What Do Mindfulness Scales Measure? Expectation Effects Examined

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Abstract

The increasing popularity of mindfulness practices has seen an accompanying growth in research. However, most research has focused on the beneficial aspects of practicing mindfulness, but often without comparison to a control group, therefore the results that have been observed may not be "real" effects. In our current research, we aimed to see whether there were expectancy effects for mindfulness practice by designing two different studies and recruiting hundred and twenty participants to three different jigsaw (as a focused practice) groups: 1) Passive control group; which received no specific mention of mindfulness or mindfulness instruction in both studies, 2) Active control group; which received the label mindfulness on the task in study 1 (without any further intervention), and the introduction of negative information about mindfulness and possible downsides of practicing in study 2, and 3) Experimental group; which received actual mindfulness training in study 1, and positive information about mindfulness and advantages of practicing in study 2. A pretest and posttest design was employed using established self-report measures for mindfulness and wellbeing, in both studies of this research. The results indicated that supported expectancy effects for mindfulness as compared to the control condition. Also, while positive information led to improvements in scores compared to the control group, negative information led to a deterioration in scores compared to the control group. This research suggests that researchers need to be cautious in evaluating the self-reports of mindfulness practice due to expectancy effects.

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Table of Contents

List of Tables

List of Figures

Literature Review

Over the last few decades, there have been changes in people's tendency to use different psychological treatments such as mindfulness, to help various problems. Nowadays there is a research focus on mindfulness, its origin, definitions, benefits and even its possible side effects. It has risen exponentially as the quantity of studies around mindfulness has grown particularly over the past two decades (Rau & Williams, 2016). American Mindfulness Research Association (2017) has indicated the massive increase in number of mindfulness journal publications from 0 in 1980 to 667 publications in 2016 (goAMRA.org). These number of publications are expected to be even more in 2020 as many studies continue to investigate this topic.

The most commonly referenced definition of mindfulness in the literature is by Kabat-Zinn (1990) who defined mindfulness as "the awareness that emerges through paying attention on purpose, in the present moment and nonjudgmentally, to the unfolding of experience moment by moment" (Kabat-Zinn, 2005); p. 64). However, the issue of definitions is complex and will be discussed further in the next two sections. Generally, after running mindfulness practice sessions, researchers intend to assess their participants or clients' mindfulness level by asking them to fill out self-report mindfulness questionnaires and relying on these self-report measurements rather than really ask them that how they would feel at that moment. Also, they do not use any objective measure, hence there is a concern whether expectancy effects exist for self-report mindfulness questionnaires; i.e., practicing mindfulness makes people feel more mindful, even if their actual behaviour has not changed. Establishing validity for these self-report measures will make an important contribution to the psychological study of mindfulness. The current

research aims to understand whether expectancy effects exist for self-reported mindfulness measures, as well as examining the facets of mindfulness in these self-report questionnaires. For this purpose, two different studies were designed to help to get the better understanding of possible expectancy effects. The first of these studies aimed to assess the effect of giving different mindfulness instructions on self-reported questionnaires to determine whether using the label "mindfulness" (sham) on a task acts to improve self-reported mindfulness, as well as other wellbeing measures. In the second study, two different definitions of mindfulness were given to participants by focusing on advantages and disadvantages of practicing mindfulness, to see whether manipulating participants understanding or perception of mindfulness would change self-report mindfulness measures along with other wellbeing measures.

To be noted here that for both studies of this research, a short-term mindfulness intervention was used, thus researchers need to be cautious about linking the results of this research to long-term mindfulness practice.

Conceptualizing Mindfulness

Mindfulness Origin

The origin of *mindfulness* is deep-rooted in *Buddhist* philosophy, in which it defines to "*see with discernment*" or to see non-judgmentally and with openness, to accept the present moment as the way it is and show willing to be open to their current moment's feelings (Herbert & Forman, 2011). Moreover, Herbert and Forman (2011), indicated that even the elements of consciousness, awareness, circumspection, and self-compassion can be seen in interpretations of the Buddhist term for mindfulness. According to Buddhism, the purpose of practicing mindfulness and being mindful is to promote awareness of the

present moment that is not involved in a specific intention or consequence (Thera, Bodhesako, & Williams, 1987). It might be questioned as to that what awareness exactly means. As Buttle said, "Awareness in this context means although there is recognition of stimuli and rising mental activity, the mind does not necessary elaborate the experience with discursive thoughts" (Buttle, 2011; p.12). Mindfulness, is a central component of Buddhist meditative practice (Thera et al., 1987), which can be characterized by concerning both an awareness and a receptive acceptance of inner involvement and experience (Bishop, 2002; Brown & Ryan, 2003; Kabat-Zinn et al., 1992; Lau et al., 2006). It is a state of living in the moment nonjudgmentally, sustainably, and alerting awareness (Brown & Ryan, 2003). It develops people's cognitive, emotional, interpersonal performance and based on many studies, it affects positively the effectiveness of stress regulation (Langer, Cangas, Salcedo, & Fuentes, 2012; Sedlmeier et al., 2012).

According to Buddhist tradition, mindfulness has four foundations that consist of; *Awareness of the body* which is recognising the body as a body. Something that is experienced as a collection of parts, not a solid unified thing. *Awareness of feelings* which means being aware of feeling as pleasant, unpleasant or neutral, worldly or spiritual and disappearing or manifesting. *Awareness of mind* which is defined as understanding the quality of the mind and creating awareness of the background and the last one is *Awareness of phenomena* which means awareness of all objects and paying attention to what is arising (Bögels & Restifo; Cornelius-White, Motschnig-Pitrik, & Lux, 2013).

Although the concept of mindfulness has become well known for many people particularly in Western culture where it has become a part of regular meditation, the American interest in Buddhist philosophy began in the early 19th century (Rau & Williams,

2016; Versluis & Lamers, 1993). Over time, this establishment became progressively westernized and gave rise to a non-religious form of Buddhist psychology that was ultimately spread under the unassuming heading of the Stress Reduction Clinic, founded by Jon Kabat-Zinn in 1979 (Rau & Williams, 2016; Williams, Rau, Suchy, Thorgusen, & Smith, 2017). The modern mindfulness movement into the Western culture, was mostly shined by the work of Jon Kabat-Zinn who initially developed *Mindfulness Stress Reduction and Relaxation,* but later was changed to *Mindfulness-Based Stress Reduction (MBSR)* program at the medical school of University of Massachusetts in order to reflect the awakening aspect of mindfulness practice (Kabat-Zinn, 1982). This program was designed with the aim of helping patients to manage symptoms of chronic illness by reducing their stress level and teaching relaxation in an alert way. In terms of reaching these goals, Kabat-Zinn integrated Buddhist teachings and mindfulness exercises which allowed mindfulness to capture a comprehensive multidisciplinary audience (Crane et al., 2016; Rau & Williams, 2016).

The origin and background of mindfulness are particularly substantial for understanding existing definitions. As mentioned in Williams and colleagues' study, mindfulness is originally from an Eastern religion, however, it has been directly influenced by Western philosophy and culture (Rau & Williams, 2016; Williams et al., 2017). According to three collections of Buddhist philosophy in the doctrine of Theravada Buddhism, the *Abhidhamma* contains the most relevant psychological construct relating to mindfulness (Rau & Williams, 2016; Williams & Kabat-Zinn, 2013) as the latest text of the Abhidhamma acknowledges inborn individual differences in mindfulness (Rau & Williams, 2016). Based on traditional Buddhism and what they call the level on the

Buddhist path, people can be categorized in two different groups; some defined as *"alert"* who are able to maintain mindfulness while others defined by *"unmindfulness"* who are not able to maintain mindfulness (Rau & Williams, 2016); p. 64). Nevertheless, mindfulness could be recognised by early teachings as a set of abilities that need training and practice. Mindfulness can be considered as a capacity of a human's mind, a process of remembering memories while being present.

Mindfulness Definitions

Given the complex and at times competing definitions of mindfulness in the literature, an in-depth discussion of the various understandings of mindfulness, is beyond the scope of this review. Rather, this section aims to introduce to the reader an overview of current definitions of mindfulness. One of the most traditional definitions of mindfulness which was proposed by Hanh, goes back to 1976 as "keeping one's consciousness alive to the present reality" (Kabat-Zinn, 1982); p. 68). Mindfulness is also described as "a thoughtful and non-judgemental attention to present moment experiences" (Kabat-Zinn, 1982); p. 67). Thoughtful entails being present and aware of own thoughts and feelings, and non-judgmental as being open to acknowledge these thoughts and feelings without labeling them as good or bad, positive or negative, with Buddhism originally characterizing this concept as an "ancient wellness technique" (Büssing, Walach, Kohls, Zimmermann, & Trousselard, 2013; Lang, France, Williams, Humphris, & Wells, 2013; McKenzie, Hassed, & Gear, 2012; Weiss, Johanson, & Monda). Although mindfulness has been around in the West since the 1970s, it was not so popular in those days. During the past 30 years, mindfulness has been adopted in Western psychology as the edge between Eastern meditation and Western therapy has developed, bridging within various fields and contexts,

such an enjoyment in training classes to a therapy session for several physical and mental health disorders (Lang & Jansen, 2013; R Amico et al., 2012). Consequently, mindfulness as a practice, has drastically improved its attraction as a world-wide solution for being available for different healing and treatment purposes (Hülsheger, Alberts, Feinholdt, & Lang, 2013). In addition, mindfulness has had a huge positive impact on psychology by expanding its practice through the development of methods and healing tools, assisting integration into therapy.

The word mindfulness existed in the English language prior to its association with the expression *sati* that is considered as a Buddhist concept dating back to more than 2500 years ago (Segal, Williams, & Teasdale, 2013). Buddhism is an old tradition and the world's fourth-largest religion that includes many different forms of mindfulness. It has been said the word sati in Buddhism means awareness, attention and remembering, although it has been difficult to be precisely translated into English (Amaro & Black, 2017). That is one of the reasons that mindfulness has been conceptualised in various ways. It is difficult to define within the words given its multi-dimension nature and deep roots in Buddhism, where it is problematic to translate it into Western concepts (Creswell, Way, Eisenberger, & Lieberman, 2007). In Buddhism, mindfulness practice is a part of training which helps people to overcome physical and mental suffering (Williams et al., 2015). It has been quoted from a Buddhist monk who defined the heart of mindfulness as "the clear and single-minded awareness of what actually happens to us and in us at the successive moments of perception" (Thera et al., 1987).

So far numerous definitions have been suggested for mindfulness. For instance mindfulness has been defined as "being consciously aware of the present moment in a non-

judgemental way" (Kabat-Zinn, 2014). Bishop and colleagues expanded on this definition, writing that mindfulness is a "kind of non-elaborative, non-judgmental, present centered awareness in which each thought, feeling or sensation that arises in the attentional field is acknowledged and accepted as it is" (Bishop, 2002; Lau et al., 2006). Baer also defined mindfulness as "the observation of the ongoing stream of internal and external stimuli as it presents itself in a non-judgemental way" (Baer, 2006). Mindfulness is also defined by a non-evaluative and focused consideration of the present moment (Cashwell & Young, 2011). "In the book of *Mindfulness-Based Therapy for Insomnia*, mindfulness has been mentioned as a deliberate act of present-moment awareness without regard to results (Ong et al., 2017; Ong & Sholtes, 2010; Ong). All these definitions are similar in focusing on being non-judgemental. That is the reason that Heidegger and colleagues' definition of mindfulness seems a bit different by describing mindfulness as just "bringing awareness to practically any situation" (Heidegger, Emad, & Kalary, 2006).

Some researchers have proposed a different definition of mindfulness by focusing on mindfulness as a meditation practice in which a person pays attention to the present moment in a particular way that is distinguishable from situations in which paying attention is due to achieving a purpose or analysing a situation (Kabat-Zinn, Lipworth, & Burney, 1985; Miller, Fletcher, & Kabat-Zinn, 1995). They have defined mindfulness as the constant, intended attention uninterruptedly focused on a known object without mindlessness and distraction (Kemeny et al., 2012; Yiend & Mathews, 2004). However, Langer had different opinion as she believed mindfulness is achievable without meditation or yoga. Langer defined mindfulness as "the simple act of actively noticing things" (Khoury, Langer, & Pagnini, 2014; Langer et al., 2012; Langer & Imber, 1980). Note that

mindfulness has been applied to both state and trait concepts (Brown & Ryan, 2003), and it can be increased through training in short-term and long-term settings (Baer, Smith, & Allen, 2004), which will be discussed further in this study.

