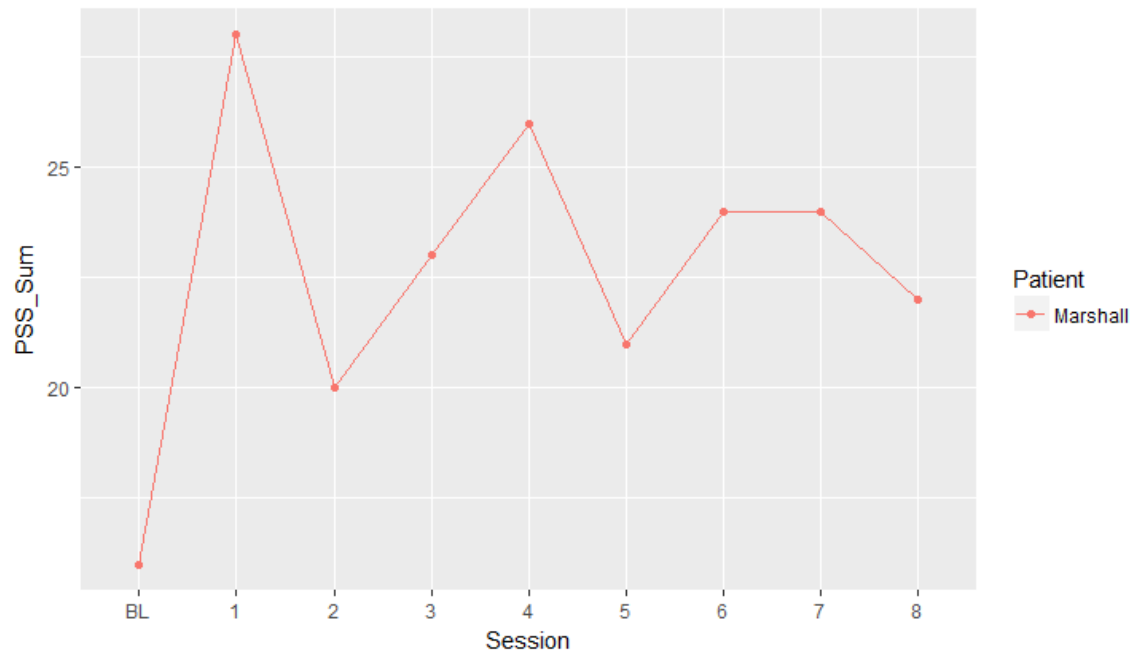


Figure 16. Perceived Stress Scale Total Scores – Marshall.

A Wilcoxon signed-rank test compared each of Marshall's Baseline scores to each of his Session Eight scores. The p-value was 0.53, which is not a significant reduction in stress at the 0.05 level. Marshall's Session Eight score was unable to be compared to the Follow-Up Interview because that time point was not completed.

Table 27

Perceived Stress Scale – Marshall

Perceived Stress Scale		
		Perceived Stress
Mean of Total Scores	22.67	Moderate
Minimum Score	16.00	Moderate
Maximum Score	28.00	High
Baseline Total Score	24.00	Moderate
Session Eight Total Score	22.00	Moderate
Follow-Up Interview Total Score		
Baseline compared to Session Eight	$p = 0.53$	
Session Eight compared to Follow-Up Interview		

Marshall completed the Toronto Mindfulness Scale after every session for a total of eight time points. His Curiosity mean was 19.75, with scores ranging from 12 to 25. Overall, Curiosity decreased from Session One to Session Five, with a plateau during Session Three and Four. It increased during the final three sessions, although Session Eight was still lower than Session One.

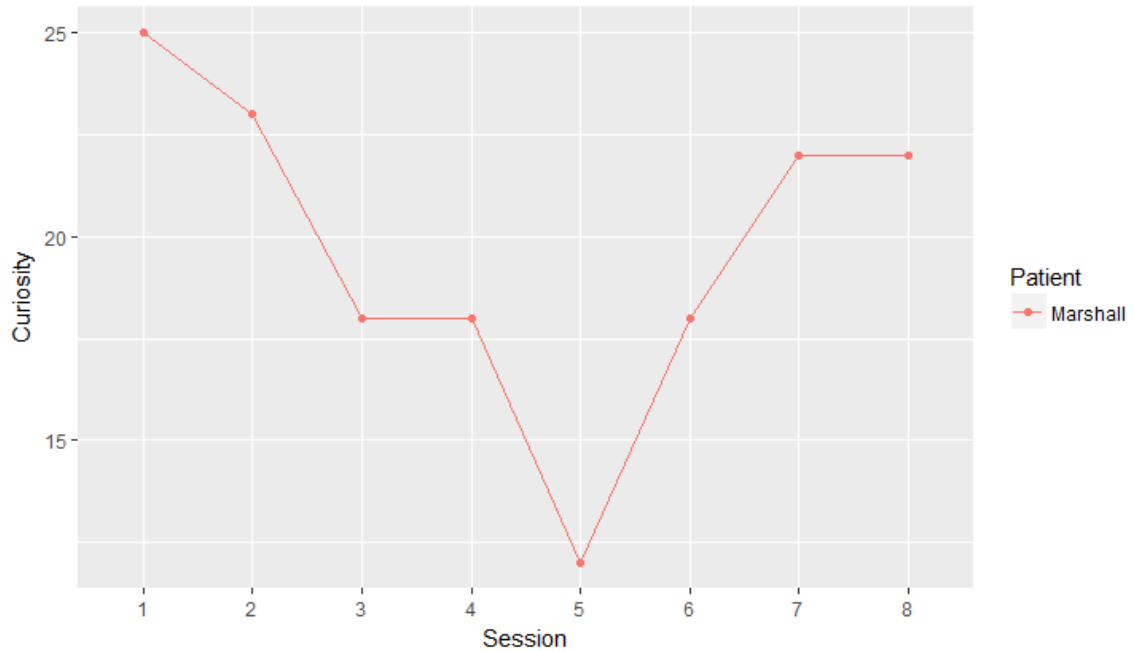


Figure 17. Toronto Mindfulness Scale Curiosity – Marshall.

The mean of Marshall's Decentering score was 23.00, with scores ranging from 14 to 31. Marshall's Decentering scores demonstrated a similar pattern to his Curiosity scores with a high score at Session One, a decline through Session Five, and then increasing again. The only difference was during Session Eight, when Marshall's Decentering decreased again. His Session Eight score was decreased as compared to his Session One score.

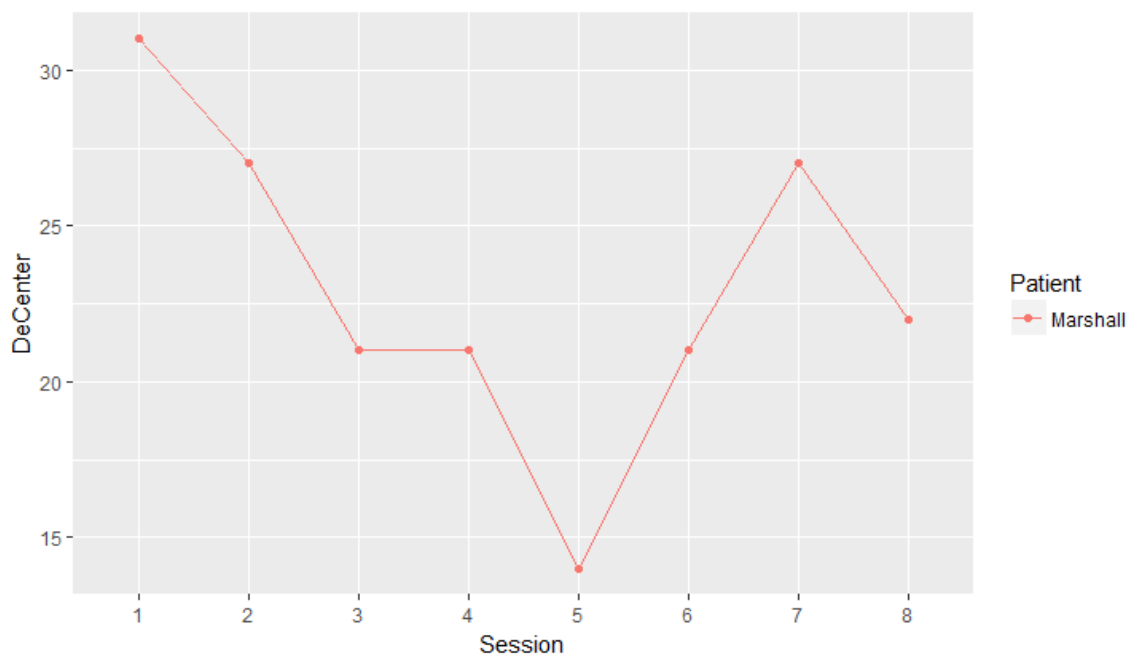


Figure 18. Toronto Mindfulness Scale Decentering – Marshall.

A Wilcoxon signed-rank test compared each of Marshall's Session One scores with his Session Eight scores. The resulting p-value was 0.01, which is a significant decrease in mindfulness over the duration of the study.

Table 28

Toronto Mindfulness Scale – Marshall

Toronto Mindfulness Scale	
Curiosity	
Mean of Total Scores	19.75
Minimum Score	12.00
Maximum Score	25.00
Decentering	
Mean of Total Scores	23.00
Minimum Score	14.00
Maximum Score	31.00
Overall	
Comparison of Session 1 to Session 8	$p = 0.01$

Summary of quantitative analysis by participant. Overall, there were few significant decreases in stress and increases in mindfulness through the duration of the study. Most of the participants had variable trends on both perceived stress and mindfulness scores. Danny did have a significant reduction in perceived stress from Session Seven (his last session) to the Follow-Up Interview, but it is difficult to determine whether that was due to the knitting intervention or an improvement in his general mental health and personal circumstances because he did not knit between those two time points. Conversely, Grace had a significant increase in perceived stress between Session Eight and the Follow-Up Interview. Stephanie, Jeffrey, and Marshall did not have significant changes in perceived stress in either direction.

Grace had a significant increase in overall mindfulness, although her scores on the Curiosity and Decentering subscales were variable. Marshall had a significant reduction in overall mindfulness, which was in the opposite direction expected. Jeffrey's mindfulness decreased slightly, and Stephanie's overall mindfulness remained relatively stable over the course of the study, although there were variations in her Curiosity and Decentering scores. Neither Danny, Stephanie, nor Jeffrey had any significant changes in mindfulness.