Mindfulness and Meditation

Normally when people are asked about meditation and how they imagine it, their common answer will be a picture of a person who is sitting aside, either in nature or in a room, with closed eyes, is silent, and focusing on specific object. The activity could be a pray, listening to nature or even concentrating on breathing. However, the purpose of doing meditation might be different for each individual. It can be differed from a religious reason to a process of revolution. Undoubtedly, all of these activities are eligible to be considered as meditation, and of course there are several ways to do meditation. From mindfulness perspective, meditation is considered as an activity that represents attention, awareness, and in general compassion (Ionescu et al., 2019; Reddy & Roy, 2019). This compassion might be defined as considering the current moment with openness and kindness toward oneself as a self-compassion or toward others as empathy and connection (Ong & Smith, 2017). And of course, like any other kind of trainings, it needs time and practice. Therefore, it sounds logical to define mindfulness meditation as a practice which involves mindfulness awareness, empathy, sympathy and nonattachment to results. As it might seem easy and practical to do mindfulness practice throughout diverse activities, it is essential to know that what mindfulness meditation does not involve (Voiß, Höxtermann, Dobos, & Cramer, 2019).

Some believe mindfulness meditation is all about being relaxed so they consider it as a relaxation technique (Volanen et al., 2020). It is undeniable that during mindfulness

practice an individual might be able to experience relaxation, however this is not the main point of doing meditation. Another stereotype is that others believe the mindfulness meditation is about thinking positively as one of the key elements of mindfulness is being non-judgmental (Massey et al., 2019). This interpretation is in contrast with what mindfulness meditation exactly is, as another key principle of mindfulness is openness which means accepting and acknowledging both positive and negative thoughts and feelings rather than avoiding the negative experiences and just focusing on the positive ones (Charles et al., 2019). It is necessary to be mindful of all experiences that are present at the moment, either positive or negative.

Correspondingly it is important to note that mindfulness is not about trying to clear the mind of all thoughts and turn it into a black or white page and think about nothing (Frick, Thinnes, & Stangier, 2020). Mindfulness is about the awareness and acknowledgment of all the feelings, thoughts and in general, all the details which are present at the moment without putting them into a bad or a good category. In this case, there is no pressure to escape or avoid any particular feelings and thought. All is about being open, acknowledging their presence, accepting them as the way they are and letting them go (Black & Slavich, 2016; Dunkley & Stanton; Schoenberg & Vago, 2019). This definition of mindfulness meditation is the closest one that was applied in this current research.

From logical philosophies, there are other types of meditation. For instance, *transcendental meditation (TM)* which is known as a simple and effective form of meditation, is actually a practice in which an individual will focus on an object until there is no distinction between the meditator and that object in the mind. TM is shown by

research to be quite effective at reducing anxiety and even lowering blood pressure (Barnes, Monto, Williams, & Rigg, 2016). Contrarily, as described earlier, mindfulness meditation is not about emptying the mind, instead, it is about how to be in peace with all those thoughts and feelings that are present and be still able to stay concentrated, although there may well be moments when the mind comes to rest with no object of thought, so this is not about a right or wrong way to meditate or have experiences. (Cornelius-White et al., 2013; Segal, Dimidjian, Vanderkruik, & Levy, 2019).

Mindfulness Objective

According to Smith and colleagues network analysis article, mindfulness is not an outcome of certain practices, but is the practice itself (Smith, Kempton, Williams, & van Ommen, 2020) Although mindfulness itself does not have an objective necessarily, transferring consciousness to daily life can be considered as the goal of formal mindfulness practice because people are not typically conscious about their surroundings in everyday (Salgado & Kingo, 2020). It means staying fully present at the moment and enjoying the most of it rather than revisiting past events or over-thinking about what is going to happen in the future (Lilja, Lundh, Josefsson, & Falkenström, 2012; Salgado & Kingo, 2020). In other words, staying focused and being aware of ordinary life activities is the point of practicing mindfulness. Some researchers stated that "By developing the ability to keep focused through acknowledging and abandoning thoughts without identifying ourselves with them, mindfulness helps us to perceive our environment clearly and to solve problems more efficiently by reducing mental wandering while performing tasks" (Delgado-Pastor et al., 2015; Geiger et al., 2016); p. 32.

Mindfulness Practice

In general, mindfulness refers to a broad set of meditative style techniques that brings awareness into the current moment. So, what does this involve? According to Buddhist practice, mindfulness practices may be formal or informal (Crane et al., 2017). *Formal practice* is a training which includes sitting in a quiet undisturbed environment for a specific time to practice certain techniques. The most common formal mindfulness practices are the body scan and the breathing exercise (Crane et al., 2017). The body scan is typically half an hour but the duration is not necessarily the key, however the ability to 'attend' is and involves moving one's awareness to different parts of the body, noting any tension or pain, or whether the part is relaxed. The breathing exercise, like the body scan is not necessarily time specific but emphasises attendance on focusing on the inhale and exhale. For current research, the breathing exercise was used as a mindfulness practice, as it enabled participants to practice it while engaging in another 'mindful' activity. On the other hand, *Informal practice* includes randomly picking moments or activities in which an individual engages with during their day and 'paying attention on purpose, non-judgmentally' to them, this may be involve some basic routine activities such as brushing teeth and/or hair, eating, walking while actually paying full attention to what they are doing (Herbert & Forman, 2011; Palmiter).

Kabat-Zinn has had a huge impact on mindfulness and its involvement into Western scientific research by emphasising it as a non-elaborative observation of present moment's feelings, thoughts and experiences, however, some researchers are starting to raise concerns around mindfulness practice. Several have discussed that mindfulness cannot easily be understood in isolation from theoretically-related Buddhist concepts (Rau &

Williams, 2016; Tiwary & International Conference on Buddhism and National Cultures, 1984) and that, excluding mindfulness from its possible larger philosophical context (Grossman, 2011; Schmidt et al., 2011). Therefore, some concepts such as compassion (Birnie, Garland, & Carlson, 2010; Germer & Neff, 2013; Germer, Siegel, & Fulton, 2005), altruism and selflessness (Block-Lerner, Adair, Plumb, Rhatigan, & Orsillo, 2007), and moral responsibility (Tsiaras et al., 2011) have gradually become integrated into the range of mindfulness language.

This may raise a question about what Western psychology is hoping to gain from mindfulness. According to Schimdt and colleagues: "A wish for self-regulation or coping with chronic pain is quite different from embarking on a spiritual path to achieve self-transformation" (Schmidt et al., 2011). One probability is that Westerners hope by implementing mindfulness into their daily lives, they might be able to go further from self-regulation to self-transformation (Shapiro, Schwartz, & Bonner, 1998). It seems to be essential to draw a well-defined borderline around mindfulness to achieve theoretical consistency. This edge has been admitted by traditional Buddhist scripts representing that "mindfulness alone is a necessary starting point for the growth of wisdom, but far from adequate on its own" (Rau & Williams, 2016; Zgierska, Wallace, Burzinski, Cox, & Backonja, 2014). For psychology as a science, it is so beneficial to fully understand the important components of mindfulness and ultimately being able to develop a valid, reliable and testable measurement and description. The definition below, would provide a useful knowledge and material to investigate its construct validity: "The first component involves the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment. The second

component involves adopting a particular orientation toward one's experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance" (Kopacz et al., 2016), p. 232.

State vs. Trait Mindfulness

When it comes to mindfulness being a state or a trait, there is an ongoing debate. *State mindfulness or Cultivated mindfulness* means being mindful of the present moment's thought and feelings while practicing mindfulness meditation, even if interruptions arise. According to this definition, a state of mindfulness is a temporary condition and an individual will stay mindful as far as staying on the task. Some researchers believe when Kabat-Zinn defined mindfulness as a skill that could be sharpened through training, he is talking about state mindfulness (Gayner et al., 2012). Another important note about state mindfulness is the role of will in which an individual can decide to stay in or move out quickly (Chen, Tsai, Lin, Chen, & Chen, 2019). State mindfulness, as a short-term and flexible condition can affect people's perception of the world around them (Naranjo & Schmidt, 2012). The challenge of measuring state mindfulness is due to its fluid mindset and occurs when it must happen in a short period of time and after the practice (Jain et al., 2007).

Trait mindfulness or *Dispositional mindfulness* refers to a mindfulness condition in which an individual has an ability to be present and aware of their thought and feelings without even being formally trained (Niemiec et al., 2010). This is what Chiesa called as an "untrained mind" (Chiesa & Serretti, 2010). In supporting trait mindfulness, some studies demonstrated that mindfulness can be a feature and quality which people inherit (Bishop et al., 2018; Siebelink et al., 2019). Based on this definition, trait mindfulness is a

more permanent ability than state mindfulness as it has roots in people's personality. Hence, it is less flexible and more resistant to change (Shelov, Suchday, & Friedberg, 2009). Also, some researchers have found some genetic basis for trait mindfulness (Eddy, Wertheim, Hale, & Wright, 2019; Siebelink et al., 2019). Trait mindfulness as a permanent feature of character is more likely to shape who people really are (Shapiro, Brown, Thoresen, & Plante, 2011). As mentioned earlier, it is a challenge to measure state mindfulness, however it might be even worse when it comes to measuring trait mindfulness as it would be more difficult to precisely calculate an individual's general inclination to move into that state (Tamagawa et al., 2013).

Lucas-Thompson, Broderick, Coatsworth, & Smyth (2019) believed that although the complex nature of mindfulness has made it tough to easily fit into these two categories of state or trait, daily mindfulness could be considered as a trait as it comes naturally and does not need to be practiced. On the other hand, the meditative mindfulness could be defined as a state as needs to be practiced. However, an interesting point about mindfulness is that although it can be considered either a trait or a state, it can simultaneously be both a state and a trait as well (Bravo, Pearson, Wilson, & Witkiewitz, 2018). In a comparison in participants from before to after a mindfulness practice session, it was found that any increase in state mindfulness leads to growth in trait mindfulness too as measured by two different self-report mindfulness questionnaires (Kiken, Garland, Bluth, Palsson, & Gaylord, 2015). Even though, if there was a little to no increase in state mindfulness, also trait mindfulness did not show that much improvement (Kiken et al., 2015; Kiken, Lundberg, & Fredrickson, 2017). Furthermore, Brown and Ryan showed that practicing mindfulness leads to increase trait mindfulness based on higher scores in self-report

measures of trait mindfulness (Brown & Ryan, 2003).

It is important to mention here that trait mindfulness and state mindfulness have both theoretical and experimental support, which representing two separate constructs of mindfulness which require distinct effective classifications and measurement tools. The issue arises when researchers aim to use the same measure to examine two different aspects of mindfulness and also can lead to false and unpredictable findings (Bravo et al., 2018). In this current research, the main focus was on state mindfulness as participants in both studies just received a short instruction on how to practice mindfulness before starting the jigsaw session.

Mindfulness-Based Approaches

Mindfulness can be cultivated through a number of well-established approaches. Validated mindfulness-based approaches include; Mindfulness-Based Stress Reduction (Kabat-Zinn et al., 1985), Dialectical Behaviour Therapy (DBT) (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991), Mindfulness-based eating awareness therapy (MB-EAT) (Kristeller & Hallett, 1999), Acceptance and Commitment Therapy (ACT) (Hayes, Follette, & Linehan, 2004), and Mindfulness-Based Cognitive Therapy (MBCT) (Segal, Williams, & Teasdale, 2002). Mindfulness interventions aim to promote greater attention to and awareness of the present moment experience of both external and internal stimuli. In mindfulness and acceptance-based approaches therapies work with clients to shift their relationship to thoughts and feelings in order to foster new ways of responding to difficult internal experiences of external situations. Rather than challenging maladaptive patterns of thoughts, mindfulness approaches develop acceptance of difficult thoughts and emotions, and promote a space between thinking or feeling and then choosing to respond (Siegel,

2019).

Mindfulness-Based Stress Reduction. Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn et al., 1985) was initially developed to treat chronic pain and has since been employed with a wide range of chronic clinical conditions, as well as with relatively healthy individuals to improve the response to stresses of daily life (Grossman, Niemann, Schmidt, & Walach, 2004; Khoury, Knäuper, Schlosser, Carrière, & Chiesa, 2017). MBSR is an 8-week program where participants learn to foster mindfulness in their lives using a standardized evidenced based protocol. MBSR consists of weekly 2-2.5 hour group-based classes with a qualified instructor, daily audio-guided home practice (approximately 42min/day), and a day-long mindfulness retreat on the sixth week (Kabat-Zinn et al., 1992). Formal guided mindfulness practices include; the body scan, mindfulness of the breath, sounds and thoughts, mindful movement, and mindfulness of everyday activities (Cavanagh et al., 2018). By learning to become aware of automatic patterns of responding, in a non-judgmental manner, participants can develop new ways of coping in response to stressful situations (Gotink et al., 2017). In a long-term clinical follow-up study, Kabat-Zinn and his colleagues demonstrated the role of MBSR in helping anxiety disorders (Miller et al., 1995). Afterwards, Kabat-Zinn and his colleagues conducted numerous studies on MBSR that verified the benefits of practicing mindfulness meditation such as improving symptoms of high blood pressure and chronic pain (Kabat-Zinn & Chapman-Waldrop, 1988; Kabat-Zinn et al., 1992; Miller et al., 1995); Breast/ prostate Cancer (Kabat-Zinn et al., 1998; Massion, Teas, Hebert, Wertheimer, & Kabat-Zinn, 1995), and decreasing aggression (Griffith et al., 2016).

However, few studies have used randomized control trials. A critical review about the effects of MBSR in aggression treatment was conducted by Fix and colleagues which demonstrated the lack of treatment integrity, lack of a control group and the potential placebo effect reduce confidence in reported findings (Fix & Fix, 2013).

Mindfulness-Based Cognitive Therapy. Mindfulness-based cognitive therapy (MBCT) was developed by three therapists Zindel Segal, Mark Williams and John Teasdale based on Kabat-Zinn's MBSR program (Segal et al., 2002). However, it is inspired by Aaron T. Beck's Cognitive Behaviour Therapy (CBT) which was established in 1960s as MBCT uses CBT techniques in collaboration with mindfulness mediation. MBCT was initially originated to treat the relapse of depression in Major Depressive Disorder (MDD) patients. The difference between MBSR and MBCT are mainly in their approaches and the initial goal of their establishment (Coelho, Canter, & Ernst, 2007). The MBCT focuses on cognitive processes, by raising participants' awareness about depression, a core role of cognition and different possible ways to cope with it. During MBCT practice, patients will learn how to avoid the automatic cognitive process while they feel depressed by noticing when it is occurring and altering from reacting to accepting and observing them without judgment (Teasdale et al., 2002). Segal and colleagues conducted a randomized controlled trial for 60 weeks and demonstrated that MBCT could be even more successful than normal pharmacological treatment at decreasing the risk of the relapse in MDD patients particularly for those with three or more previous episodes of depression (Segal et al., 2002; Teasdale et al., 2002). Furthermore, in another long-term study, Segal and colleagues showed that MBCT would be able to be compared to

pharmacotherapy with the same advantages as a maintenance therapy in decreasing the risk of the relapse in MDD patients over a follow-up of a period of 18 months.

Although results demonstrated that MBCT decreased the risk of relapse by 74%, with pharmacotherapy showing a similar decrease of 76% (Bondolfi et al., 2010; Segal et al., 2010; Segal & Walsh, 2016; Segal et al., 2002), there are other researchers that argue against the unidimensional feature of MBCT for MDD patients. Bondolfi and colleagues worked on their Swiss sample of 60 patients with psychiatric disorders. They did not see superiority of MBCT over psychiatric treatment (Bondolfi et al., 2010). In another systematic review, Lomas and colleagues found the MBCT results for depression were ambiguous. They said although the majority of studies found an overall improvement for MDD patients, some found no such improvement (Lomas et al., 2017). However, it needs to be clarified here that such findings might be predictable as MBCT are primarily targeted at people who are at risk of relapse to depression. Otherwise, it would show more positive results if the target group was people who are actually currently depressed (Dobkin et al., 2012).

Dialectical Behavioural Therapy. Dialectical Behavioural Therapy (DBT) (Linehan et al., 1991) is a cognitive behavioural therapy with a focus on mindfulness and acceptance strategies. DBT was created by Dr Linehan to treat chronically suicidal individuals and developed into a comprehensive treatment for Borderline Personality Disorder (BPD) (Linehan et al., 1991). BPD is a personality disorder characterized by prominent and pervasive dysregulation of emotion, behaviour and cognition. Emotion dysregulation is defined as a lack of skills needed, or using maladaptive strategies to regulate emotional responses (Kring & Sloan, 2010). DBT is a comprehensive treatment

program that includes weekly group training, individual therapy sessions and telephone coaching (Lindal & Breivik, 2010). The core mindfulness skills in DBT are designed to help individuals focus on the present moment, let go of memories of the past, and worries about the future (Bohus et al., 2019). In a meta-analysis and systematic review, DBT demonstrated efficacy in stabilizing and controlling self-destructive behavior in BPD client and improving compliance (Mancke et al., 2017). Although DBT is effective in reducing self-harm in BPD patients (Hawton et al., 2016; McFetridge, Milner, Gavin, & Levita, 2015), in some cases patients did not show improvement and decided to leave treatment prematurely (Reyes-Ortega et al., 2019; Wright et al., 2018).

Mindfulness-Based Eating Awareness Therapy. *Mindfulness-based eating awareness therapy (MB-EAT)* was established by Jean Kristeller as a program which aims to help people with eating disorders and weight management (Kristeller & Hallett, 1999). In contrast with MBSR and MBCT which are 8-week training sessions, MB-EAT is a 12-session training course. This program includes teaching inner and outer wisdom, mindful eating, hunger and body awareness, physical activity and taste satisfaction, fullness awareness and mindful choices, integrating internal and external wisdom, mindful movement and attending to emotions, stress and eating, breaking the chain and moving forward, and the follow-up (Kristeller & Wolever, 2011). In a recent study, it was suggested that the MB-EAT program would engage different aspects of experience which are related to emotional balance, as evaluated by the Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being subscale (FACIT-Sp), and that increases in spiritual well-being would relate to other measures of adjustment such as improvement in disordered eating (Kristeller & Jordan, 2018).

Acceptance and Commitment Therapy. Acceptance and commitment therapy (ACT) is a trans-diagnostic approach that focuses on increasing psychological flexibility by emphasising mindfulness, acceptance, and values based commitment action (A-Tjak et al., 2015). The psychological flexibility model underlying ACT provides a unified model of behaviour change (Arch et al., 2020). In ACT rather than changing or disputing negative thoughts, clients are taught to defuse from them using mindfulness and acceptance techniques that promote the process of disentanglement (Orsillo & Batten, 2005). Support for the ACT model has been shown to have positive outcomes across a broad range of psychological problems (Dalrymple & Herbert, 2007; Lundgren, Dahl, Yardi, & Melin, 2008; Muto, Hayes, & Jeffcoat, 2011). The American Psychological Society in 2016 stated that ACT had modest research support for treating depression (Pots et al., 2016).

To draw a conclusion based on what have been discussed about mindfulness-based approaches, it can be said that most of these studies have concentrated on benefits of these approaches on mental and physical health. This might raise the question for some of whether or not these approaches are capable of being considered types of psychotherapy or forms of substitute medicine. There are several similarities between mindfulness principles and psychological theories, particularly cognitive behavioral theories. The main resemblance is on their focus on mental activities. In both theories, mental activities are considered as a main source to produce emotional pain that is similar to cognitive theories of psychological distress (Ma & Fang, 2019).

Measuring Mindfulness

How mindfulness is conceptualised and assessed within research and clinical settings, has considerable importance for the field. A large body of literature suggests that

mindfulness training is helpful in reducing psychological distress and increasing wellbeing, albeit many studies lack full randomized control trial (RCT) (Gotink et al., 2017; Lindsay et al., 2018). However less research exists about the extent to which participants acquire mindfulness skills during practice sessions, or what specific aspects of mindfulness contribute to the positive treatment effects (Shapiro, Carlson, Astin, & Freedman, 2006). As investigations increasingly seek to understand the active components of mindfulness that underlie clinical outcomes, the development of reliable and valid measurements of mindfulness is needed.

Several self-report instruments have been presented in recent years to assess mindfulness in daily life. Brown and Ryan introduced the *Mindful Attention Awareness Scale (MAAS)* which is a 15-item scale and measures trait mindfulness (Brown & Ryan, 2003); *Kentucky Inventory of Mindfulness Skills (KIMS)* is developed by Baer, Smith and Allen which is a 39-item scale (Baer et al., 2004); Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, presented *Freiburg Mindfulness Inventory (FMI)* which is a 14-item questionnaire and claims that is able to cover all aspects of mindfulness (Leigh, Bowen, & Marlatt, 2005); *Toronto Mindfulness Scale (TMS)* is a 10-item mindfulness scale that measures state mindfulness after meditation experience (Lau et al., 2006), however Davis and colleagues developed a trait version of the Toronto Mindfulness Scale *(TMS-Trait)* (Davis, Lau, & Cairns, 2009); Feldman introduced *Cognitive and Affective Mindfulness Scale—Revised (CAMS-R)* which is a 12-item scale (Feldman, 2007); *Philadelphia Mindfulness Scale (PHLMS)* is a 20-item questionnaire that aims to measure trait mindfulness and has two subscales, awareness and acceptance (Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008); and Chadwick and Hember introduced *Southampton*

Mindfulness Questionnaire (SMQ) (Chadwick, Hember, et al., 2008). *The Five Facet Mindfulness Questionnaire (FFMQ)* is another mindfulness measurement that in fact consists of five independently developed mindfulness questionnaires and is presented by Baer and his colleagues (Baer et al., 2008); And finally, the most recent mindfulness questionnaire presented by Li, Black and Garland that is the *Applied Mindfulness Process Scale (AMPS)* and is designed as a process scale (Li, Black, & Garland, 2016). For a more detailed discussion of the development and facets of the FFMQ and AMPS see the *General Methods* of this thesis.

These high number of mindfulness questionnaires demonstrate the extensive amount of research interest in this area. However, these instruments and the facets they measure have not been objectively tested for validity. In spite of the fact that some researchers have compared the fundamental hypotheses and concepts of these measurements, so far none of them have aimed to evaluate the difference in methodological approaches that are used in these questionnaires. A lot of research suggested that researchers should be cautious in using self-report measures to evaluate mindfulness (Baer, 2018, 2019; Grossman, 2011; Jackson et al., 2019; Kim, Park, & Seo, 2016). Other authors have suggested that future research should expand the assessment of mindfulness to include methods other than self-report questionnaires citing a growing number of laboratory experiments that study the effects of mindfulness and assess how participants cope with stressors, or use experience sampling methods as a means to examine individuals' mindful awareness during daily activities (Brown & Ryan, 2003). Also, Jackson and colleagues systematic review drew attention to the importance of using quality performance-based measures (e.g., cognitive tests of attention, inhabitation) in addition to subjective self-

reports that assess mindfulness (Jackson et al., 2019).

Content validity, dimensionality, and factor structure. According to some studies by multiple researchers, several mindfulness questionnaires such a MAAS, SMQ, CAMS-R and FMI, are able to support the unitary construct of mindfulness; (Brown & Ryan, 2003; Chadwick, Baker, Jacoby, Marson, & Smith, 2008; Chadwick, Kusel, Cuddy, & Taylor, 2005; Leary, Tate, Adams, Allen, & Hancock, 2007; Majumdar, Grossman, Dietz-Waschkowski, Kersig, & Walach, 2002). Among all of these mindfulness questionnaires, some studies showed that the MAAS has been mostly considered mindfulness as a unidimensional measure (Carlson & Brown, 2005; Fang et al., 2019; MacKillop, Mattson, Anderson Mackillop, Castelda, & Donovick, 2007). This is the main reason that some researchers has criticized this measurement as a one that underrepresenting mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Furthermore, MAAS has been critiqued for mainly focusing on attention and not non-judgement (Carriere, Cheyne, & Smilek, 2008; Zhu et al., 2019) and is also too basic (Grossman, 2011).

On the other hand, other mindfulness questionnaires such as FFMQ, PHLMS, TMS and KIMS support multidimensional constructs of mindfulness; (Baer, 2018; Baer et al., 2004; Baer et al., 2006; Cardaciotto et al., 2008; Feldman et al., 2007; Lau et al., 2006). Additionally, many studies have shown the conceptual similarity in all these multidimensional measurements such as awareness and acceptance in PHLMS and decentering and curiosity in TMS. Likewise, studies have shown some similarities between the conceptual basis of these multidimensional scales and facet-level inter correlations in the FFMQ which illustrates awareness and non-reactivity as the most observed

involvement with the mindfulness construct (Bishop, 2002). Based on mindfulness's multidimensional construct, researchers mostly prefer to assess the interaction between these dimensions instead of using an overall score as a representation of mindfulness by considering the fact that these facets might be separable (Baer, 2018; Büssing, Hedtstück, Khalsa, Ostermann, & Heusser, 2012; Eisenlohr-Moul, Walsh, Charnigo, Lynam, & Baer, 2012).

Based on measuring mindfulness as a concept, it is highly recommended to consider and use other questionnaires along with mindfulness scales as most of those that exist typically relied on self-report data, with no objective measure of a participant's ability to be mindful (Elices et al., 2019; Krieger et al., 2019). For both studies of current thesis, FFMQ and AMPS were used to assess self-report mindfulness in participants along with self-consciousness measure (SCS-R), as a measure that would be expected to correlate with mindfulness, but was created without the intention of being a mindfulness measure. For more detailed information of the mindfulness and wellbeing questionnaires which were chosen for this research see the *General Methods* section of this thesis.

Benefits of Mindfulness

Mindfulness and Wellbeing

In recent decades, psychological wellbeing and mindfulness practice have been strongly associated with each other (Brown & Ryan, 2003; Davis, Strasburger, & Brown, 2007; Tambyah, Tan, & Kau, 2010). Mace in a study demonstrated that the association between mindfulness and psychological wellbeing is due to the dissimilar feature and unique quality of mindfulness which is focusing on a process rather than unimportant and unnecessary aspects of life that can cause issues for a person's wellbeing (Mace, 2008).