Qualitative Analysis

A qualitative analysis was used to assess for the experience of individualized knitting lessons with the researcher. All instruments were written by the researcher and a combination of written and verbal feedback was used. Participants were given the opportunity to write down comments after each session, and then their overall experience was assessed during the Follow-Up Interview several weeks after study completion. All participants responded to the Post-Session Question with no refusals. Four of the five participants completed the Follow-Up

Interview. Despite attempts made to obtain the final interview, that participant was lost to follow-up.

Post-Session Question. To evaluate the experience of the participants during each knitting session, each was given a Post-Session Question. Participants were asked, “Overall, how was the session for you today?” and were instructed to write down their answers. A total of 36 sessions were completed across all participants, and all wrote a comment at the end of each session. Table 29 summarizes this information.

Several themes arose from these written comments. The reactions of the participants were largely positive, and many used words such as, “Good,” and, “Great,” to describe their sessions. These positive comments were consistent throughout the eight sessions, occurring after beginning, middle and the final sessions. At no point during the intervention did participants report not finding at least some enjoyment from the experience.

In addition to positive comments, during the earlier sessions several participants expressed excitement about looking forward to learning a new skill. For example, Grace wrote, “It was very good. I enjoyed today. I look forward to knitting a scarf and a hat.” Jeffrey also wrote that he was “eager and excited,” for that day’s session, and that, “Overall, I’m very excited to learn something new.” By Session Two, Stephanie stated that she was enjoying the learning process and that building on her skills each week was giving her a sense of accomplishment.

Only Marshall noted dissatisfaction with the slowness of the learning process. During the initial consent meeting, he had stated that he thought that he would be able to pick knitting up quickly due to his art background. He was somewhat frustrated and disappointed when he was not able to learn as fast as he had anticipated.

As participants completed the sessions, the comments after sessions 3-5 focused more on the learning process. After Session Three, Grace wrote, “It was very good. I enjoy learning difficult patterns in knitting.” Stephanie observed her anxiety spike when someone approached and interrupted the session. Once the session was moved into a classroom away from others, she regained her calm feelings. “Otherwise,” she said, “it was fun learning new techniques and tips.” After Session Three and Session Four, Jeffry noticed that the knitting process included learning how to focus his attention. He observed that when his mind wandered he tended to make more mistakes, and that when he redirected his attention to the task in the present moment, he had more success.

By the final sessions, participants made observations about the experience of learning and how they could use their new skill in the future. For example, Danny wrote, “I learned a lot about myself, and the world.” Stephanie was proud of what she had accomplished and planned to continue knitting on her own. Even with a slow start, after Session Six Marshall wrote, “It was good learning. Much quicker. Only small problems.” After Session Eight, Grace commented on the fact that she had finished a headband and was still working on the scarf.

Another theme that ran through many of the session comments was that knitting was relaxing, calming, and meditative. As early as Session One, Danny wrote, “The session was very fun and relaxing and very interesting/joyful.” He repeated a similar sentiment after Session Five. Stephanie arrived at Session Five a few minutes late agitated after a stressful commute and noticed that after knitting and chatting for a while she was able to achieve a calmer mood. She wrote, “I came into the session feeling agitated from some events prior but found that knitting and chatting calmed my mood. Thank you!”

Stephanie was the only participant who commented specifically on the individual format of the lessons as compared to the group. After Session Six she wrote, “I really appreciate the one-on-one tutoring for knitting compared to my experience knitting in a group setting. The one-on-one attention really helped motivate me and allows me to learn at my own pace.” However, even though the others did not specifically comment on the format, they did echo Stephanie’s appreciation for the individual attention. For instance, Danny said that he enjoyed talking to the researcher and would often discuss aspects of work and relationships with his children and former spouse. After a particularly stressful day, Grace noted that she was able to work out her thoughts and felt better. Jeffrey was very interested in his process of knitting, and it is doubtful that he would have been able to explore that to the same depth in a group setting.

Overall, participants were positive about their experience. They seemed to benefit from learning to knit as well as working with the researcher. The only negative comments related to disappointment in the speed of the learning process and pace of knitting, or discomfort with the milieu setting of some of the lessons due to Café space restrictions. By the end of the study, most participants were appreciative of the time spent with the researcher and expressed an enjoyment of knitting with intent to continue in the future.

Table 29

Post-Session Question

Session Number	Written Comments by Participants
Session One	<ul style="list-style-type: none"> • The session was very fun and relaxing and very interesting/joyful. • It was very good. I enjoyed today. I look forward in to knitting a scarf and hat. • It was great. It started off with me feeling a bit low energy but once we started knitting I felt really present and focused and thoroughly enjoyed the process. • I felt very eager and excited for today session. I also felt somewhat anxious as I was late for my session because I don't like to be late. Overall I'm very excited to learn something new. • It was ok I guess. Felt slow she was great though.
Session Two	<ul style="list-style-type: none"> • I very much enjoyed learning how and what knitting can help me. • It was a good session learning. Knitting is a good experience. • I had so much fun! I really enjoyed the learning process building on my skills step by step a little bit more each week. It gives me a sense of accomplishment. • It was great. I learned that some parts of my knitting where I messed up were consistent in some way so I'm gonna try and learn to notice my thoughts or emotional feeling when I get to that point. I'm [indecipherable] in [indecipherable] and excited about learning more. • Yes it was good give her a great grade.
Session Three	<ul style="list-style-type: none"> • Curious and enjoyable. • It was very good. I enjoy learning difficult patterns in knitting. • It was great! I felt a bit anxious when someone approached us and interrupted during our knitting session because I felt self-conscious but didn't want to be rude. Otherwise, it was fun learning new techniques and tips. • Awesome. I notice that when I didn't think of anything I focused on my knitting it would flow, then I would think of something else like my son I caught myself and focused back on my knitting. • Good :)
Session Four	<ul style="list-style-type: none"> • I was very happy that I didn't miss my class. • It was good experiencing new techniques. • It felt good. I was a little tired and less motivated than the past few weeks but still enjoyed the session and building upon my skills.

Session Four (continued)	<ul style="list-style-type: none"> • I notice that as I started to wander my thoughts I referred back to my knitting and stayed focus on it rather than letting something else distract me. I enjoy my appointments for the fact it is teaching me more about commitments and following through. • Good :)
Session Five	<ul style="list-style-type: none"> • The experience get more relaxing and enjoyable. • Today's session was good. Learning different things (patterns) about knitting was fun. • I came into the session feeling agitated from some events prior but found that knitting and chatting calmed my mood. Thank you! • Awesome!!! I was able to concentrate more as I experienced something new. I also had caught myself about to mess up on a stitch and I just stop & let it go & dropped the knitting until I focused again.
Session Six	<ul style="list-style-type: none"> • I enjoyed talk and knitting at the same time. • It was good worked out my thoughts. I feel better now. • I really appreciate the one on one tutoring for knitting compared to my experience knitting in a group setting. The one on one attention really helps motivate me and allows me to learn at my own pace. Thank you. • It was good learning much quicker only small problems. :)
Session Seven	<ul style="list-style-type: none"> • I learned a lot about myself, and the world. • Learning more about knitting my hat. • As with all my sessions to date, it was very relaxing, calming for the mind, and was fun to do in a supportive environment. I really appreciate the one on one attention! Thx! • Much easier :) Good.
Session Eight	<ul style="list-style-type: none"> • I finished a head band which was awesome. Still trying to finish a scarf. I enjoy knitting. • Thank you for being such a great and patient teacher. I feel very proud of what I've been able to accomplish in all the sessions. I think I will continue to keep up knitting because my experience with this study has been so positive and knitting has proven to be such a great creative outlet and relaxing, meditative practice. • Last time :(Your internship :(

Note. Some minor edits were made to spelling for clarity. Punctuation and grammar were left intact.

Follow-Up Interview. After all the sessions were complete, a Follow-Up Interview was conducted with four of the five participants, either in-person or over the phone. The researcher was unable to reach Marshall after several attempts via phone, and Recovery Café staff reported that he had discontinued his Café membership.

Interviews were recorded, transcribed, and coded by the researcher. Participants were asked a total of 12 questions about their knitting since completion of the study, substance use, and overall experience. This included finding out what they thought was easy or hard, what was meaningful, what they enjoyed, and whether there were any suggestions for future improvements. Each question is listed below.

1. About how many days in the past week did you knit?
2. About how many days in the past week have you used drugs or alcohol?
3. From your point of view, what was the purpose of this study?
4. What was the overall experience of this project for you?
5. What stood out to you as most important or meaningful?
6. What parts of knitting did you enjoy?
7. What was difficult about learning to knit?
8. What was easy about learning to knit?
9. Do you think you will continue to knit in the future? If yes, what are some of your reasons for knitting?
10. How was your experience working with the researcher?
11. What suggestions do you have for improving this experience?
12. Other comments.

In the following sections, the responses to each question are summarized. See Table 30 for excerpts from the Follow-Up Interview. Data from the first two questions regarding knitting frequency and substance use are summarized in the Quantitative Analysis section above.

Purpose of study. When asked about the purpose of the study, some participants were unsure of the precise objective. However, all identified that at least part of the purpose was to learn to knit. Two participants mentioned that it had to do with people who were struggling with “hard times,” and substance abuse. Danny guessed that it had to do with helping people calm down, and Stephanie mentioned mindfulness. Jeffrey thought the study had to do with helping people focus and not become distracted by emotions.

Overall experience. Consistent with the Post-Session Question, the overall experience reported by participants was positive. Participants stated that it was, “Excellent,” “Interesting,” and that it helped them with mindfulness and staying focused. Jeffrey noted that it helped him look at things differently and encouraged him to pause to think before making hasty decisions. Stephanie indicated that she had found a new hobby which gave her “something to do.”

Most important or meaningful. There were a variety of responses to this question. They ranged from commenting on the act of knitting itself, the projects, and the process of the experience. Grace and Jeffrey focused on the final products, although Jeffrey added that he felt a sense of accomplishment. Stephanie remarked on how calming the process was, and Danny enjoyed the social aspect of knitting with the researcher.

Enjoyment. All of the participants agreed that they found enjoyment from producing the projects. They liked having a visual, tactile representation of their progress. Jeffrey stated that even though it was repetitive, he got satisfaction from seeing the scarf or the hat growing, which

kept him motivated. Stephanie had similar comments, expressing a contrast between previous jobs where she had a more difficult time tracking her progress.

Difficulty. When asked what was the most difficult, two participants stated that the process was tedious at times and required patience. Jeffrey found that mastering the precise movements required to manipulate the yarn was challenging, but he was eventually able to have success. For Jeffrey, another difficult aspect of the study was following through with session appointments. One of his goals was to complete what he started, but unfortunately his life circumstances prevented that.