The definition of wellbeing has been conceptualized differently by many researchers, even though they are all fairly similar. Some believed wellbeing is the same as psychological wellbeing (Ryff, 1989) and subjective wellbeing (Diener, 2000). While others believed wellbeing is nothing but happiness (Myers, 2000), and is directly related to the quality of life (Frisch, 2006). The general research overview of mindfulness, with the main focus on advantages of practicing mindfulness illustrate that people who are highly mindful are reported to have higher general wellbeing as they believe that they are in charge of their lives. These individuals feel the freedom to choose right, appropriate and appealing reactions to different situations and behaviour in general, without being concerned of being judged or evaluated by others (Brown, Abrantes, et al., 2007; Lopez & Wiley InterScience (Online service), 2009). In another research by Brown and Hammond, it has been revealed that people make securer choices by considering any possible consequences and outcomes, when they were higher in dispositional mindfulness (Brown & Hammond, 2007).

There are also some qualities that are represented during a state of being mindful (Kabat-Zinn et al., 1998). These include being open and non-judgmental, patient and non-striving, mindful of feelings and letting them go. Some people also feel hope and trust during a state of mindfulness (Becke; Cornelius-White et al., 2013), which is defined as self-compassion in other studies (Kashdan & Ciarrochi, 2013) and showing the core role of the self in mindfulness practice. A quality of being open means accepting thoughts and feelings in the way that they really are without any bias or prejudice. This meaning can overlap the quality of being non-judgmental which refers to a state of being aware but having no preference. So that all thoughts are acceptable and will not be judged or labeled as either “good and bad” or “right and wrong”. Hence, there is no attempt in focusing on

the “good thoughts” or avoid the “bad thoughts”. Being patient and non-striving are vital in practicing mindfulness because this is not an act that can be enforced or rushed. A quality of letting go in mindfulness refers to a state that permitting things to be as they are in nature. It needs to be mentioned here that accepting feelings and thoughts does not have the same meaning as giving up. Opposition, the quality of acceptance is acknowledging the feelings and thoughts which are present at the moment, without trying to change or fix them or even make them better. All these qualities play an important role in implementing mindfulness practice to each moment. In fact, the psychological construct of mindfulness goes back to the basic human nature that is described as a general tendency to accept present moment experiences (Kabat-Zinn et al., 1992; Santorelli, 2007; Williams & Cropley, 2014). However, this tendency needs to be trained to improve.

Overall, all these mindfulness qualities are directly linked with general wellbeing and does appear to improve the wellbeing. However, based on Lomas and colleagues systematic review of the impact of mindfulness on the wellbeing of healthcare professionals, the similarity of the studies was inconsistent so further research is needed, especially high quality randomized controlled trials (Lomas, Medina, Ivtzan, Rupprecht, & Eiroa-Orosa, 2018).

Mindfulness and Mental Health

There are several psychological and physical health benefits which have been associated with mindfulness (Chiesa & Serretti, 2010; Coffey, 2008; Creswell et al., 2007; Didonna, 2009; Digdon & Howell, 2008; Hofmann, Grossman, & Hinton, 2011; Keng, Smoski, & Robins, 2011; Lakey, Campbell, Brown, & Goodie, 2007; Smith, Richardson, Hoffman, & Pilkington, 2005). Mindfulness is also proposed to improve the concentration

ability (Sedlmeier et al., 2012), to decrease the concerns of being judged or evaluated along with reducing negative self-conscious experience (Brown, Ryan, & Brown, 2007), and improve an ability to cope with thoughts and feelings (Shapiro et al., 2006). Other studies, have found a significant relationship between higher levels of mindfulness and enhanced sports performance as well (Bernier, Burle, Hasbroucq, & Blouin, 2009; Kee et al., 2008; Wolanin et al., 2010). A few studies have shown that the state of mindfulness can be enhanced through practicing meditation (Lutz, Lochbaum, Lanning, Stinson, & Brewer, 2007).

Some studies have linked the high scores in self-report mindfulness measurements to higher scores in creativity (Ball & Dibble, 1980; Colzato, Ozturk, & Hommel, 2012). Other studies have related positive mental health to regular practicing mindfulness (Campagne, 2019; Eskic, Kuhlmann, Kreinbihl, & Hammerle, 2019). In short, people who are more mindful than others particularly during their daily routines, were shown to have stronger mental health (Brown & Ryan, 2003; Khoo et al., 2019; Santorelli, 2007). Furthermore, practicing mindfulness has been directly related to improving numerous cognitive processes (Chambers, Gullone, & Allen, 2009; Jha, Krompinger, & Baime, 2007; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010). For instance, in a study that is conducted by Jha and colleagues, it was demonstrated that practicing mindfulness significantly enriched varied facets of attention (Jha et al., 2007). In another study by Seli and colleagues, it has been predicted that mindfulness might be able to ease the distinguishment of familiar objects in unfamiliar contexts and could be related to enhancements in sustained attention (Seli, Carriere, & Smilek, 2015) . Another research by Baer and colleagues has demonstrated a positive significant connection in people who

report higher state of mindfulness in their daily lives (either by training or dispositional) and enhanced psychological health and wellbeing (Baer, Carmody, & Hunsinger, 2012). Other studies have found a relationship between being mindful and healthier eating habits, better quality sleep, and improved physical health (Carlson, Speca, Patel, & Goodey, 2004). It appears that people in high mindfulness state, are able to show better physical and psychological health than others as it could be said that people high in mindfulness have less fear to be evaluated. They are more eager to live in the present and are less worried about the past or even future.

However, there are some critical and systematic reviews of mindfulness that do not completely agree with what have been discussed here (Lomas, Medina, Ivtzan, Rupprecht, et al., 2018; Lomas et al., 2017). They believe that when it comes to demonstrating the positive relationship between mindfulness and especially mental health, it is vital to analyse its various components separately (Lomas et al., 2017), which many studies did, e.g., deploying Bear et al.'s Five Facet of Mindfulness Scale (Baer et al., 2006). This shows the need to avoid simplistic statements about effectiveness of mindfulness practice in mental health without at least clarifying which aspect or type of mindfulness one is referring to (Lomas et al., 2017).

Mindfulness and Psychological Distress

A lot of studies have been conducted by focusing on finding the inverse relationship between mindfulness and psychological distress such as depression and anxiety (Baer et al., 2012; Brown & Ryan, 2003; Carmody, Reed, Kristeller, & Merriam, 2008; Delgado-Pastor et al., 2015; Fehr, 2017; Gu et al., 2016; Wells & Fisher). Psychological distress represents a significant health burden as it contributes to poor health behaviour,

psychological imbalance and increased morbidity and mortality. High level of psychological stress have been correlated with immune dysfunction (Cohen, Tyrrell, & Smith, 1991). In mental health and medical interventions, mindfulness has been included as a skill that can be learned and trained. In these settings, mindfulness practice helps to develop psychological performance as well as decreasing psychological distress that ultimately will lead to improved and better-quality health and wellbeing (Evans & Hannigan, 2016).

Researchers have tried to implement different methods to assess the possible inverse relationship between mindfulness and psychological distress such as interventions methods and individual differences methods (Ostafin, Brooks, & Laitem, 2013). Based on intervention studies, a significant relation between decreasing psychological distress and practicing mindfulness have been found. These results showed reduction in psychological distress after interventions administered from just one session (Arch & Craske, 2006) to ten days intensive training (Ostafin & Palfai, 2006) and even a long-term intervention study with controlled weekly sessions over two months (Carmody & Baer, 2008).

However, there is some research that suggests mindfulness can also have moderate to severe negative health impacts such as leading to more anxiety, negative social behaviour or even psychosis (Britton, 2019; Farias & Wikholm, 2016; Van Dam et al., 2018). Moreover, according to Lomas and colleagues systematic review, further high quality randomized control trials research is needed to enable researchers to talk about their positive findings associates with mindfulness more confidently (Lomas, Medina, Ivtzan, Ruppercht, & Eiroa-Orosa, 2018; Lomas et al., 2017).

These findings illustrate how mindfulness practice can result in positive health

outcomes. An introduction to the proposed cognitive mechanisms of action was presented in context with conceptualizations of mindfulness in practice. Research that continues to explore the active components of mindfulness will provide a better understanding of the psychological mechanisms underlying the observed benefits of mindfulness interventions and will serve to inform mindfulness-based practice.

Expectancy Effects

The expectancy effects refer to ways in which participants expectations and beliefs affect their perception and behaviour, and as a result, affect the outcome of a psychological study (Vujanovic, Zvolensky, Bernstein, Feldner, & McLeish, 2007). In general, when people are mindful of a desired outcome, their perception and behaviour are also affected in some way (Ostojić et al., 2016; Vujanovic et al., 2007). Expectations can have self-fulfilling consequences which could be therefore both negative and positive (Ostojić et al., 2016). Inaccurate negative expectations can fully stop a person from achieving his or her full potential and in contrast, positive expectations can help lead one to accomplish their dreams (Cash, Heisick, & Papesh, 2018; Ostojić et al., 2016). In this research, it was aimed to find out to what extent unrelated expectations to mindfulness could influence the results. There are different variety of expectancy effects in psychological studies such as the placebo effect, observer or experimenter effects, social desirability and subject expectancy effects (Cash et al., 2018; Huppert et al., 2004; Kirsch, 2019).

The Placebo Effect

A placebo can be considered as an object, substance, therapy, or even a label that has no identified medical and psychological effects by itself (no active ingredient), but nevertheless, when presented with the expectation of a benefit brings about a physical

change in someone's condition. Mostly in medical studies a placebo can be a sterile water or a sugar tablet. The main point of using a placebo in different studies is mostly due to its real possible effect while it is just a fake treatment (Ionescu et al., 2019). The history of placebo in psychology and psychiatry can be understood only in the context of randomized controlled trials (RCTs) (Benedetti, 2008; Shorter, 2011). Placebo treatments are as old as medicine itself, and are particularly effective in dealing with psychosomatic symptoms (Shorter, 2011). Although in psychology, placebos have mainly been featured in clinical drug trials (Cook et al., 2004; Goletiani, Mendelson, Sholar, Siegel, & Mello, 2009; Perry et al., 2019), there are other psychological studies that have been included placebos in mental health and wellbeing such as treatment of depression (Krause et al., 2019; Walpoth et al., 2008); pain relief (Williams, Eccleston, & Morley, 2012; Zeidan et al., 2015); mood and cardiovascular variables (Zeidan, Johnson, Gordon, & Goolkasian, 2010); significant increases in mindfulness dispositions and critical thinking scores (Noone & Hogan, 2018); when compared to a control group. Also, in support of these psychological studies another systematic review suggested that mindfulness based interventions were more effective than no treatment group and treatment-as-usual group, but not in comparison to placebo or other active treatment condition (Hedman-Lagerlöf, Hedman-Lagerlöf, & Öst, 2018).

The placebo effect can be considered as a mock treatment or an inactive substance that can be substituted by the real treatment and still produce the same response as if it was an original treatment (Roon et al., 2000). According to Krause and colleagues' study, people with major depression disorder showed a significant improvement after experiencing the placebo effect and having a placebo treatment instead of having a real antidepressant medication (Krause et al., 2019). Up to now, several studies have been

conducted to support the benefits of the placebo effect in different patients such as; Lupus erythematosus (Fangtham, Kasturi, Bannuru, Nash, & Wang, 2019); Sleep quality (Rusch et al., 2019); Chronic suicide (Ionescu et al., 2019); Cancer (van Die et al., 2017); And in general, changes in brain connectivity (Taylor et al., 2018). Based on the book of "*The Placebo Effect*", there is some evidence that placebo effects and drug effects are additive. This result suggests the advisability of maximizing the placebo component of treatment, by instructing realistically positive outcome expectations and enhancing the therapeutic association (Kirsch, 2019).

Ito and colleagues research suggested that mindfulness meditation placebo can reduce stress and anxiety (Ito, Shima, & Yoshioka, 2019). In another study, Adler-Neal also showed that mindfulness and sham-mindfulness meditation similarly reduced pain ratings (Adler-Neal et al., 2019). All of these studies demonstrated that patient's expectations play a significant role in the placebo effect as the more an individual believes in the treatment, a placebo response is more likely to be seen. Some researchers believe when a patient is expected to be cured, some important parts of their brain such as frontal cortical areas, that are responsible for creating and sustaining cognitive expectancies, will be activated which are similar to the same areas that would normally activate during mindfulness practice and psychotherapy sessions (Mayberg et al., 2002; Ong, Stohler, & Herr, 2019; Schmidt et al., 2013). Hence as Chiesa and colleagues say "It is difficult to differentiate the neural correlates of the specific effects of active treatments from the nonspecific placebo-like effects, such as the expectancy of a benefit, which are common to all treatments." (Chiesa, Brambilla, & Serretti, 2010); p. 87). Also, Benson and Friedman talked about "remembered wellness" as a form of placebo in their work on the relaxation

response which is similar to mindfulness (Benson & Friedman, 1996). They believed that the term placebo should be replaced by remembered wellness as all people have the capability to remember the calm and confidence associated with health and happiness, but not just in an emotional or psychologically soothing way, also, this memory is physical (Benson & Friedman, 1996).

However, according to Zeidan and colleagues study, although participants in the placebo and sham mindfulness group which received a short introduction on breathing exercise, showed improvement in all facets of mindfulness, actual mindfulness meditation group produced greater results and employed distinct neural mechanisms than placebo and sham mindfulness meditation by activating higher order brain regions, including the orbitofrontal and cingulate cortices (Zeidan et al., 2015). Moreover, based upon a quasi-randomized trial and long-term observational follow-up study which conducted by Grossman and colleagues, results indicated mindfulness intervention to be of potential long-term benefit in comparison with the sham intervention (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007). Also, Prothero and colleagues showed that attention, education, and placebo control groups produced some improvements but not as large as those produced by the psychological and mindfulness interventions (Prothero, Barley, Galloway, Georgopoulou, & Sturt, 2018). Other research demonstrated that only mindful individuals feel less pain and evoke greater deactivation of brain regions supporting the engagement sensory, cognitive, and affective appraisals, in comparison with the placebo condition (Zeidan et al., 2018).

In the first study of current research, the label "mindfulness" was used to see if it could produce the expectancy effects in the active control group. It needs to be clarified here that the rational around using the passive control and active control terms in the literature was because even what was called a passive control group in this research, was still active, as they were doing jigsaw puzzles. However, this needed to be distinguished from the active control group which received the label "mindfulness" on a task.

Social Desirability and Experimenter Effects

Based on Edwards definition, social desirability refers to the participants' tendency to give socially desirable responses rather than choosing responses that are reflective of their true feelings (Edwards, 1957). In many psychological studies, social desirability is a factor that needs to be considered particularly when data collection occurs based on using self-repot questionnaires. However there are number of methods to tackle this issue such as use of well-trained interviewer or data collection through methods that do not require presence involvement of an interviewer and participants' identity can stay anonymous (Jago, Baranowski, Baranowski, Cullen, & Thompson, 2007).

Another related issue that might affect the results is experimental effects which normally happen due to some characteristics of the experimenter or something the experimenter did (Ostojić et al., 2016). When a researcher is conducting a study, some influences and errors might occur that affect the results of the study. The most common experimenter effect happens when the experimenter communicates their expectations for the outcome of the study to the participants, causing them to alter their behaviour to conform to those expectations (Pashler, Coburn, & Harris, 2012). To eliminate these issues,

both studies of current research were single-blind and participants were not told the study's hypotheses and they did not know which condition they were in.

It needs to be noted here that in a double-blind study both the participants and the experimenter do not know which group was the passive control, placebo and the experimental condition, however, in a single-blind study (as current research), only the experimenter knows the participants' conditions. Participants in any of three conditions of current research (the passive control, active control and experimental) were not aware which group they were in. The current research is single-blind as researcher needed to know in advance that participants belong to which group to give them specific information and instruction to meet the research's goals. In the first study of this research, participants in the active control group were administered the sham (just given the label mindfulness), while participants in the experimental group received actual mindfulness instruction, and the passive control group took part in the task with no reference made to mindfulness. The purpose of doing this was to determine whether or not the expectancy effects would occur for mindfulness practice. If participants who received the sham demonstrated a significant improvement in their self-report measures by comparing to the passive and experimental groups, then current study could help to support the claim for the expectancy effects for mindfulness. However, three possibilities needed to be considered and distinguished; 1) The expectancy effects occur; as participants expected to improve on mindfulness and wellbeing measures and the expectancy led to this improvement, 2) The social desirability and experimenter effects; as participants expected to show better results, although they might have not experienced an improvement, and ultimately, 3) The brain exercise (jigsaw puzzle) actually led to improve on wellbeing and mindfulness scores, in and of itself. All

these three possibilities have been considered and discussed in the *Results* section of this thesis.

Aims and Objectives

Aim of Study

The aim of current research was to investigate if there were any expectancy effects for mindfulness as well as other wellbeing measures such as mood, self-consciousness and perceived stress. For this purpose, in the first study the main focus was on the effect of different mindfulness instructions on self-report questionnaires and to determine whether simply using the label "mindfulness" on a task acts to improve self-reported measures for either mindfulness or wellbeing. For this purpose, the passive control group were told that they were participating in a wellbeing study, so researcher expected to find some improvements on wellbeing questionnaires, but no improvement on mindfulness and self-consciousness measurements. Hence, for this group, it was hypothesised that there is an expectancy effect for wellbeing. However, if an improvement was seen on all of the questionnaires, then it might have been social desirability rather than expectancy effects. For the active control group or the group who received the label mindfulness, it was predicted to find some improvements on wellbeing questionnaires as they believed they were participating in a wellbeing study (same as the passive control group) and also some improvements on mindfulness questionnaires due to receiving the label mindfulness on a task. Hence, it was hypothesised there are expectancy effects for both wellbeing and mindfulness in the active control group. The same was predicted for the experimental group or the group who received a short-mindfulness intervention.

In the second study, the main focus shifted to manipulating participants' understanding of mindfulness to determine how it would affect their self-report mindfulness along with other proposed wellbeing measurements. It was assumed that if a short-mindfulness intervention had an effect for itself, it must have occurred regardless of giving positive or negative information to participants. For this purpose, it was hypothesised that the passive control group would show some improvements on wellbeing questionnaires, but no improvement on mindfulness and self-consciousness measurements (same as the study 1). However, if an improvement could be seen on all of the questionnaires, then it might have been social desirability rather than expectancy effects. For the active control group, or the group who received an induction about disadvantages of practicing mindfulness, it was predicted that giving negative information about mindfulness would significantly decrease participants self-report mindfulness and self-consciousness along with self-report wellbeing. In contrast, for the experimental group or the group who received an induction about advantages of practicing mindfulness, it was predicted that giving positive information about mindfulness would significantly increase participants self-report mindfulness along with self-report wellbeing. So, both of these hypotheses could help to support researcher's main question regarding the existence of expectancy effects for mindfulness.

This research is highly original, as it is assessing these expectancy effects and serves as a caution to other mindfulness research using self-reports. This is needed to enhance evidence based psychological research into mindfulness practices.

Hypotheses

Study 1

H_1: There is an expectancy effect for well-being in the passive control group.

H_2: There is an expectancy effect for mindfulness in the active control group.

H_3: There is an expectancy effect for well-being in the active control group.

H_4: There is an expectancy effect for mindfulness in the experimental group.

H_5: There is an expectancy effect for well-being in the experimental group.

Study 2

H_1: There is an expectancy effect for well-being in the passive control group.

H_2: Focusing on "disadvantages of practicing mindfulness" would significantly decrease self-report mindfulness in the active control group.

H_3: Focusing on "disadvantages of practicing mindfulness" would significantly decrease self-report well-being in the experimental group.

H_4: Focusing on "advantages of practicing mindfulness" would significantly improve self-report mindfulness in the active control group.

H_5: Focusing on "advantages of practicing mindfulness" would significantly improve self-report well-being in the experimental group.

General Methods

Participants

This research consisted of two different experimental studies using two different samples of participants. There was no obligation for participants to enter these studies and the only requirement was that they needed to be more than 18 years old. Participants were provided with an information sheet and written consent form[1] prior to engaging in the research activity. They could withdraw at any time, and were entered into a prize draw for taking part. As it is explained in the procedure section, participants in both studies of this research consisted of both university students and members of the public. The research was evaluated to be low risk and notified as such to the Massey University ethics committee. A total of hundred and twenty participants took part in two studies (n = 60 each). Each study consisted of three groups with twenty participants in each. Both genders (female and male) were involved and all were over eighteen years old at questionnaire completion. As shown in Figure 1, the majority were female in both studies:

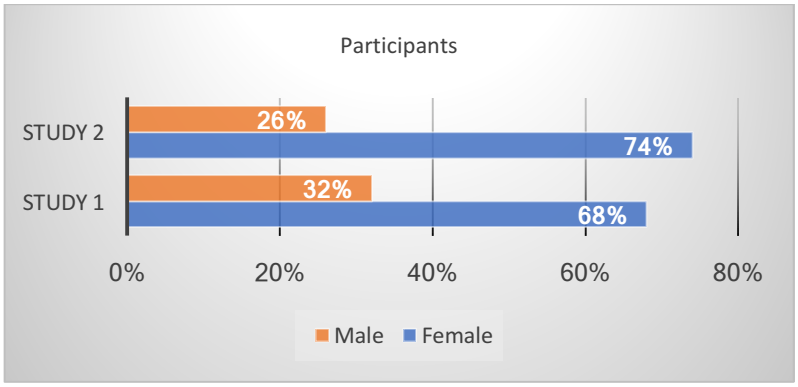

Figure 1. Population of female and male participants in study 1 and study 2.

[1] Appendix A

The risk of harm associated with the intervention and measures used in this study was minimal. No data collected has been used for undisclosed purpose. Data is sorted electronically and password protected. Individuals are not identifiable from their sorted data.

Ethics

The current research has been assessed by peer review and considered to be low risk. Accordingly, it has not been reviewed by one of the University's Human Ethics Committees. This study was deemed to be low risk as per Massey University's ethics guidelines, and was notified as such. As a definition of low risk research, it is one in which the nature of the harm is minimal and no more than what is normally faced in daily life. A research that has been considered low risk does not receive approval from a Human Ethics Committee, but is notified and conducted according to their guidelines.

The main researcher is accountable for the ethical conduct of this research so all considerations of the code of ethical conduct have been considered with regard to this research. Written informed consent was required for all participants prior enrolling in this research. Participants were briefed in full and received information sheet before agreeing with and signing the consent form. Other kinds of ethical considerations include the safety of participants if they, especially passive control group, in both studies, experience elevated distress as a result of not being aware about taking part in mindfulness research. As each group was given slightly different instructions, in the debriefing it was ensured that they all received the same information on the purpose of the study and how to complete jigsaws mindfully.

Jigsaw Puzzles

In both, the study 1 and the study 2 of this research, jigsaw puzzles were selected for the task as a "brain exercise" that needed participants' concentration on the present moment for a certain period of time along with being doable in group setting. Before purchasing jigsaws for this research, it had been considered to find standard jigsaw puzzles which were suitable for adults and with almost the same difficulty levels. Also, themes were picked that seemed to compliment a study on wellbeing and mindfulness. Ultimately, the jigsaw puzzles which were used in this research consisted of six different pictures of nature[2] with 100 pieces and moderate complexity which were selected to be consistent with a "well-being" exercise and were randomly given one to each participant.

Measures

Quantitative measures for mindfulness skills, mood, perceived stress and self-consciousness were used in this research. The emphasis of this study was on expectancy effects of self-report measures, especially mindfulness measures. The data for both studies was collected by 5 self-report questionnaires to assess the outcome(s) of the study. Five Facet Mindfulness Questionnaire (FFMQ) and Applied Mindfulness Process Scale (AMPS) for assessing mindfulness, Positive Affect of Schedule (PA-PANAS) for positive mood, Negative Affect of Schedule (NA-PANAS) for negative mood, Perceived Stress Scale (PSS) for stress, and Self-Conscious Scale-Revise (SCS-R) for self-consciousness.

[2] Photos of the jigsaws in Appendix B

Additionally, in post-test and after jigsaw session, participants also were asked to complete the demographic questionnaire which consisted of these questions:

1) What is your age?

2) Gender

3) Your ethnic

4) Are you a student?

5) Is Psychology your major?

6) Are you a native English speaker?

7) Spiritual Affiliation: Do you consider yourself to be a spiritual person?

8) Have you ever had meditation experience? (even based on your religion)

9) Have you ever heard of 'mindfulness'?

10) Have you ever practiced 'mindfulness'?

11) If yes, have you found it useful?[3]

Mindfulness Questionnaires

As mentioned in previous chapter, up to now several scales have been introduced to measure mindfulness abilities as a state or trait (Sood et al., 2019). The main focus of all these self-report measures is to examine an individual's overall inclination to be mindful in everyday life (Walsh, Saab, & Farb, 2019). These measures also are meaningfully correlated with each other and display acceptable psychometric assets (Baer et al., 2006). For this research, all mindfulness questionnaires were considered and their possibility of

[3] Appendix C

being applicable in current research was assessed. Although this research is looking at state mindfulness, after a careful consideration, the decision was made to use FFMQ and AMPS for this research. Since state measures such as MAAS are only assessing attention and awareness, which even in the control condition could have increased as doing jigsaws involved attention and awareness. Whereas including the trait measure with five facets allowed researcher to look whether all facets increase or just those that might have been expected to fit with the task (e.g., observing and acting), which would be more indicative of expectancy effects than just seeing an increase in attention and awareness.