Stephanie noted that she sometimes found it frustrating when she became stuck between sessions and was unable to contact the researcher for help. However, she observed that instead of waiting until the next session, she would often either look techniques up on YouTube or solve the problem independently, which gave her a sense of accomplishment. She admitted, “I think that gave me even more satisfaction that I was able to figure it out on my own before I came to you.”

Easy. Many of the answers to the question, “What was easy about learning to knit?” reiterated the answers to previous questions and the post-session comments. Participants mentioned that they enjoyed talking to the researcher and appreciated the individualized format of the lessons. Grace said that it helped her with stress, while Jeffrey focused more on the mechanics of knitting. He stated that both the knit and purl stitch felt easy for him.

Future knitting. All of the participants stated that they planned to continue knitting in the future. Danny was looking forward to challenging himself with more complex projects using creative materials. The others reported that it would give them a way to stay busy. In addition,

Stephanie thought it was an activity she could continue with her niece. Jeffrey reported that it was a way to keep his mind off using drugs and alcohol.

Experience with researcher. Although all of the participants made positive statements about working with the researcher, these responses can be biased because the researcher posed the question. That said, the participants seemed genuinely pleased with their experience and all attrition was due to outside circumstances and not issues with the researcher. Danny said, “I really loved the sessions,” and others mentioned that the researcher was pleasant and easy to converse with. They appreciated the time, patience, and thoughtful feedback that was given to them throughout the study.

Suggestions for improvement. When asked for feedback to improve the design of the study, both Grace and Jeffrey stated individual factors, such as knitting more between sessions and making scheduled appointments. Stephanie stated that she might have benefited from sessions that were 90 minutes instead of one hour, because the time seemed to go by quickly. She also suggested that having visual instructions available may have been useful for the times when she was stuck in between sessions.

Other comments. Two of the four participants who completed the Follow-Up Interview had some additional comments. Danny expressed wanting to knit with the researcher again after she completed her internship. Jeffrey, on the other hand, showed appreciation for the researcher coming into his life and helping him with a new skill. He was excited to be able to set a good example for his children, who may have previously thought that knitting was only for women. Jeffrey said,

I have boys, a lot of boys, and they're like, "What are you gotta do that for? It's dumb, it's gay, it's only for women." I don't care what people say. I knit, so what? You know what I mean? It builds character within me. I'm still clean, I'm still sober, I haven't started to use, or to drink, nothing. And whatever challenge I have, to learn something new, I can.

Table 30

Excerpts From Follow-Up Interview

Excerpts from Follow-Up Interview
<p>From your point of view, what was the purpose of this study?</p> <ul style="list-style-type: none"> • “To see how knitting affects people who are going through hard times and trying to get straight. To see if it has a positive effect on that. To see if people can help calm down or whatever. And it does, it helps. And it’s fun also.” • “Learn how to knit, I guess. Learn how to knit.” • “Actually, I don’t know too much about it! I just know for myself that I thought it would be cool to learn how to knit. Oh, I know, I thought it had to do with addiction and...my guess is that utilizing knitting as a strategy to aid in perhaps mindfulness or...I don’t know too much.” • “It was to stay focused, because I know there’s time when my mind is just off, and I let things bother me...Knitting helped me to stay focused and how keep track of what I’m doing, to focus on one thing when my mind starts to wander off and gets distracted...And all my emotions, you know if I started to get stressed, I’d look for it, because it was a comfort, you know. And also trying to finish what I started, from the beginning, I said I always had a problem completing things, following through.”
<p>What was the overall experience of this project for you?</p> <ul style="list-style-type: none"> • “It was excellent. I really enjoyed it.” • “It was interesting.” • “It was very positive. I got to learn something that has now become a new hobby for me. I really enjoy it and my initial reaction was that it was a really good practice for me, to practice mindfulness and being present in the moment and also just giving my hands something busy to do.” • “It helped me to look at things differently, to stay focused. I caught myself, I would catch myself getting—for example, at work, I’d get excited and start jumping up and down and making decisions without thinking them out or starting to look around and focus.”
<p>What stood out to you as most important or meaningful?</p> <ul style="list-style-type: none"> • “Having somebody teach me something that I can do and take the time to show me how to do it, that meant a lot to me.” • “Learning how to make a hat and a scarf. A headband and a scarf.” • “I really like it as a practice because it has a calming effect for me. I notice when I feel agitated or I really don’t feel like doing anything else, I almost always feel like I want to knit. Especially when I’m irritated, too, it’s helpful because like I said, it has a calming effect. It’s a way for me to get out of my head.” • “That I could do it! That I was accomplishing something that—say with the scarf part, when it was just stitch, stitch, stitch, then when I learned how to purl, and I saw how it would look different when I’d purl one, then stitch the next

row, then a purl, then if I stitched, then I just did a purl, how the design came out. And it was just, it was cool, like I could design whatever pattern I wanted. Being creative.”

What parts of knitting did you enjoy?

- “The part where you’re actually producing something after a little while. That it’s actually possible to do it.”
 - “Making a scarf.”
 - “I like hobbies that are tactile in nature, something that I can do with my hands...I’m very visual and...I liked that there’s something tangible, that there’s a finished product at the end. I like to be able to track my progress...The kind of work I’ve always done before is more analytical and, because I’m more visual, I like to see how far I’ve gone, and I like the project nature of knitting, because I start from scratch and end you up with something really cool...It’s a good mindfulness practice and it’s calming.”
 - “I enjoyed the purl and the parts to start making a cap. Even though it was repetitious, it just keeps getting long and wider and wider...I liked the whole concept and using the big needles, and then the smaller ones. And when I didn’t have a needle...to improvise using chopsticks. Yeah, because it’s like push forward, no matter what. I used what I have to keep going...to not quit.”
-

What was difficult about learning to knit?

- “It wasn’t really difficult. It was a little tedious.”
 - “It takes a lot of patience.”
 - “The only times that it was difficult was when I didn’t have you at my immediate disposal where I can ask you a question and I knew I needed to wait for the following week when I got stuck. I just noticed that I would get frustrated with myself when I would try something over and over and over again, literally, and not know how to fix certain things...But I also felt a sense of accomplishment, too, when I was finally able to figure it out...I would just look up YouTube videos or just ponder it. Or sometimes it would finally dawn on me, and then I would have this epiphany that no YouTube video showed me or anything but I just finally figured it out on my own. I think that gave me even more satisfaction that I was able to figure it out on my own before I came to you.”
 - “The movement of my hands and how to control the yarn and my hands, and how to put the needle through the thread, and through the loop, and then loop the yarn through it and, it was hard, kind of hard at first, I had to focus on what I was doing and keep going with it rather than being too mechanical...it was hard at first, but then I became comfortable with it. The beginning when it was—it was also kind of hard. Starting it. Following through. I can’t even remember the word! Yeah, casting on, because the way I had to hold the yarn, and then cast on, it was hard at first, I had to go real slow at it, you know? And I’d get ahead of myself, because, yeah, I’d notice when I had the yarn backwards, it doesn’t go that way, I had to go the opposite way, but that was hard. And the hard part was learning the difference between the stitch and the purl, the location.”
-

What was easy about learning to knit?

- “I don’t know. Sitting there and enjoying it, talking to you.”
- “Helps you with stress.”
- “The easy part was the fact that you work with me one-on-one because I don’t think I would have had the same experience if it was in a group setting. Or if I just tried to learn it on my own. I think it would have been a lot more frustrating and I may have just given up or not have even tried in the first place...The fact that I had this to look forward to every week...meeting with you, and the fact that it’s one-on-one, yeah that was really helpful and motivating.”
- “The stitch. Yeah, the stitch was easy, and then when I got to purl it was easy. After I did it a couple of times.”

Do you think you will continue to knit in the future? If yes, what are some of your reasons for knitting?

- “Yeah. I want to see what I can do as far as thinking of something crazy, some kind of crazy material, some kind of clothing for myself.”
- “Yeah. Keeping busy. Something to do.”
- “I know I will, yeah thanks to you, you made your dissertation into something that’s become a new hobby for me, and it’s also something that I can enjoy doing with my niece, so now I have another activity that I can do with her, and that would also further encourage me to keep it up, because yeah, it’s just another way I can spend time with her and bond with her over knitting. I want to also keep up this hobby because I just want to include more self-care activities in my life because I’m working on my overall well-being and I have a tendency to not do these fun activities like knitting because, out of guilt. I’ve had this mentality in the past where I—like a “should” mentality, like I should be doing something more productive, or I should be doing something that I don’t really feel like doing...So this is good to have this kind of activity to encourage more balance in my life.”
- “It calms me, when I’m by myself. When I have nothing else to do, I’ll just sit there and pass the time, it makes me feel relaxed. I don’t get impatient, I can sit there. And I’m okay with the time that I have because I’m doing something. Like when I go to work, I take it with me to work, and I get there like an hour and a half early, and I’d rather knit than just sit there and listen to music...rather than dwelling on problems...I haven’t had thoughts about using or drinking because I stay focused on what’s right there. It consumes my time, I don’t have to worry about when subconsciously thoughts of using pop up or desires, or reflect on it.”

How was your experience working with the researcher?

- “It was excellent. I really loved the sessions.”
 - “Good. Easy to get along with.”
 - “Really good. I really like you, as a person, and that was also part that was really nice to have these weekly meetings, because it gave me something to look forward to. I know the focus is on knitting, but I really enjoyed just having conversations with you during our knitting sessions...Now that it’s over, I feel
-

a little sad because I don't have these meetings to look forward to! But yeah, that's fine, you're onto bigger and better things, though. And you've introduced me to something that I think I will carry on with."

- "It was fun. It was exciting because you took the time to show me, you were patient with it..."
-

What suggestions do you have for improving this experience?