The Five Facet Mindfulness Questionnaire (FFMQ)[4]*;* can be considered as one of the most commonly used instruments in measuring mindfulness, which was introduced by Baer, Smith, Krietemeyer and Toney in 2006. The FFMQ is presented to measure dispositional or trait mindfulness and has two versions; long form which is a 39-item scale and short form that is a 15-item scale. All participants in both studies of the current research completed the long form of the FFMQ which measures five facets of a general tendency to be mindful in daily life. Each item is rated on a 5-point Likert scale ranging from 1 (Never or very rarely true) to 5 (Very often or always true). The five facets are: *Observing* one's inner experiences and answers to incentives, *Describing* one's thoughts and feelings, *Non-judging* and acceptance to one's inner state rather than considering thoughts and emotions as good or bad, *Acting with awareness,* and *Non-reactivity* to inner experiences, or the inclination to let stimulating incentive to come and go without essentially responding (Baer et al., 2008). Based on several studies, the FFMQ has been illustrated to have an excellent

[4] Appendix D

internal consistency among its 5 facets with the following alpha values: Non-reactivity =.75, Observing = .83, Acting with Awareness = .87, Describing = .91, and Non-judging = .87 (Baer et al., 2006; Gu et al., 2016).

The FFMQ represents an attempt to provide a comprehensive measure that constructs mindfulness multi-dimensionally (Baer, 2009). This questionnaire and its facets developed from an empirical factor analysis of the joint group of 112 elements gathered from five different mindfulness measurements in a sample of 615 undergraduate students who almost had no meditation nor mindfulness experience (Baer et al., 2008). The five mindfulness scales examined were: the Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003), the Kentucky Inventory of Mindfulness Skills (KIMS) (Baer et al., 2004), the Cognitive and Affective Mindfulness Scale-Revised (CAMS) (Feldman, 2007), and the Mindfulness Questionnaire (MQ) (Chadwick, Hember, et al., 2008). All questionnaires showed adequate internal consistency and were expressively and positively correlated with each other, moreover, to a large extent correlated in anticipated directions with variables related to mindfulness (such as meditation experience, openness to experience, emotional intelligence, psychological symptoms, thought suppression and experimental avoidance) (Iani, Lauriola, & Cafaro, 2017) However, the variation in the correlations between mindfulness and other constructs suggested that the questionnaires may be assessing somewhat different aspects of the mindfulness construct (Baer, 2006).

Baer and colleagues used a hierarchical confirmatory factor analysis to test whether the five facets were indicators of a total mindfulness construct or are well understood as five distinct constructs (Baer et al., 2006). Their findings supported a categorized structure to mindfulness as in which *Describe*, *Act-Aware*, *Non-Judge* and *Non-React* can be

considered facets of a broad mindfulness construct. However, the *Observe* facet loaded non-significantly on the overall mindfulness factor (Baer et al., 2006). The lack of fit was unexpected as observing is widely described as a central feature of mindfulness. Further analyses comparing samples with and without meditation experience suggested that the observe facet is likely sensitive to changes with meditation experience that modify its relationship with other mindfulness facets.

Baer and colleagues also found that the observing facet demonstrated a modest positive correlation with several maladaptive constructs such as, psychological symptoms and thought suppression (Baer et al., 2006). They suggested later that this might be related to the literature on self-focused attention which can be maladaptive and is associated with negative emotion and psychological disorder (Baer et al., 2008). A follow up confirmatory analysis supported the finding that the observing facet may function differently in individuals with meditating experience (Baer, 2009). Most correlations between mindfulness facets and psychological symptoms were negative, however for the observation facet this was true only in the meditating sample. In addition, when correlating mindfulness facets with wellbeing, the observing facet was only significant in the meditating sample. Baer and colleagues reported that the tendency to notice internal and external stimuli is strongly related to wellbeing in meditators but not in others (Baer, 2009; Baer et al., 2008). In current research, each facets of mindfulness were individually analysed to see if there is an expectancy effect for any of these five facets, potentially giving an idea of how participants were interpreting the questions (e.g., a participant's idea of what mindfulness is may lead to them responding to certain questions with expectancy but not others if they do not fit their idea of mindfulness). The long version of the FFMQ

(FFMQ-39) was used for both studies of this research.

In summary, the FFMQ represents an attempt to explore and operationalise common dimensions from five separate mindfulness questionnaires developed within a few years by independent research teams. The FFMQ was selected for this research because evidence has illustrated that it is sensitive to mindfulness intervention participant changes in dispositional mindfulness (Carmody & Baer, 2008). The FFMQ was also used to provide more detailed information about the different facets of mindfulness that might be responsive to the intervention, and associated with adaptive outcomes. It has mentioned earlier that the multi-faceted approach to the assessment of mindfulness is important as it may help to clarify that in current research, whether all facets of mindfulness show increase or decrease, or just those that might have been expected to fit with the task, e.g., observing and acting.

In current research, the FFMQ-39 tested the hypothesis that participants given the mindfulness label and brief mindfulness intervention could cultivate mindfulness skills or the ability to respond mindfully to the experience of daily life, as an expectancy for the active control group and either expectancy or real benefit for the experimental group. It was predicted that using active controls and implementing the label "mindfulness" in the study 1, and receiving positive information about mindfulness and advantages of practicing in the study 2, would indicate expectancy effects for mindfulness on multiple facets of the FFMQ by comparing to the passive control group.

The Applied Mindfulness Process Scale (AMPS)[5]; is one of the most recent mindfulness measurements which was introduced by Li, Black and Garland as "A process measure for evaluating mindfulness-based interventions" (Li et al., 2016). The AMPS consists of 15 items and is a new and short mindfulness scale looking at process instead of focusing on either trait or state of mindfulness. The AMPS has aimed to assess the frequency in which people may use numerous mindfulness methods and practices to deal with day-to-day stressors. In other words, the individual's answers to questions of this scale will indicate how frequently they use mindfulness to handle a variety of situations for the period of the past seven days (Li et al., 2016).

The AMPS has been developed and validated with 15 items which characterize three different fields of applied mindfulness processes including; 1) decentering, 2) positive emotional regulation, and 3) negative emotional regulation (Li et al., 2016). The AMPS has illustrated solid internal consistency with Cronbach's $\alpha = 0.91 - 0.94$, along with adequate nomological[6] validity particularly with associated constructs (Li et al., 2016). Considering the AMPS as a process measure, it can be used as a separate scale or beside recognized mindfulness scales as a construct. The AMPS was initially proposed to be used among existing mindfulness practitioners or mindfulness based intervention participants (Li et al., 2016). The development of robust mindfulness measures continues to evolve and further testing and evaluation is necessary to advance understanding.

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[5] Appendix E

[6] It is a type of construct validity that needs an evaluation of at least two constructs and that those constructs have a probable relation.

The AMPS-15 was deemed suitable for the current research because it has shown strong internal consistency in several samples including university populations and those new to mindfulness (Li et al., 2016; Schiepek et al., 2019). Also, other mindfulness measurements were considered carefully, however, none of them could catch what researcher was looking for, to run this research. The AMPS was used in this study to test the hypothesis that participants with mindfulness label and brief mindfulness intervention in study 1 and participants with positive information about mindfulness and knowledge of advantages of practicing mindfulness in study 2, could show the ability to respond mindfully to the experience of daily life particularly for the active control and experimental groups. The AMPS look at mindfulness as a process instead of putting this in box of trait or state. Another interesting point about using the AMPS for current research is related to the time frame of its questions and what it would indicate if the results showed some improvements in AMPS scores from pretest to protest. For both studies of this research, the time frame did not change from past to future. In this case, when participants scores showed increase at posttest it would mean that this improvement had happened despite not having practiced jigsaws until after the time period.

Mood Measure

The Positive and Negative Affect Schedule (PANAS)[7] by Watson, Clark and Tellegen has been considered one of the most broadly used mood questionnaires in psychological research and other wide range of psychological studies due to being employed as a measure of both psychological distress and pleasurable experience (Watson,

[7] Appendix F

Clark, & Carey, 1988). The PANAS consists of 20 affective descriptors which developed to provide a brief measure of 10 positive emotion items; *PA* (1,3,5,7,9,11,13,15,17,19) such as *Interested* and *Enthusiastic*, and 10 negative emotion items; *NA* (2,4,6,8,10,12,14,16,18,20), like *Nervous* and *Irritable*. Participants were asked to rate the extent to which they have experienced each particular emotion within a specific period of time with reference to a 5-point Likert-type scale: 1 (*very slightly or not at all*) to 5 (*very much*). The *Positive affect* is described as the extent to which a person feels passionate, dynamic and vigilant and considering its quantity, would be considered as a *High positive affect* or a *low positive affect* (Watson, Clark, & Tellegen, 1988). In contrast, the *high negative affect* was characterized as an overall feature of particular distress that includes the range of aversive mood statuses, such as anger, dislike, disgust, guilt, fear and nervousness. Whereas *low negative affect* was described as a state of serenity and quietness (Watson, Clark, & Tellegen, 1988).

The items from the PANAS were derived using a Principal Components Analysis with a large sample of emotion descriptors from Zevon and Tellegen's mood checklist (1982). These researchers accepted terms with loading of 0.40 greater on the relevant factors. The final scale resulted in 10 positive affect terms and 10 negative affect terms. The inter-correlations and internal consistencies of the positive and negative PANAS scale are 0.87 and 0.91, respectively (Sandin, Georgieva, Silberring, & Terenius, 1999). Mean scores on the PANAS can range from 1 to 5 for each scale, with 5 indicating high levels of either positive or negative affect.

The PANAS was used in this study because it has demonstrated strong psychometric properties and has been used in numerous MBIs[8] (Watson, Clark, & Tellegen, 1988), investigating the effect of mindfulness on stress and wellbeing which has a huge overlap with current research. The PANAS provides a reliable and independent measure of two affective components as a means to assess changes in wellbeing during the intervention.

For both studies of this research, the main question was about change over a short period of time, so participants were asked to indicate the extent they feel this way *over the future,* instead of over the past week and this was applied to both pretest and posttest. The PANAS-PA scores were the calculations of the ratings of the PA 10-items and the PANAS-NA scores were the calculations of the NA 10-items. As a measure of psychological distress, it was hypothesised that the all three conditions in both studies; the passive control, the active control and the experimental groups, would show reduction in the negative affect scale (NA) and an increase in the positive affect scale (PA) across the pre-test to post-test time frame. In other words, it was hypothesised that using the label "mindfulness" in study 1 and receiving positive information about mindfulness and advantages of practicing in study 2, would significantly improve self-reported mood scale scores.

Perceived Stress Measure

The Perceived Stress Scale (PSS)[9]*;* was originally developed by Cohen and colleagues in 1983 as a stress evaluation questionnaire and aims to assess psychological

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[8] Mindfulness Based Interventions

[9] Appendix G

stress over the seven days prior to the baseline and post-intervention sessions (Cohen, Kamarck, & Mermelstein, 1983). Participants answered 10 questions on a 4-point Likert scale: 1 *(Never)* and 4 *(very often)*. Higher scores are indicative that stressors negatively impact an individual. The PSS in general aims to understand how different situations affect everyone's feelings and their perceived stress (Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2004). The PSS-10 was used in both studies of current research to test the hypothesis that the mindfulness label could produce expectancy effect and improve participant's response to stress as a well-being factor.

The PSS was developed by focusing on an individual's ability to cope with life events, that characterized stress as the interaction between the appraisal of the stressor and the individual's perceived ability to cope. This is a stress model which called "Lazarus's transactional stress model" (Cohen, McKenzie, Rahmani, Singh, & Prospere, 2012; Taylor et al., 2014). It does not assess the context of specific stressful life events such as moving house or death in the family, but it gauges the individual's patterns of reacting to events, and how unpredictable, uncontrollable, and overloading respondents find their lives (Todd, Cooksey, Davies, McRobbie, & Brophy, 2019).

The original 14-item PSS (PSS-14) was validated with two samples of college students (n = 456) and another community sample of people in a smoking cessation program (n = 64) (Cohen et al., 1983). The PSS-14 exhibited good internal consistency across all three samples, respectively 0.84, 0.85 and 0.86 with moderate predictive and concurrent validity correlating in the expected manner with a range of self-report and behavioural criteria (Cohen et al., 1983; Cohen et al., 1991). As cited in (Taylor et al., 2014), a subsequent exploratory factor analysis was conducted by Cohen in 1988 and the

results revealed inadequately performing items, which were dropped to create the 10-item PSS (PSS-10).