- "I'm really not sure. I don't see any way to improve it, really. I really liked it the way it was one-on-one, you know. It really made it fun for me."
 - "Trying to knit some more."
 - "I think it was great. I can't even really think of anything... Well, the only suggestions I have were things I already did myself, looking at YouTube videos, or just - I'm also really visual, so maybe some visual instructions of what we just practiced... That's all I could really think of, but those are all things I could have easily done myself which I did. It was a good amount of time, and it went by so fast, I think most of the time, not that it needs to be longer, but I could have easily done it for a couple of hours, or an hour and a half, even... It doesn't necessarily need to be longer, it was just because I was enjoying it, that's why. I mean I could have just done it for hours."
 - "Making my appointments."
-

Other comments:

- "I hope you come back and I'd like to knit with you again."
 - "No, you can't control everything... You're a blessing because you came in to my life for a reason, I wanted to learn how to knit when I first came to the Recovery Café. It was something that I wanted to learn how to do when I talked to the other people who worked there, and I went into the classroom, and then they introduced me to you, because you were doing a study in exchange to learn how to knit. So I was excited about that. I hope everything goes well in your life, for your study. You can always contact me and ask me how my life is going, if you'd like a follow-up, because I mean, this helped me, it really has. It's an example to my kids, like, you know, I have boys, a lot of boys, and they're like, 'What are you gotta do that for? It's dumb, it's gay, it's only for women.' I don't care what people say. Yeah, I knit, so what? You know what I mean? It builds character within me. I'm still clean, I'm still sober, I haven't had to start to use, or to drink, nothing. And whatever challenge I have, to learn something new, I can. I take it with me at work, whatever little things I learn with knitting, I take it to work and I'm not afraid to operate big equipment, I'm not afraid to take a chance, you know. I'm gonna mess up, just like with my knitting where I miss a stitch or, you know, just keep going. Because if I try to correct it I'm going to mess up more. If I get frustrated I just put it down. So it helps with that."
-

Summary of qualitative analysis. The questions were used to identify eight overall themes: positive experience, learning process, working with the researcher, producing something, calming/stress reduction, mindfulness, creative, and session format. The most common theme, which was mentioned 24 times throughout the interviews, was that the experience was positive. Words such as, “excellent,” “fun,” “enjoyment,” and “interesting,” were used by all the participants.

The second most frequently mentioned theme was comments about the learning process, which ranged widely. Participants noted that learning the stitches took patience, and for some it was easier than for others. One participant found it to be a bit tedious, and another was frustrated by not being able to fix mistakes independently. Another participant also expressed frustration at having to try new skills repeatedly. However, participants also found that learning to knit was good practice and that following through with a commitment increases the benefits obtained from the skill.

The act of producing something was mentioned nine times, which was the third most common theme. Participants enjoyed making an item that they could either keep and wear or give away. One participant wanted to give her finished hat to her niece. They enjoyed the feeling of satisfaction and accomplishment when finishing something and liked to be able to track their progress as the sessions went along.

The fourth most common theme was that the respondents enjoyed working with the researcher. They said that she was easy to get along with, patient, and interested in their process, and they liked talking with her while learning to knit. One person indicated benefiting from the one-on-one format of the lessons, stating that the individual attention was much preferred over less personal group lessons. The only negative aspect of working with the researcher was that she

was not available for help between sessions, so if one became stuck, they either had to wait until the next session or figure things out for themselves.

Calming and stress reduction was remarked on seven times, and mindfulness was mentioned an additional six times. Although these themes seem similar, they have been separated out because they are slightly different. Participants stated that they thought the purpose of the study was to see if knitting helped people reduce stress, and there were comments about how knitting helped them calm down when agitated. Mindfulness, on the other hand, can also be calming but it also has to do with attention and focus. For example, participants stated that knitting was a way to hone their attention and to not be distracted by thoughts of substance use or other life stressors. They endorsed the theme that knitting was a way to help them practice mindfulness.

The least common theme was the creative aspect of the study. A participant recalled how he creatively used chopsticks in place of needles when his needles broke. This participant also took some time to experiment with different knit and purl patterns, which the other participants did not do. Overall, creativity was not as important a theme as the social and tangible aspects of the study. This may have been due to the structured nature of the study curriculum, which had everyone making the same two basic items.

Chapter 5: Discussion, Recommendations, and Conclusion

Summary and Analysis of Findings

This study hypothesized that learning to knit would reduce perceived stress and increase mindfulness of participants. The change in stress would be measured by the Perceived Stress Scale, completed at the Baseline Interview, prior to every knitting session, and at the Follow-Up Interview. Mindfulness would be measured using the Toronto Mindfulness Scale administered after each knitting session. Additionally, time spent knitting and substance use between sessions would be tracked to see if they had any effect on outcomes. The Baseline and Follow-Up interviews included a qualitative component to obtain the subjective experience of the participants. It was hypothesized that learning to knit could be difficult at first, but after the participants became comfortable, the experience would be positive.

The entire study was completed by two of the five participants: Grace and Stephanie. Danny and Jeffrey withdrew early, with Danny only completing seven sessions and Jeffrey completing five sessions. Marshall completed all eight knitting sessions but was unreachable for the Follow-Up Interview.

Results from the quantitative portion of the study did not yield statistically significant results. Total scores from the Perceived Stress Scale were combined and averaged, and various time points were compared to determine if there was a reduction in stress. Across all participants, there was no statistically significant reduction in stress when the following comparisons were made: Baseline to Session Four, Session Four to the last session, Session Four to Follow-Up, Baseline to the last session, and Baseline to Follow-Up.

The Toronto Mindfulness Scale measured mindfulness using two scales: Curiosity and Decentering. Scores for each scale were averaged across participants and the following time

points were compared: Session One to Session Four, Session One to the last session, and Session Four to the last session. Curiosity increased slightly across all time points, but Decentering was variable. Decentering decreased from Session One to Session Four and from Session One to the last session, but it increased from Session Four to the last session. However, none of these changes were statistically significant.

When results were examined by individual participant, most had variability in both perceived stress and mindfulness. Danny's stress was high and low throughout the study, and when his Baseline score was compared to his last session, the decrease in stress by two points was not significant. There was, however, a significant reduction in his stress between his last session and the Follow-Up Interview. Danny had a general upward trend for Curiosity, which then decreased for the last session. His Decentering score increased or remained the same for five sessions, and then decreased during the last two. There was also a decrease of overall mindfulness at session Seven, and Danny did not have a significant increase in overall mindfulness. It seems likely that the knitting sessions were not enough to reduce his external life stressors and mental health difficulties.

Grace's perceived stress was also variable and there was an increase at the Follow-Up Interview. From Baseline to Session Eight, perceived stress decreased five points, but this was not statistically significant. Between Session Eight and the Follow-Up Interview, the results were statistically significant but in the opposite direction of the hypothesis with a 14-point increase in perceived stress. With the exception of Session Four, Grace's Curiosity increased over the course of the study, and there was a variable upward trend for Decentering. When Session One was compared to Session Eight for overall mindfulness, Grace did experience a significant increase.

Although Stephanie's perceived stress varied from session to session, when her Baseline Interview score was compared to her Session Eight score, it showed a significant reduction at the .10 level, but not at the .05 level. Her perceived stress did increase between Session Eight and the Follow-Up Interview, but the change was not large enough to be significant. Stephanie's Curiosity and Decentering increased and decreased throughout the duration of the study. There was not a significant change in her overall mindfulness when Session One was compared to Session Eight.

Jeffrey's perceived stress increased at Session Three, then decreased for the last two sessions and Follow-Up. Curiosity was variable from session to session, but Session One remained the same as Session Five, his last session. Jeffrey's Decentering was highest during Session One, was variable thereafter, and never returned to the Session One level. His overall mindfulness actually decreased, but not enough to be statistically significant.

Marshall reported his perceived stress to be at the lowest during the Baseline Interview, and the highest at Session One. From his Baseline Interview to Session Eight, his stress increased but not significantly. Curiosity was highest in the beginning and never returned to Marshall's Session One score, and Decentering was similar with the exception that there was a decrease at Session Eight. Over the course of the study, Marshall's mindfulness decreased.

Few of the quantitative data from the Perceived Stress Scale yielded the hypothesized results. This could be a failure of the intervention, although there were many other factors that were likely contributing to the results, such as the small sample size. Grace, Stephanie, and Marshall all had moderate to high perceived stress throughout the study. Danny did report low stress during Session Five and Session Six, but his perceived stress spiked when he was experiencing mental health issues. Jeffrey reported low perceived stress at the Follow-Up

Interview, which could be attributed to knitting or the fact that when he started the study he was homeless, and by the Follow-Up session he was in stable housing with steady employment.

The Toronto Mindfulness Scale results were also not in the direction hypothesized. Mindfulness can be a challenging state to enter into in a busy milieu setting, and participants may have also had difficulty conceptualizing their level of mindfulness using only the items on the rating scale. Positive changes in mindfulness would likely be easier to detect in a quieter setting without the researcher and other distractions. Mindfulness might also be difficult to achieve during the learning process that can be stressful, but may be obtained later as the participants become more comfortable with the skill.

While the quantitative results did not support the hypothesis, the qualitative reports were more encouraging. Participants completed a Baseline Interview prior to all sessions, which consisted of questions about their history with substance use, their experience with treatment, and what has worked or hindered their recovery. Additional background information included basic demographics, medical issues, their activities at the Recovery Café, and why they were interested in participating in the study.

After each session, participants were asked to write down any feedback they had about their experience. Results from this question were generally positive. Participants commented on various aspects of the intervention, such as the individualized format, the learning process, the milieu setting, and working with the researcher. Words such as, “excellent,” “fun,” and “enjoyment” were used. The only negative or constructive comments were about situational factors such as discomfort with other Café members approaching the knitting lessons. One participant even reported that the lessons “flew by” and she wished they were longer.

The Follow-Up Interview was conducted several weeks after the participants had finished all the knitting sessions. Four of the five participants completed the interview. Questions were designed to understand the subjective experience of the participant, and included items asking about what they thought the purpose was and what was most meaningful. Participants were given the opportunity to comment on what was difficult, whether they thought they would continue knitting in the future, and what it was like working with the researcher. All four participants reported that they would indeed keep knitting and that they enjoyed the social interaction during the lessons.

When asked to give suggestions for future research, two members stated things that they could have done differently to increase their success, such as knitting more outside sessions and consistently showing up for appointments. One participant did suggest longer sessions because often 60 minutes felt too short to accomplish everything she wanted. The only other suggestion was to have visual materials available to participants to take home, such as patterns and instructions.

While the statistical results were not significant, the qualitative data from this project were promising. Learning how to knit may not affect stress in the short term, particularly when there are serious life stressors, such as unstable housing and employment. It also may not increase mindfulness when done in a busy setting, especially during the early days of learning. However, the qualitative data suggest that knitting is an activity that has a positive impact. It has the potential to be one of many useful tools for those recovering from substance use.

Implications

This study contributes to the available literature on alternative therapeutic techniques to address the challenges that are associated with a history of substance use disorder. Although

knitting has existed for centuries, use as part of a therapeutic technique is relatively recent. This project did not use a sufficiently large sample size to find statistical significance with the analyses. Nonetheless, the qualitative reports demonstrate that knitting has the potential to be a useful tool in a therapeutic setting, particularly in the one-on-one format. This study showed that knitting may possibly (a) increase feelings of calm; (b) increase relaxation; (c) provide a distracting activity; (d) encourage individuals to be creative; and (e) produce a tangible object.