The PSS has consistently shown good reliability and convergent validity across studies. A Psychometric analysis of the PSS-10 confirmed that it is a psychometrically valid instrument for the measurement of psychological stress (Taylor et al., 2014) Another study with a sample of 557 undergraduate students in North America tested the validity of the PSS-10 (Smith & Williams, 2014). The researchers concluded that their findings provide compelling evidence in support of this questionnaire as a stress assessment scale for business students in general and accounting students in particular (Smith & Williams, 2014). The PSS-10 was considered appropriate for this research as it has shown good psychometric properties with adequate convergent and concurrent validity. The PSS-10 was used in this research to test the hypotheses that participating in a wellbeing study for the passive control groups, along with the mindfulness label and brief mindfulness intervention in study 1 and receiving positive information about mindfulness and advantages of practicing in study 2, could improve response to stress in all three conditions; the passive control, the active control and the experimental groups, by reducing participant's stress as measured by the PSS.

Self-Consciousness Measure

The Self-Consciousness Revised Scale (SCS-R)[10]*;* is a revised version of the SCS by Fenigstein and colleagues in 1975 (Scheier & Carver, 1985). This questionnaire aims to measure three subscales that all of them are related to self-consciousness; *Private self-*

[10] Appendix H

consciousness which is related to the inner and hidden focus of one's thoughts, whereas *Public self-consciousness* which is related to the outer and noticeable path of one's thoughts, or the ideas and beliefs an individual has about the effect of their presence on others. The third subscale is called *Social anxiety* and is considered an envelope of the Public self-consciousness subscale. Originally the Self-Consciousness Scale (SCS) was extended and reviewed by different researchers such as Buss in 1980, Scheier and Carver in 1985, Grant, Kim and Crow in 2001 and finally Scheier and Carver in 2013. The SCS-R continues to be altered for diverse populations, like the instance of one of its versions that was used for children (Takishima-Lacasa, Higa-McMillan, Ebesutani, Smith, & Chorpita, 2014).

The SCS-R is originally consisted of 23 items measured with 4 point ratings (0 = not at all like me to 3 = a lot like me), which as mentioned above were split into three scopes: *Private self-consciousness* including nine items, such as "I'm always trying to figure myself out*", Public self-consciousness* including seven items, such as "I'm concerned about the way I present myself", and *Social anxiety* which includes six items, such as "I have trouble working when someone is watching me". It presented a sufficient reliability score (α = 0.73 to 0.89), and confirmed the tri-factor structure of original measure.

In both studies of this research, only *Private self-consciousness* subscale (9 questions) was used. Private self-consciousness is defined as "the tendency to think about and attend to the more covet, hidden aspects of the self" (Beitel, Ferrer, & Cecero, 2005). For instance, one's privately held beliefs, aspirations, values and feeling. Based on the main focus of the current research which is on mindfulness and wellbeing, the inward

direction of one's thoughts about themselves sounded rational to be considered as a wellbeing factor that should correlate well with mindfulness as both are introspective. The SCS-R was used in this research to test the hypotheses that participants with mindfulness label and brief mindfulness intervention in study 1 and participants with positive information about mindfulness and knowledge the advantages of practicing in study 2, could show increase in self-consciousness of the experimental groups participant's by comparing to the passive control group.

Study Design

This research was quasi-experimental in nature employing 3 X 2 designs, with one between subject variable (Group: Passive control (P.CTRL), Active control (A.CTRL), Experimental (EXP)), and one within subject variable (Pretest vs. Posttest).

Previous studies that applied a similar design found effects of a short mindfulness intervention and well-being variables of around $d = 0.45$ (Lönnberg et al., 2020; Podgurski, Greco, Croom, Arnold, & Claxton, 2019). The sample size for both studies of this research was determined based on Jacob Cohen's article "Power Primer" (Cohen, 1992). Cohen stated that sample size between 30 and 500 at 5% confidence level is generally sufficient for many researchers. Moreover, according to what Cohen discussed, an 80% chance of detecting a moderate to large effect ($d = 0.70$) with a two-tailed t test at alpha level = 0.05 requires 33 participants per sample (Cohen, 1992). Hence, according to Cohen's study and what was normally suggested in this field (Beadman et al., 2015; Cash et al., 2018; Sperduti, Makowski, Blondé, & Piolino, 2017; Stein et al., 2007), the population of 120 participants (n = 60 in each study) was known to achieve a sufficient statistical power. Also, to note here that researcher was constrained by recruiting limitations.

Procedure

Both studies in this research were advertised by posters and flyers and presented with a title of "Jigsaw and Wellbeing" to find interested potential participants. A4 sized colourful posters[11] were displayed on notice boards at Massey University (different schools), Albany village library, Auckland central library, The University of Auckland, and Auckland University of Technology, as well as around student buildings and Albany's supermarkets (Pak and Save, and New World). In this case, researcher could be assured that participants would consist of both university students and members of the public. Moreover, an email version of the flyer was sent to the Psy-Grad Email list[12]. Refreshments (tea, coffee, biscuits) were provided along with entry into a 1000-piece puzzle and a well-being book (separate prizes for each study) to thank them for their time and participation.

For both study 1 and study 2, data collection occurred before and after jigsaw sessions (pre-test, post-test). All the data before attending the jigsaw session on campus, were collected through an online survey. An invitation[13] and acknowledgement email[14] was sent to those who saw the advertisement and showed their interest to be a part of this study. Based on their availability, they were given the chance to choose a time slot to participate in the jigsaw session by doodle poll online. According to their availabilities,

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[11] Appendix I

[12] Appendix J

[13] Appendix K

[14] Appendix L

participants were quasi-randomly allocated to three groups; Passive Control (P.CTRL), Active Control (A.CTRL) and Experimental (EXP).

All participants were asked a week before coming for the jigsaw session to fill in the online survey that consisted of the information sheet, consent form and 5 questionnaires: FFMQ and AMPS (for mindfulness), PANAS (for positive and negative mood), PSS (stress), and SCS-R (self-consciousness). The reason for choosing the online survey as pretest was due to being faster and easier for both researcher and participant. After a delay of approximately a week, participants attended the jigsaw session, where participants underwent an introduction according to their group assignment and then participants were asked again to complete five questionnaires for a second time as well as the demography scale.

Before starting the jigsaw session, all participants were told that it was not a competition so there was no winner or loser. The main point of this session was to do a brain exercise which needed to be focused and concentrated and at the end of the session, by filling out the questionnaires for the second time, it would help the researcher to find a possible link between jigsaws and wellbeing and/or mindfulness, depended on group allocation.

Researcher facilitated the sessions in the style of a group intervention. All the instructions were given verbally by researcher and differed depending on group and study assignment. In both study 1 and study 2, the passive control group received neither term mindfulness nor mindfulness instruction. The only thing that was presented to participants in the passive control group, was a summary of jigsaw's history and the benefits of doing

jigsaw puzzles on wellbeing[15] to investigate possible expectancy effects for wellbeing. So, they were assumed that they are part of jigsaw and wellbeing research. On the other hand, the experimental groups in both studies, received actual mindfulness instruction along with some tips on how to practice mindfulness in study 1 and some information about advantages of practicing mindfulness in study 2. For the active control group, participants received just the label mindfulness in study 1, and some information about disadvantages of practicing mindfulness in study 2 to investigate possible expectancy effects for mindfulness.

In all three conditions, jigsaw puzzles were completed as a brain exercise in between tests. After instructions were given orally, each group approximately received twenty minutes to completed the jigsaws. Each group consisted of five participants and each participant received one jigsaw puzzle. Everyone was asked to sit down around a round table along with other participants. The researcher was quiet to decrease distractions, although participants were free to talk with each other. However, from researcher's observation, participants in the active control and the experimental groups in both studies, were quieter and stayed more focus in comparison with the passive control groups. Moreover, researcher reminded all participants to concentrate on their breathing from time to time. The detail of these will be discussed in the next two chapters.

[15] Appendix M

Study1: Mindfulness Expectancy Effects and Labeling

In this chapter, the study 1 will be explained along with its specific methods, results and a brief discussion. Statistical analyses were completed by using the Statistical Package for the Social Sciences (SPSS, v23) to analyse quantitative data. Repeated measure (pre-posttest) with the group as a between subject variable was used, with follow up post-hoc tests. All post-hoc pairwise comparisons were adjusted for multiple comparisons to manage family-wise error. For this purpose, alpha (0.05) was divided by number of comparisons which was five in this study. Partial eta squared (η_p^2) and Cohen's *d* were calculated to assess effect sizes. P<.05 has been used as criteria for both studies of this research.

Participants

For study 1, almost half of participants (45%) were between 18 to 29 years old, whilst nearly (35%) were between 30 to 45 years old and only (20%) were 50 years or older. The majority (54%) of participants had never heard or had any meditation or mindfulness experience, the remaining (46%) were experienced or had heard about mindfulness. Among experienced participants (70%) had found mindfulness meditation useful. Over half of participants (68%) were students, with nearly one quarter (23%) psychology students. Nearly half of them (56%) were native English speakers. The majority of participants (52%) reported their ethnicity as 'NZ', less than one quarter (13%) reported 'Maori/Pacific' and (13%) European, whilst 'Asian' and 'Middle Eastern' participants made up (32%) of the respondents. Over half (59%) considered themselves spiritually affiliated.

Design

In the first study, mindfulness was not mentioned to the passive control group (P.CTRL), not even as a label, and participants just completed jigsaws. Although the active control group (A.CTRL) was given the term "mindful jigsaws", they completed jigsaws as per the passive control and no specific instruction was given to this group on how to practice mindfulness. However, the experimental group (EXP) was different. Participants in EXP group were given the term "mindful jigsaws" and given instruction on mindfulness to complete the jigsaws.

Mindfulness Instructions

For study 1, participants in the active control group were told that they are taking part in a 'mindful jigsaw and wellbeing' study and no instruction or any additional information about mindfulness was given to them. However, the same as the passive control group, they received a history of jigsaw and its benefits. So, the only difference with the passive control group was the term 'mindfulness' which the active control group received. The experimental group received instruction on mindfulness in the jigsaw session. This instruction consisted of a short history and definition of mindfulness as well as help to focus on their breath and teach them mindful breathing techniques. Then they were asked and helped to be mindful during the jigsaw completion by reminding them to concentrate on their breath, the shape and colour of jigsaw's pieces and any other small details. A summary of the mindful breathing technique that was used in study 1, is mentioned here:

"The most basic way to do mindful breathing is simply to focus your attention on your breath, the inhale and exhale. You can do this while standing, sitting or even lying in a comfortable position. Your eyes may be open or closed. Tune into your breath. Feel the natural flow of breath—in, out. You don't need to do anything to your breath. Not long, not short, just natural. Notice where you feel your breath in your body. It might be in your abdomen. It may be in your chest or throat or in your nostrils. See if you can feel the sensations of breath, one breath at a time. When one breath ends, the next breath begins. Now as you do this, you might notice that your mind may start to wander. You may start thinking about other things. If this happens, it is not a problem. It's very natural. Just notice that your mind has wandered. You can say thinking or wandering in your head softly. And then gently redirect your attention right back to the breathing. Stay here for five to seven minutes. Notice your breath, in silence. From time to time, you'll get lost in thought, then return to your breath".

Results

Descriptive statistics along with inferential statistics indicated that there were no statistically significant differences among groups at baseline, suggesting all three groups were equivalent at pretest. Table 1 lists means and standard deviations at pretest and Table 2 illustrates *t*-test results for all measures at baseline for study 1.

Table 1

Baseline Means and Standard Deviations for Self-Report Measures in Study 1

	P.CTRL	A.CTRL	EXP
Measure	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**
AMPS	32.35 (6.37)	31.55 (6.99)	36.00 (7.49)
FFMQ	115.9 (13.56)	117.2 (8.25)	117.05 (11.40)
Observe	24.75 (3.49)	24.30 (2.57)	23.40 (2.72)
Describe	27.15 (2.45)	25.70 (3.11)	23.95 (3.03)
Non-React	26.90 (2.97)	24.65 (1.92)	23.50 (2.70)
Act-Aware	24.30 (2.57)	27.15 (2.45)	23.55 (2.78)
Non-Judge	23.40 (2.72)	26.05 (1.98)	23.90(2.80)
PANAS-PA	33.9 (6.26)	33.2 (6.12)	34.7 (6.54)
PANAS-NA	28.7 (5.23)	30 (3.81)	28.7 (4.27)
PSS	22.05 (3.63)	20.5 (2.62)	22.05 (4.68)
SCS-R	15.3 (3.52)	13.5 (3.92)	13.8 (4.32)

Note. P.CTRL= the passive control group, A.CTRL= the active control group, EXP= the experimental group, M= Mean, SD= Standard Deviation, AMPS= Applied Mindfulness Process Scale, FFMQ= Five Facet Mindfulness Scale, PANAS= Positive and Negative Affect Scale, PA= Positive Affect, NA= Negative Affect, PSS= Perceived Stress Scale, SCS-R= Self-Consciousness Scale-Revised.