Increasing feelings of calm can be helpful to all individuals and particularly those who are experiencing life stressors and are in recovery from substance use disorder. Negative emotional states are one of the risk factors for relapse (Marlatt & Gordon, 1985). Knitting is an activity that can be done to increase relaxation and distraction as a way to cope with stressful situations and emotions without turning to substance use. Having a tangible object may increase feelings of accomplishment as the individuals have physical evidence of their creativity and effort. While knitting should not be used in place of other evidence-based treatments, preliminary results from this study suggests that it may be an additional means of support that could help an individual stay in recovery.

Limitations

This study includes various limitations in design, implementation, and analysis. Limitations with the study setting and participants likely influenced the outcomes. Uncontrolled and unforeseen variables, such as the milieu setting and participant stress, may have also had an impact on the results. Limitations due to lack of resources may have contributed to biased responses from the participants.

Milieu setting. Due to the limited resources at the Recovery Café, its Director of Programs had concerns about hosting this project. The Café offers many classes and groups throughout the day, and the primary concern was availability of space to accommodate 40 one-hour-long knitting lessons and 10 interviews. Although it was necessary for the Baseline and Follow-Up interviews to be administered in confidential spaces due to the sensitive nature of the discussion topics, the Director requested that the knitting lessons be conducted in the common area of the Café if there was not an open therapy room or classroom.

During the course of the study, many of the lessons were completed in the common space, which was typically busy and noisy. This allowed for interactions from members of the Café freely approaching the knitting lessons. Knitting was an unusual activity for others to witness in the common area; thus, it frequently attracted attention. Responses from Café members ranged from passing interest and questions, to other members sitting down and including themselves in the session without invitation.

Reactions from the study participants were varied. Some participants did not have an issue with others joining and may have even appreciated the attention. For other participants, being approached while learning a new skill was distracting and induced feelings of anxiety. For those participants, every effort was made to find a classroom in which to hold sessions, although it was not always possible.

Whether the response from the participant was positive or negative, the interruptions and distractions may have had an impact on study outcomes. Negative feelings in response to being observed by others may have increased stress during the session. Those who experienced positive or neutral reactions may have been less able to remain mindful and focused on the task when they were frequently interrupted or distracted by their surroundings.

Participant sample. A non-randomized convenience sample of volunteers was used for this study, thus there was no true control group. With a control group, a future study can explore whether a causal relationship between knitting, mindfulness, and stress reduction exists.

Unfortunately, the results in the current study cannot be attributed to a single variable, such as knitting. It is possible that any positive outcomes were due to other factors, such as the rapport built between the researcher and the participant during lessons, improvement in external life circumstances, or participation in other therapeutic groups and classes at the Recovery Café.

Participation and scheduling. The Recovery Café was only open for six hours per day, five days per week, and closed on Sundays, Mondays, and holidays. The researcher was not an employee of the Recovery Café and had schedule commitments elsewhere that further reduced the number of hours available for appointments. Obtaining approval from the Recovery Café took longer than expected, and by the time permission had been granted there was a limited window in which to collect the data. These limitations prevented two participants from completing all eight sessions.

All sessions were scheduled individually with each participant according to participant and researcher availability. Some participants had a set session time and attended all sessions with no issues other than occasional tardiness. Other participants had more variable schedules and frequently rescheduled or neglected to give notice for a missed appointment. After failing to appear for several scheduled sessions, one participant finally completed Session Seven. This participant was unable to complete Session Eight due to closure of the data collection period. Another participant had to withdraw from the study after Session Five due to not meeting the requirements for Café membership because of being scheduled to work during all Café hours.

One participant completed all sessions but was unreachable for the Follow-Up Interview for unknown reasons.

Researcher bias and response demands. The researcher designed the study, recruited participants with the assistance of the Recovery Café staff, implemented the intervention, and collected the data. Without an independent person collecting data, the researcher may have influenced the results, either consciously or unconsciously. In addition, participants knew that the same person conducting the lessons would also analyze the data. Thus, they may have responded in such a way as to meet the perceived goals of the researcher. This could have been particularly evident during the Follow-Up Interview when the researcher asked about their experience working with the researcher. If there had been any negative feedback, participants may not have felt comfortable disclosing it directly to the researcher. A blind process between the principal investigator and an assistant could further advance this research.

Uncontrolled variables. Although the sessions were not intended to be traditional mental health therapy sessions, all of the participants chose to carry on conversations with the researcher while knitting. The researcher attempted to remain neutral, but also did not discourage conversing. The discussion topics were generally directed by the participant and ranged from knitting techniques to more personal matters such as family, relationships, and housing or work difficulties. This potentially confounding factor, combined with the lack of a control group and a small sample size, makes it impossible to determine whether any therapeutic effects participants derived from the sessions were due to knitting, working with the researcher, or a combination of the two.

During the course of the study, the participants were coping with external life stressors such as housing difficulties, unemployment, or social and relationship challenges in addition to

their substance use disorder. These external life stressors may have been too significant to be reduced by an hour or two of knitting per week for six to eight weeks. In addition, learning a new skill can be stress-inducing, and may have contributed to the lack of perceived stress reduction during the intervention.

Instrumentation. The participant demographic information and outcome data collected were not exhaustive. For example, participants were not asked about their sexual orientation, political or religious beliefs, or trauma history during the Baseline Interview. Although there were questions regarding education, employment, and housing, no question explicitly inquired about socioeconomic status. During the Follow-Up Interview, participants were not asked to give examples of their changes in mood nor behavior and they were not formally assessed regarding their responses to encountering other Recovery Café members nor strangers while knitting in a public setting. Therefore, it is difficult to determine whether the knitting had an effect on other variables such as mood or social interaction.

Recommendations for Future Research

The findings from this study warrant future research to further explore knitting as an adjunctive treatment for substance use disorder, as well as a tool for reducing stress and increasing mindfulness. Should this study be replicated, the following changes are recommended.

Study design. According to study design, participants were asked to complete eight hour-long knitting sessions, which would give them the skills to knit a hat and a scarf. Learning to knit is a process with a learning curve, and many participants knitted more slowly than anticipated. Only one participant completed both the hat and the scarf. It is recommended that

one or more of the following changes be made to the study design to increase the likelihood that participants are able to finish projects.

The hat and scarf projects used worsted, or medium weight, yarn and 5.0–5.5mm needles. Increasing the needle size and yarn thickness would produce a finished product more quickly, and could be done in combination with reducing the total number of projects from two to one. Alternatively, the study could be broken up into two parts: beginning and intermediate. Beginners could spend five or six sessions learning the skills required for making a scarf. At that point, participants would have the option to discontinue sessions. For participants who chose to continue, another five or six sessions could be focused on learning to knit a basic hat or a cowl. A simple cowl would be an opportunity for participants to learn to knit in the round without having to use double pointed needles or decreasing, which are more advanced skills.

Other options to improve success rates are to increase the total number of sessions from eight to ten or twelve or to schedule sessions for 90 minutes instead of 60. Often an hour felt short to participants, and one person mentioned that she could have knitted for longer. Alternatively, sessions could be scheduled for a minimum of 60 minutes, with an option to stop for those who were tired or continue for an additional 30 minutes. Scheduling an optional 30 minutes could allow for participants to have time to learn and practice a new skill as well as fill out the questionnaires before and after the session without feeling rushed. A potential limitation to this design is the lack of consistency across participants. The supplementary sessions or time would allow more time to finish the projects, which could potentially make the experience more positive for participants.

Learning a new skill may be stressful for some individuals, and therefore stress may increase before it decreases. Some of the benefits of knitting may be experienced after one

becomes proficient with the skill. Therefore, it is recommended that there be a more extensive follow-up period to capture any positive outcomes that are apparent after the initial intervention is complete.

Because this project was a multiple case study, it was challenging to conduct statistical analyses among participants. Replication of this study may include a delayed intervention control group to isolate the variables and assess causality. It was nearly impossible to draw definitive quantitative conclusions from the small sample size. In addition, having incomplete data sets from three participants may have affected the outcomes. If a similar study were to be conducted in the future, it is recommended that a larger sample size be used. However, without an estimate of the magnitude of an expected effect, it is difficult to predict the sample size required to show such an effect, so no specific sample size is recommended. Using a larger sample size could also allow for attrition and more detailed statistical analyses to be conducted, such as examining correlations between socioeconomic factors, perceived stress, session attendance, and acquisition and mastery of knitting skills. Replication of this study may include a delayed intervention control group to isolate the variables and assess causality.

Therapeutic environment. This study was approved to be conducted only at the Recovery Café, which proved to be a limitation. Due to restrictions with space, many sessions were conducted in a milieu setting in the Café's common area. The Café was noisy, often crowded, and chaotic, with other members frequently interrupting or joining in the sessions uninvited. For some participants, this environment was distracting and anxiety-provoking, and may have interfered with their ability to mindfully focus on the present activity. It is recommended that future knitting lessons be conducted in a quieter, confidential space so participants can get the full benefit of the individualized format without interruptions.

Study Replication and Future Research

Although this research was conducted by a doctoral student in psychology, it may not be required that replication of this study be conducted by someone with a doctoral degree. Indeed, an advanced degree is not necessary for the knitting lessons. However, because of the sensitive nature of the topics that participants wanted to discuss during lessons, it is recommended that an instructor with training in behavioral therapy or mental health conduct future research. Participants, particularly ones with psychological diagnoses, are somewhat vulnerable when learning a new skill and spending individualized time with an instructor. Someone with less training in mental health may inadvertently do harm to the participant.

Participants were only asked about their overall experiences, perceived stress, and mindfulness during sessions. Studying other variables, such as emotion regulation or executive functioning skills, may yield different results. It is also recommended that more extensive background data are collected, such as asking participants about any trauma or adverse childhood experiences.

In addition, the limited scope of this project did not allow for development of a standardized knitting intervention protocol or curriculum. The lesson plan created by the researcher was not a practical plan for the participants given the restricted timeline for the study. Consequently, modifications to the original plan are necessary to develop a more appropriate plan for the intervention. To aid in accessibility of services and ensure treatment fidelity, it is recommended that future research include testing the curriculum and creating a detailed procedure based on participant and researcher feedback.

Conclusion

Previous research on knitting, though limited, demonstrated many possible therapeutic effects with both typically functioning hobbyists (Ferber, 2005; Jauh, 2014; Riley et al., 2013; Stannard & Sanders, 2015; Tracey, 2010) as well as those with physiological (Fraser & Keating, 2014) and psychological (Clave-Brule et al., 2009) diagnoses. However, it was unknown whether knitting would have similar impacts on individuals with substance use disorder. Other studies had examined variables such as the effects of knitting on stress (Clave-Brule et al., 2009; Jauh, 2014; Utsch, 2007), relaxation and well-being (Ferber, 2005), empowerment and control over environment (Rebmann, 2006), and social relationships (Fraser & Keating, 2014; Stannard & Sanders, 2015; Tracey, 2010). While it would have been ideal to test all possible outcomes, as with any research project, this one had limited resources. After much deliberation, the focus was narrowed to examine mindfulness and perceived stress.

Results from this study showed that for most participants, the individualized knitting lessons intervention did not increase mindfulness nor decrease stress. As discussed in the Limitations section, the distractions of the milieu setting and possibly other unknown factors likely interfered with participants' ability to remain curious and present in the moment. All the participants had instability in their lives to varying degrees, which undoubtedly affected their perceived stress. Along with being at different points in the recovery process, the participants faced homelessness or temporary housing situations, unemployment, relational issues with friends and family, mental and physical illness, and one participant was attempting to re-enroll in high school classes a decade after dropping out. Because of these outside challenges, it turned out to be too great a demand that the brief knitting intervention would significantly reduce perceived stress.

One of the drawbacks to designing a study before implementation is that unforeseen variables may become apparent as the study progresses. Although clear in hindsight, prior to study onset it was not anticipated that executive functioning skills, specifically planning and organizing, would have such an impact on participation and outcomes. Anecdotally, the individuals who were able to schedule and show up on time for lessons generally made more improvements than those who found planning and time management to be more arduous skills, yet this was not reflected in the data. Had this been known ahead of time, the intervention may have been formulated with accommodations in mind, such as providing participants with personal calendars or reminders at regular intervals prior to appointments.

Incorporating what is known now, stress and mindfulness would not be the recommended variables to measure. Instead, more emphasis would be placed on the qualitative responses from the participants. More time would be spent gathering data about their experiences and perceptions instead of asking them to rate their current mindfulness and stress. If quantitative measures were to be used, they would focus on assessment of emotion regulation skills, executive function, the therapeutic alliance, or a combination. Expansion of the background data would include the addition of questions about adverse childhood experiences and factors that may have increased the participants' vulnerability to substance use disorder.

In spite of the lack of quantitative results, there were positive results that were challenging to quantify. Some were captured through the qualitative comments and interviews, though there was likely much information missing that was not addressed in the specific interview questions. It is almost impossible to measure the degree to which, much like the therapeutic alliance (Norcross, 2011), the relationship between the examiner and participant was healing in and of itself. It may have been that the experience of spending time with another

person demonstrating positive regard was the support needed to help them through a difficult time. As the relationship between the examiner and each individual was unique, the exact benefits each may have experienced were also unique. In addition, the impacts were not unilateral. In her own way, the examiner was not an impartial observer but a contributor, and thus was influenced by each participant interaction in ways that may affect future therapy and research designs. Therefore, it may have been the connection between two people for a short time that was a step toward learning, self-awareness, recovery, and possible increased ability to use behavioral health resources in the future. Knitting was the focal point, but the unquantifiable results from genuine social connection may have been the factor with the greatest impact.

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Appendix A

Antioch University Seattle IRB Application Form

1. Principal Investigator's name: Aubriana Teeley

2. Academic Department: School of Applied Psychology

3. Departmental Status: Student

4. Phone Number: [redacted]

5. Name of research advisors:

Mark Russell, Ph.D., ABPP, ABCCAP

Art Lewy, Ph.D., MSSW

Maile Bay, Psy.D., MSCP

6. Name & email addresses of other researchers involved in this project:

Maile Bay: mmbay@comcast.net

Art Lewy: alewy@antioch.edu

Mark Russell: mrussell@antioch.edu

7. Project Title: Knitting as an Adjunctive Treatment for Substance Use Disorder

8. Is this project federally funded? No

Source of funding for this project (if applicable): Individuals from the community have donated supplies to be used for this project.

9. Expected starting date for data collection: 4/26/2017

10. Expected completion date for data collection: 4/25/2018

11. Project Purpose(s): (Up to 500 words)

This study uses a quantitative and qualitative (mixed methods) multiple case study design to understand whether learning and developing the skill of knitting will induce flow, reduce stress, and increase well-being for people who have had disordered substance use.

The purpose of this study is to examine the use of knitting as an adjunct treatment for substance use disorder to decrease stress and increase feelings of well-being, accomplishment, and social relationships.

The study will teach beginning knitting to individuals over the course of eight sessions. By the end of the study, participants should have the skills to knit a basic scarf and hat. A possible outcome of this study is that people in recovery from substance use can use knitting as a coping tool and as an activity that conflicts with drug use.

The intent of this study is to contribute to the existing research on the therapeutic effects of knitting by providing evidence for its use as a component of substance use interventions. This study may also lead to further research on knitting with this population and others.

12. Describe the proposed participants- age, number, sex, race, or other special characteristics. Describe criteria for inclusion and exclusion of participants. Please provide brief justification for these criteria. (Up to 500 words)

Three to eight adult participants will be selected from a non-random, convenience sample of members of the Recovery Cafe in Seattle, WA. The Recovery Cafe provides long-term recovery support for members, including opportunities to participate in creative activities and classes. Participants will be current, active members with a self-reported history of problematic substance use. Participants will not be excluded based on gender identity or race/ethnicity. Sessions will be rescheduled if participant discloses they are under influence or are visibly intoxicated. Recovery Café manager or staff will be consulted to verify eligibility.

Inclusion criteria:

- 18 years old or older
- Gender: any
- Race/ethnicity: any
- DSM-5 diagnosis of substance use disorder or self-reported history of problematic substance use
- Ability to complete written subjective evaluations of their experience
- Ability to communicate orally in English
- Free from disability or mobility issues with hands and arms that would prevent knitting comfortably
- No prior experience with knitting
- Ability to attend eight one-hour sessions
- Not in current crisis
- Not visibly under the influence of alcohol or drugs

Exclusion criteria:

- Less than 18 years of age
- Unable to complete written questionnaires
- Non-English speaking
- Physical disabilities that prevent knitting
- Unable to attend eight one-hour sessions
- Other significant developmental or intellectual disability or inability to provide informed consent
- Other severe psychological disorder, such as psychosis, aggression, or traumatic brain injury
- Actively in crisis or psychiatric hospitalization within the past two months
- Current intoxication

13. Describe how the participants are to be selected and recruited. (Up to 500 words)

Participants will be recruited through consultation with staff at the Recovery Café and verbal announcement. If the subject is approached by a staff member and expresses interest, the staff member will give them a flyer with a brief study description and researcher contact information to set up an initial meeting at the Recovery Café. I (the researcher) will introduce myself as a doctoral student researcher at Antioch University Seattle and explain the purpose of the research

to each potential participant. Each will be provided information about the study and asked to participate.

No more than eight participants will be accepted for this study.

14. Do you have a prior or current relationship, either personal or professional, with any person involved in your research?: Yes

14a: Describe the situation that presents a potential conflict of interest in the proposed research study, (For example, if you are employed or have been employed at the research site or if you know the potential participants, whether personal or a professional relationship).

I completed my social justice service practicum at the Recovery Cafe in 2013-2014. I know the Cafe manager and some of the staff. Although there are fluctuations and turnover in membership, it is possible that I might know some of the members.

14b. Describe how you will manage personal bias caused by these relationships and protect the validity of your data against the perception that you may be biased (For example, you will not recruit anyone who works directly for you or in your direct team.)

I will not recruit any member with whom I had a therapeutic relationship during my practicum.

15. Describe the process you will follow to attain informed consent.

Members will be volunteers, either self-referred or referred by the cafe staff. For interested members, the study will be explained to them in detail and the informed consent form will be reviewed with them carefully. Potential participants will have the opportunity to ask any questions they choose, both before and after signing the consent form. They will be notified that they may refuse to answer any question at any time for any reason and that the audio recordings will be destroyed after the interview has been transcribed. No identifying information will be audio recorded. They also may withdraw from the study at any time. If they agree to participate, they will be asked to sign the consent form and will receive a copy of for their records.

16. Describe the proposed procedures, (e.g., interview surveys, questionnaires, experiments, etc.) in the project. Any proposed experimental activities that are included in evaluation, research, development, demonstration, instruction, study, treatments, debriefing, questionnaires, and similar projects must be described. USE SIMPLE LANGUAGE, AVOID JARGON, AND IDENTIFY ACRONYMS. Please do not insert a copy of your methodology section from your proposal. State briefly and concisely the procedures for the project. (500 words)

After signing the consent form, participants will be asked to complete the in-person Baseline Interview, which will be audio recorded in a private room. Study members will be identified only by a code number on the recording. At this time, participants will also complete the written Perceived Stress Scale. It is estimated that this session will take about one hour. After the Baseline Interview, the participant will schedule a time to begin individual knitting lessons,

which will take place 1-2 times per week. There will be a total of eight one-hour sessions which will either be held in the common area of the Recovery Café or in a private room (if available). During the first four sessions, the participant will learn the skills to make a basic scarf: casting on, the knit stitch, and binding off. During the second four sessions, the participant will learn the skills for making a basic hat: knitting in the round, purling, decreasing, and using double-pointed needles.

Prior to each session, participants will complete the written Perceived Stress Scale and Pre-Session Questions. At the end of each session, participants will complete the written Toronto Mindfulness Scale and Post-Session Question. If a participant is visibly intoxicated or otherwise unable to attend a session, one reschedule will be permitted.

Two- to four-weeks after the last session, participants will complete the Perceived Stress Scale and a Follow-Up Interview, which will also be audio recorded. This interview may be conducted in-person or over the phone. It is estimated that this interview will take about one hour.

Participants are welcome (but not required) to work on their projects independently between sessions. At the end of the study, participants will be allowed to keep their knitting needles, projects, and any yarn that was used.

17. Participants in research may be exposed to the possibility of harm - physiological, psychological, and/or social - please provide the following information: (Up to 500 words)

a. Identify and describe potential risks of harm to participants (including physical, emotional, financial, or social harm).

No vulnerable populations will be participating in this study. There are no identified risks of physical or financial harm to participants. Responding to questions may be bothersome. Participants may also fear embarrassment or frustration if they find the task of learning to knit to be emotionally or socially challenging.

The primary investigator will be available to discuss such concerns with participants and remind them that they may discontinue the study at any time without penalty. They may also refuse to answer any question they choose.

b. Identify and describe the anticipated benefits of this research (including direct benefits to participants and to society-at-large or others)

The anticipated benefits from this research will be to teach a skill to participants that they may find to be soothing. They may also experience a sense of accomplishment, stress reduction, and enhanced social relationships that could improve their lives. If knitting is found to be an effective adjunctive treatment for people with substance use disorder, it may be used more widely as an inexpensive, portable therapeutic technique. Additionally, this study will contribute to the previous research on knitting and could lead to future studies.

c. Explain why you believe the risks are outweighed by the benefits described above as to warrant asking participants to accept these risks. Include a discussion of why

the research method you propose is superior to alternative methods that may entail less risk.

The benefits of this research are outweighed by the risks because without questionnaires there would not be a way to measure the efficacy of the intervention. The study may inform the field of psychology about the efficacy of using knitting as an adjunctive treatment for substance use disorder. This study will potentially provide evidence for using knitting in therapy to improve abstinence and relapse prevention.

Any unforeseen emerging risk will be addressed immediately and will be appropriately resolved.

d. Explain fully how the rights and welfare of participants at risk will be protected (e.g., screening out particularly vulnerable participants, follow-up contact with participants, list of referrals, etc.) and what provisions will be made for the case of an adverse incident occurring during the study.

Vulnerable participants, such as children, prisoners, and pregnant women will be excluded from the study.

All identifying information about each participant will be de-identified and coded with a participant number. Only the researcher will have the participant-number coding list, which will be kept confidential, and password protected on the researchers encrypted flash drive.

Participation will be on a voluntary basis. Each participant will be allowed to cease assessment, interview, or therapeutic participation at any time and can request that their information not be used in the analysis and subsequent research.

18. Explain how participants' privacy is addressed by your proposed research. Specify any steps taken to safeguard the anonymity of participants and/or confidentiality of their responses. Indicate what personal identifying information will be kept, and procedures for storage and ultimate disposal of personal information. Describe how you will de-identify the data or attach the signed confidentiality agreement on the attachments tab (scan, if necessary). (Up to 500 words)

Each participant will sign an informed consent document (see attached) and be provided a copy for their records.

To protect all signatures, paper copies of the informed consents and assents will be kept in a locked filing cabinet in a locked location.

To keep the questionnaire responses confidential, participants will be assigned a study code number. Links between the participant names and code numbers will be kept on an encrypted flash drive protected by a password. Only the principal investigator will have access.

Participants may be contacted for scheduling and follow up by providing a phone number or email address, which will also be stored in a confidential location. No identifying information

will be on the audio recordings and they will be destroyed after transcription is complete.

Data and personal identifiers will be destroyed after data collection and analysis is complete.

19. Will audio-visual devices be used for recording participants? Will electrical, mechanical (e.g., biofeedback, electroencephalogram, etc.) devices be used? Yes

If YES, describe the devices and how they will be used:

An audio recording device will be used to record interviews

20. Type of Review: Full

Please provide your reasons/justification for the level of review you are requesting.

The supplies used are noninvasive and vulnerable populations will be excluded. This study is expected to involve minimal risk to participants, but we are requesting a full review due to including human subjects.

21. Please attach any recruitment flyers, letters, recruitment scripts, or other materials used to recruit participants. Attach informed consent, assent, and/or permission forms. If a consent form is not used, or if consent is to be presented orally, state your reason for this modification below. In cases when oral consent will be used, include the text to be used for the oral consent. *Oral consent is not allowed when participants are under age 18.

See Appendix D for the Adult Informed Consent Form.

22. If questionnaires, tests, or related research instruments are to be used, then you must attach a copy of the instrument at the bottom of this form (unless the instrument is copyrighted material), or submit a detailed description (with examples of items) of the research instruments, questionnaires, or tests that are to be used in the project. Copies will be retained in the permanent IRB files. If you intend to use a copyrighted instrument, please consult with your research advisor and your IRB chair. Please clearly name and identify all attached documents when you add them on the attachments tab.

For research instruments, see Appendices E, F, H, I, K, and L.

I have agreed to conduct this project in accordance with Antioch University's policies and requirements involving research as outlined in the IRB Manual and supplemental materials.

Researcher Signature/Date

Appendix B

Antioch University Seattle IRB Approval Letter

Dear Aubriana Teeley,

As Chair of the Institutional Review Board (IRB) for 'Antioch University Seattle, I am letting you know that the committee has reviewed your Ethics Application. Based on the information presented in your Ethics Application, your study has been approved.

Your data collection is approved from 04/26/2017 to 04/25/2018. If your data collection should extend beyond this time period, you are required to submit a Request for Extension Application to the IRB. Any changes in the protocol(s) for this study must be formally requested by submitting a request for amendment from the IRB committee. Any adverse event, should one occur during this study, must be reported immediately to the IRB committee. Please review the IRB forms available for these exceptional circumstances.

Sincerely,

Mark Russell

Appendix C

Recovery Café Letter of Cooperation

Recovery Café
2022 Boren Avenue
Seattle, WA 98121

April 14, 2017

Antioch University Seattle IRB
2400 3rd Avenue #200
Seattle, WA 98121

Please note that Ms. Aubriana Teeley, AUS Graduate Student, has the permission of the Recovery Café to conduct research at our facility for her study, "Knitting as an Adjunctive Treatment for Substance Use Disorder".

Ms. Teeley will recruit members through referral from the staff or verbal announcement. If members are interested in participating, she will carefully review the consent form with them and answer any questions they might have. Once enrolled, members will participate in the study for up to 10 weeks. Ms. Teeley's on-site research activities will be finished by August 1, 2017.

Ms. Teeley has also agreed to provide to my office a copy of the Antioch University IRB-approved, stamped consent document before she recruits participants, and will also provide a copy of any aggregate results.

If there are any questions, please contact my office.

Signed,



Ruby Takushi, Ph.D.
Director of Programs
Recovery Café
2022 Boren Avenue
Seattle, WA 98121
206-374-8731 ext 120
ruby@recoverycafe.org

Appendix D

Adult Informed Consent Form

ANTIOCH UNIVERSITY SEATTLE ADULT INFORMED CONSENT FORM

This informed consent form is for members of the Recovery Café who we are inviting to participate in a research project titled “Knitting as an Adjunctive Treatment to Substance Use Disorder”.

Name of Principle Investigator: Aubriana Teeley, Psy.D. Student

Name of Organization: Antioch University, School of Applied Psychology

Name of Project: Knitting as an Adjunctive Treatment to Substance Use Disorder

You will be given a copy of the full Informed Consent Form

Introduction

I am Aubriana Teeley, a student in the Doctor of Psychology Program at Antioch University Seattle. As part of this degree, I am completing a project to learn more about the effects of knitting on stress and mindfulness for people who have a history of substance use. I am going to give you information about the study and invite you to be part of this research. You may talk to anyone you feel comfortable talking with about the research and take time to reflect on whether you want to participate or not. You may ask questions at any time.

Purpose of the research

Recovering from drug and/or alcohol use can be very difficult. People may experience more stress, either from the recovery or outside events. The purpose of this study is to see if individual knitting lessons help with stress, recovery, and mindfulness.

Type of Research Intervention

This research will involve your participation in individual knitting lessons and answering questions about your experiences.

Before starting the knitting lessons, you will be asked to complete an interview and written questionnaire. Some of the questions will be about your experience in recovery, treatments, and other background information. Examples of questions are, “What has worked/helped for staying in recovery?” and “What hasn’t worked/been challenging about staying in recovery?” The written questionnaire is about how you are experiencing stress. For example, “In the past week, how often have you been upset because of something that happened unexpectedly?” or, “In the past week, how often have you found that you could not cope with all the things that you had to do?”

There will be eight knitting lessons total. Each lesson will last about an hour and will be scheduled once or twice a week. At the beginning of each session, you will be asked about how much you knitted since the past session, if you had any drug and/or alcohol use since the last session, and you will be asked to fill out the stress questionnaire. At the end of each session, you will be asked for feedback on how the session was for you and you will be asked to fill out a

questionnaire on mindfulness. Examples of mindfulness questions are, “I experienced myself as being separate from my thoughts and feelings,” and, “I was receptive to observing unpleasant thoughts and feelings without interfering with them.”

During the first four knitting sessions, you will learn the skills needed to make a scarf. This includes casting on, the knit stitch, and casting off. During the second four sessions, you will learn the skills needed to make a hat. These include knitting in a circle, the purl stitch, decreasing, and using different types of needles.

Two to four-weeks after finishing the knitting lessons, you will be contacted for a follow-up interview. The researcher will ask you questions about how the study was for you. You will also be asked to complete the stress questionnaire.

The entire study will last up to three months with a total of 10 sessions: eight lessons and two interviews. Each session will last about 60 minutes. You are welcome to (but not required) to work on your project between sessions.

The two interviews (one at the beginning and one at the end) will be audio recorded solely for research purposes, but all of the participants’ contributions will be de-identified prior to publication or the sharing of the research results. These recordings, and any other information that may connect you to the study, will be kept in a locked, secure location.

Participant Selection

You are being invited to take part in this research because you are a member of the Recovery Café, have a self-reported history of substance use, are able to engage in knitting, and are able to answer interview questions and complete questionnaires in English. You should not consider participation in this research if you are actively using substances, are in crisis or have been hospitalized for psychiatric issues in the past two months, have a disability that would prevent you from knitting, or are unable to understand, read, and write in English. If you show up to the lesson under the influence of alcohol or drugs, you may reschedule for another day. If it happens twice you will be asked to leave the study.

Voluntary Participation

Your participation in this study is completely voluntary. You may choose not to participate. You will not be penalized for your decision not to participate or for any of your contributions during the study. You may withdraw from this study at any time. If an interview has already taken place, the information you provided will not be used in the research study.

Risks

No study is completely risk free. I do not anticipate that you will be harmed during this study, but some of the questions asked of you might feel personal or uncomfortable. You may stop being in the study at any time if you become uncomfortable. If you experience any discomfort as a result of your participation, Recovery Café staff and my supervisors will be available to you to use as a resource.

Benefits

You may or may not directly benefit from your participation in this study, but your participation may help others in the future.

Reimbursements

You will not be provided any monetary incentive to take part in this research project. However, you will be welcome to keep any knitting needles, projects, and yarn used during the study.

Confidentiality

All information will be de-identified, so that it cannot be connected back to you. You will be given a Study ID number, and your real name will be replaced with a pseudonym in the write-up of this project. Only the primary researcher will have access to the list connecting your name to the pseudonym. This list, along with audio recordings of the discussion sessions, will be kept in a secure, locked location. The audio recording will be destroyed when the transcription is complete.

Limits of Privacy Confidentiality

Generally speaking, I can assure you that I will keep everything you tell me or do for the study private. Yet there are times where I cannot keep things private (confidential). The researcher cannot keep things private (confidential) when:

- The researcher finds out that a child or vulnerable adult has been abused
- The researcher finds out that that a person plans to hurt him or herself, such as commit suicide
- The researcher finds out that a person plans to hurt someone else

There are laws that require many professionals to take action if they think a person is at risk for self-harm or are self-harming, harming another, or if a child or adult is being abused. In addition, there are guidelines that researchers must follow to make sure all people are treated with respect and kept safe. In most states, there is a government agency that must be told if someone is being abused or plans to self-harm or harm another person. Please ask any questions you may have about this issue before agreeing to be in the study. It is important that you do not feel betrayed if it turns out that the researcher cannot keep some things private.

Future Publication

The primary researcher, Aubriana Teeley, reserves the right to include any results of this study in future scholarly presentations and/or publications. All information will be de-identified prior to publication.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so, and you may withdraw from the study at any time.

Who to Contact

If you have any questions, you may ask them now or later. If you have questions later, you may contact Aubriana Teeley at ateeley@antioch.edu

If you have any questions about your rights as a research participant, you may contact:

Mark Russell, Ph.D. at 206-268-4837, or
Benjamin Pryor, Ph.D., Provost and Chief Operating Officer, at 206-441-5352

This proposal has been reviewed and approved by the Antioch International Review Board (IRB), which is a committee whose task it is to make sure that research participants are protected.

DO YOU WISH TO BE IN THIS STUDY?

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

DO YOU WISH TO BE AUDIOTAPED IN THIS STUDY?

I voluntarily agree to let the researcher audiotape me for this study. I agree to allow the use of my recordings as described in this form.

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/month/year

To be filled out by the researcher or the person taking consent:

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this Informed Consent Form has been provided to the participant.

Print Name of Researcher _____

Signature of Researcher _____

Date: _____

Day/month/year

Appendix E

Participant Collected Demographic Information: Baseline Interview

Study ID: _____

Age: _____

Gender: _____

Race/Ethnicity: _____

Highest level of education completed: _____

Employment status: _____

Relationship status: _____

Current living situation: _____

Psychological diagnosis: _____

Other health issues: _____

Medications: _____

How long have you been a member of the Recovery Café? _____

What activities do you participate in at the Café? _____

Tell me about your drinking/drug use history: _____

Consequences of alcohol/drug use: _____

Tell me about your treatment history. _____

How long have you been in recovery? _____

What has worked/helped for staying in recovery? _____

What hasn't worked or been challenging about staying in recovery? _____

What experience do you have with creative hobbies? _____

What interested you about participating in this study? _____

Comments/questions: _____

Appendix F

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last week**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Study ID: _____

Date: _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last week, how often have you been upset because of something that happened unexpectedly?..... **0 1 2 3 4**

2. In the last week, how often have you felt that you were unable to control the important things in your life?**0 1 2 3 4**

3. In the last week, how often have you felt nervous and “stressed”? **0 1 2 3 4**

4. In the last week, how often have you felt confident about your ability to handle your personal problems?**0 1 2 3 4**

5. In the last week, how often have you felt that things were going your way?..... **0 1 2 3 4**

6. In the last week, how often have you found that you could not cope with all the things that you had to do?**0 1 2 3 4**

7. In the last week, how often have you been able to control irritations in your life?.....**0 1 2 3 4**

8. In the last week, how often have you felt that you were on top of things?..**0 1 2 3 4**

9. In the last week, how often have you been angered because of things that were outside of your control?.....**0 1 2 3 4**

10. In the last week, how often have you felt difficulties were piling up so high that you could not overcome them? **0 1 2 3 4**

Cohen, S. (1994). *Perceived Stress Scale*. Retrieved from <https://www.mindgarden.com/documents/PerceivedStressScale.pdf>

Adapted by Aubriana Teeley, with permission from Dr. Sheldon Cohen. Permission was granted by Dr. Cohen to include the modified Perceived Stress Scale in this dissertation as per email dated 10/15/2018.

Appendix G

Permission to Use and Alter Perceived Stress Scale

On Mon, Feb 6, 2017 at 5:05 PM, Sheldon Cohen <scohen@cmu.edu> wrote:

ok

From: Aubriana Teeley [mailto:ateeley@antioch.edu]

Sent: Monday, February 06, 2017 4:45 PM

To: Sheldon Cohen

Subject: PSS alteration

Dear Dr. Cohen,

My name is Aubriana Teeley. I am a fourth-year clinical psychology doctoral student at Antioch University Seattle in Seattle, WA and I am nearing the beginning phase of my dissertation study. The study will use individual knitting lessons as an adjunctive treatment for substance use disorder. One of the variables I am looking at is stress reduction. When I came across the Perceived Stress Scale, I thought that it would be a good fit for my project.

I see that you give permission on your website for academic research. However, because I am conducting weekly sessions, may I have permission to slightly alter the wording of the items to ask about the previous week instead of the previous month?

If you have any questions or concerns please let me know. I can be reached at ateeley@antioch.edu or at [redacted]. My dissertation committee chair is also available and I can provide his contact information upon request.

Thank you for your time and consideration.

Aubriana

Appendix H

Pre-Session Questions

Study ID: _____

Date: _____

Session (circle one):

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

1. About how many days did you knit since the last session?

0 days	1-2 days	3-4 days	5-6 days	7 or more days
--------	----------	----------	----------	----------------

2. About how many days since the last session have you used drugs or alcohol?

0 days	1-2 days	3-4 days	5-6 days	7 or more days
--------	----------	----------	----------	----------------

Appendix I

Toronto Mindfulness Scale

Knitting as an Adjunctive Treatment for Substance Use Disorder Toronto Mindfulness Scale

Study ID: _____

Date: _____

Session #: _____

Instructions: We are interested in what you just experienced. Below is a list of things that people sometimes experience. Please read each statement. Next to each statement are five choices: “not at all,” “a little,” “moderately,” “quite a bit,” and “very much.” Please indicate the degree to which you agree with each statement. In other words, how well does the statement describe what you just experienced, just now?

	Not at all	A little	Moder- ately	Quite a bit	Very much
1. I experienced myself as being separate from my changing thoughts and feelings.	1	2	3	4	5
2. I was more concerned with being open to my experiences than controlling or changing them.	1	2	3	4	5
3. I was curious about what I might learn about myself by taking notice of how I react to certain thoughts, feelings, or sensations.	1	2	3	4	5
4. I experienced my thoughts more as events in my mind than as a necessarily accurate reflection of the way things “really” are.	1	2	3	4	5
5. I was curious to see what my mind made up from moment to moment	1	2	3	4	5
6. I was curious about each of the thoughts and feelings that I was having.	1	2	3	4	5
7. I was receptive to observing unpleasant thoughts and feelings without interfering with them.	1	2	3	4	5
8. I was more invested in just watching my experiences as they arose, than in figuring out what they could mean.	1	2	3	4	5
9. I approached each experience by trying to accept it, no matter whether it was pleasant or unpleasant.	1	2	3	4	5
10. I remained curious about the nature of each experience as it arose.	1	2	3	4	5
11. I was aware of my thoughts and feelings without overriding them.	1	2	3	4	5

12. I was curious about my reactions to things.	1	2	3	4	5
13. I was curious about what I might learn about myself just by taking notice of what my attention gets drawn to.	1	2	3	4	5

Lau, M. A., Bishop, S. R., Segal Z. V., Buis, T., Anderson, N. D., Carlson, L...Devins, G. (2006). The Toronto Mindfulness Scale: Development and validation. *Journal of Clinical Psychology*, 62, 1445–1467.

Permission was granted by Dr. Mark Lau to include the Toronto Mindfulness Scale in this dissertation as per email dated 9/24/2018.

Appendix J

Permission to Use the Toronto Mindfulness Scale

On Mon, Feb 6, 2017 at 4:00 PM, <mark.lau@vancouvercbt.ca> wrote:

Dear Aubriana,

Thank you for your interest in the TMS. As it is in the public domain, you are free to use it as you wish. Please note the administration instructions for the TMS-state version. All the best with your research.

Best regards,

Mark

Mark Lau, Ph.D., R.Psych
CACBT-ACTCC-Certified in Cognitive Behaviour Therapy
Vancouver CBT Centre
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Vancouver, BC
V6J 5C6
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Fax. 604.738.7339
E-mail. mark.lau@vancouvercbt.ca

On 2017-02-06 13:57, Aubriana Teeley wrote:

Dear Dr. Lau,

My name is Aubriana Teeley and I am a fourth-year clinical psychology doctoral student at Antioch University Seattle in Seattle, WA. I am nearing the beginning phase of my dissertation study, which will use individual knitting lessons as an adjunctive treatment for substance use disorder.

One of the variables I am looking at is mindfulness and the Toronto Mindfulness Scale would be a good fit for my project. Could I please have permission to use it as part of my academic research?

If you have any questions or concerns please let me know. I can be reached at ateeley@antioch.edu or at [redacted]. My dissertation committee chair is also available and I can provide his contact information upon request.

Thank you for your time and consideration.

Aubriana

Appendix K

Post-Session Question

Knitting as an Adjunctive Treatment for Substance Use Disorder
Post-Session Question

Overall, how was the session for you today? _____

Appendix L

Follow-Up Interview

Knitting as an Adjunctive Treatment for Substance Use Disorder Follow-Up Interview Questions

Study ID: _____

Date: _____

Time since last session: _____

1. About how many days in the past week did you knit?

0 days	1-2 days	3-4 days	5-6 days	7 days
--------	----------	----------	----------	--------

2. About how many days in the past week have you used drugs or alcohol?

0 days	1-2 days	3-4 days	5-6 days	7 days
--------	----------	----------	----------	--------

3. From your point of view, what was the purpose of this study? _____

4. What was the overall experience of this project for you? _____

5. What stood out to you as most important or meaningful? _____

6. What parts of knitting did you enjoy? _____

7. What was difficult about learning to knit? _____

8. What was easy about learning to knit? _____

9. Do you think you will continue to knit in the future? (circle one) Yes No

 If yes, what are some of your reasons for knitting? _____

10. How was your experience working with the researcher? _____

11. What suggestions do you have for improving this experience? _____

12. Other comments: _____