Table 2

T-test Results and P Value for Self-Report Measures at Baseline in Study 1

	P.CTRL vs A.CTRL		A.CTRL vs EXP		P.CTRL vs EXP	
Measure	*t*-test	*p*	*t*-test	*p*	*t*-test	*p*
AMPS	1.081	0.28	1.941	0.60	1.658	0.10
FFMQ	-0.352	0.72	-0.278	0.78	0.048	0.96
PANAS-PA	0.358	0.72	-0.724	0.47	-0.370	0.71
PANAS-NA	-0.864	0.39	0.976	0.33	0.000	1.00
PSS	1.546	0.13	0.000	1.00	-1.291	0.20
SCS-R	1.567	0.12	-0.268	0.79	1.203	0.23

Note. 95% Confidence Interval for the Difference ($p<.05$)

All data was normally distributed and independent measures *t*-test, paired *t*-test and mixed repeated measures was used for analysis of variance (ANOVA). Repeated measures ANOVAs were run to identify changes in dependent variables from pretest to posttest (Preposttest), including changes in scores for the whole group (Group) and for the active control group and the experimental group versus the passive control group (Preposttest*Group).

Self-Report Questionnaires

Applied Mindfulness Scale

A repeated measures ANOVA was conducted to compare the AMPS scores over time for all three conditions. Results indicated a significant main effect of time (pretest versus posttest) in AMPS scores, $F(1,57) = 85.51$, $p = .001$, $\eta_p^2 = 0.60$. with AMPS 2 being

significantly higher at posttest (M = 36.83, SD = 7.73) than pretest (M = 33.3, SD = 7.12). There was also a significant main effect for group by showing an increase from the passive control (M = 32.6, SD = 1.49) to the active control (M = 33.4, SD = 1.49) and the experimental (M = 39.2, SD = 1.49); $F(2,57) = 5.76$, $p = .005$, $\eta_p^2 = 0.168$, as well as a significant interaction effect found between time and group, $F(2,57) = 19.61$, $p = .001$, $\eta_p^2 = 0.408$. In order to investigate this interaction, paired sample t-tests were calculated and adjusted for multiple comparisons. Results illustrated that there was no significant difference in the passive control group AMPS scores from pretest (M = 32.35, SD = 6.37) to posttest (M = 32.85, SD = 6.90); $t(19) = 1.070$, $p = .29$, $d = 0.07$, 95% CI [-1.478, 0.478]. However, there was a significant difference in the AMPS scores for the active control group by showing increase from pretest (M = 31.55, SD = 6.99) to posttest (M = 35.30, SD = 7.42); $t(19) = 5.452$, $p = .001$, $d = 0.52$, 95% CI [-5.19, 2.31]. The experimental group also showed a significant increase from pretest (M = 36.0, SD = 7.49) to posttest (M = 42.35, SD = 5.64); $t(19) = 8.048$, $p = .001$, $d = 0.95$, 95% CI [-8.001, -4.699].

As previously indicated the three groups did not significantly differ from one another at pretest, however, at posttest, pairwise comparisons (LSD adjusted for multiple comparisons) revealed significant differences among the experimental group and both the passive control and the active control group. The experimental (M = 42.35, SD = 5.64) had significantly higher scores than both the passive control group (M = 32.85, SD = 6.91); $t(38) = 4.764$, $p = .001$, $d = 1.50$, 95% CI [-13.537, -5.463] and the active control group (M = 35.30, SD = 7.42); $t(38) = 3.383$, $p = .002$, $d = 1.06$, 95% CI [-11.269, -2.831]. Data showed that there was no significant difference in AMPS scores at posttest for the passive

control and the active control group; t (38) = 1.081, p = .28, d = 0.34, 95% CI [-7.04, 2.14]. Figure 2 illustrates the means of all three conditions from pretest to posttest.

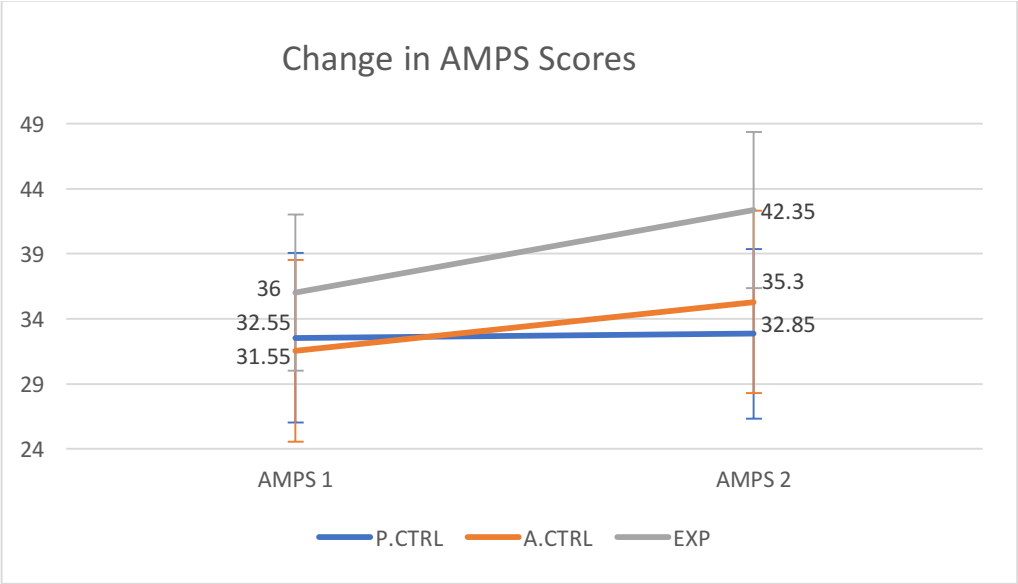

Figure 2. Applied Mindfulness Process Scale (AMPS) mean scores for all three groups between pretest to posttest in study 1.

Five Facet Mindfulness Questionnaire

To compare the FFMQ scores over time for all three conditions, a repeated measures ANOVA was conducted. Results indicated a significant main effect of time (pretest versus posttest) in the FFMQ scores, F(1,57) = 126.83, p = .001, η_p^2 = 0.69, with the FFMQ 2 (M = 125.40, SD = 15.62) being significantly higher at posttest than the FFMQ 1 (M = 116.73, SD = 11.106) at pretest. The data also showed a significant main effect for group by demonstrating a an increase from the passive control (M = 116.27, SD = 2.63) to the active control (M = 119.55, SD = 2.63) and the experimental (M = 127.37, SD = 7.12); F(2,57) = 4.68, p = .013, η_p^2 = 0.141. Furthermore, there was a significant interaction effect between time and group, F(2,57) = 62.93, p = .001, η_p^2 = 0.688.

In order to investigate this interaction, paired sample *t*-tests (adjusted for multiple comparisons) were calculated which illustrated that there was no significant difference, neither increase nor decrease, in the passive control group FFMQ scores from pretest (M = 115.95, SD = 13.56) to posttest (M = 116.6, SD = 13.30); t (19) = 0.959, p = .35, d = 0.04, 95% CI [-2.069, 0.769]. In contrast, data found a significant difference in the FFMQ scores for the active control group which received the label mindfulness, by showing a significant increase from pretest (M = 117.20, SD = 8.25) to posttest (M = 121.90, SD = 8.79); t (19) = 7.968, p = .005, d = 0.55, 95% CI [-5.935, 3.465]. Also, data demonstrated that the experimental group which received actual mindfulness training, showed a meaningful increase from pretest (M = 117.05, SD = 11.40) to posttest (M = 137.7, SD = 15.82); t (19) = 9.710, p = .001, d = 1.49, 95% CI [-25.10, -16.19].

All three groups did not significantly differ from one another at pretest, however, at posttest pairwise comparisons with adjusted LSD for multiple comparisons, revealed significant differences between the experimental group and both the passive control and active control groups. The experimental group (M = 137.70, SD = 15.82) had significantly higher scores than both the passive control (M = 116.60, SD = 13.30); t (38) = 4.565, p = .001, d = 1.44, 95% CI [-30.46, -11.74] and the active control (M = 121.90, SD = 8.79); t (38) = 3.903, p = .001, d = 1.23, 95% CI [-23.996, -7.604]. On the other hand, data showed that there was no significant difference in the FFMQ scores at posttest between the passive control and active control group; t (38) = 1.487, p = .14, d = 0.47, 95% CI [-12.52, 1.92]. Figure 3 shows the mean scores from pretest to posttest for each group separately.

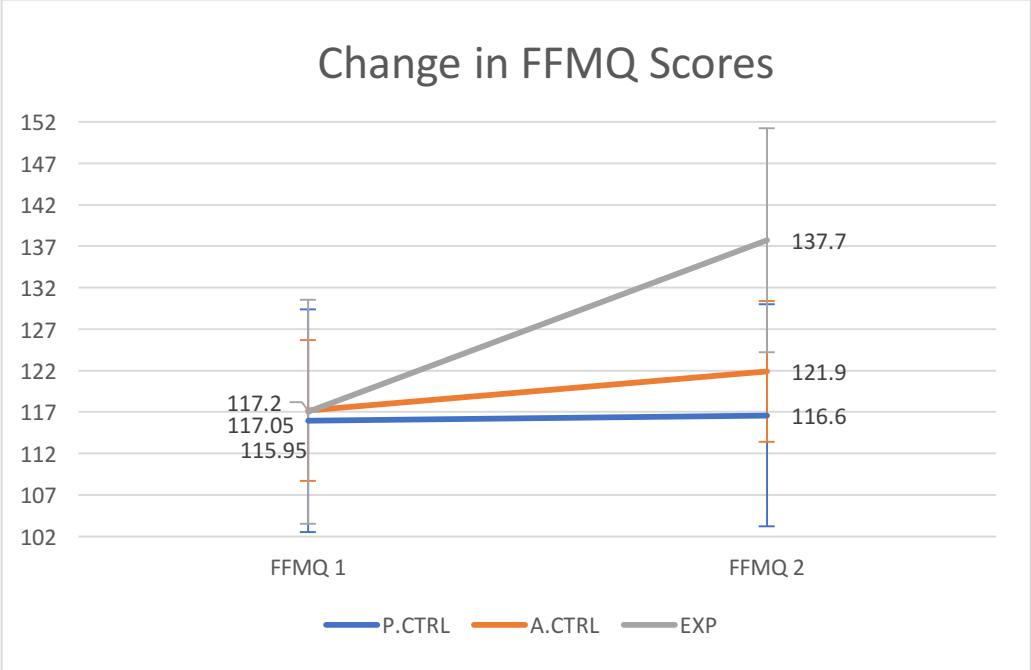

Figure 3. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for all three groups from pretest to posttest in study 1.

According to the five-factor model, facets of mindfulness on the FFMQ were evaluated as five separate factors. Figures 4, 5 and 6 showing the change in means of five facets of FFMQ for all three conditions from pretest to posttest. All five facets behaved in a consistent manner across groups as there was a little change for the passive control group, increase for the active control group and the most increase for the experimental group.

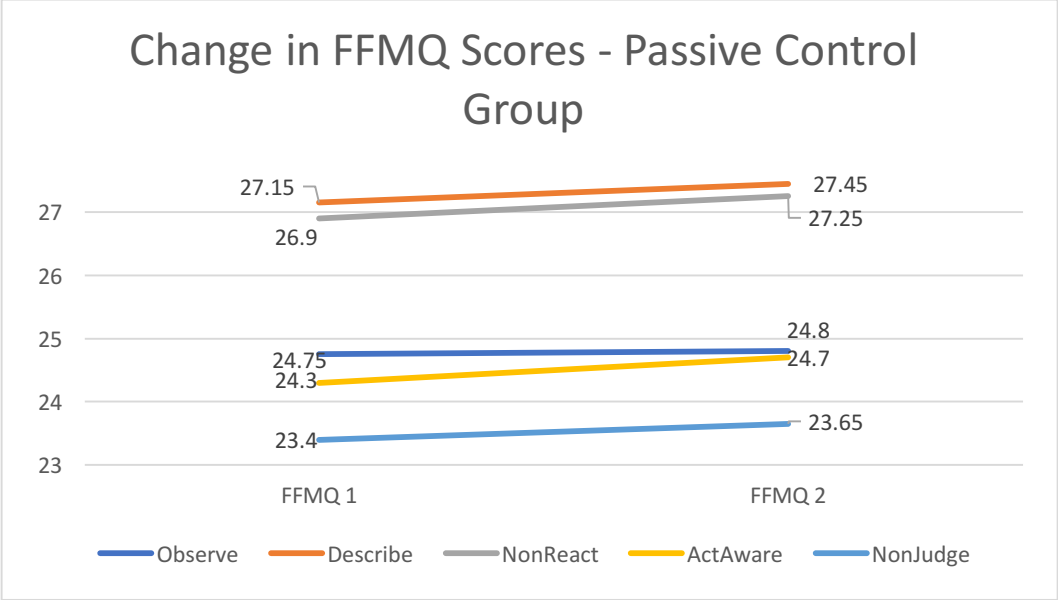

Figure 4. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for passive control group from baseline to post-intervention. Results indicate no significant change for any of five facets of mindfulness for the passive control group in study 1.

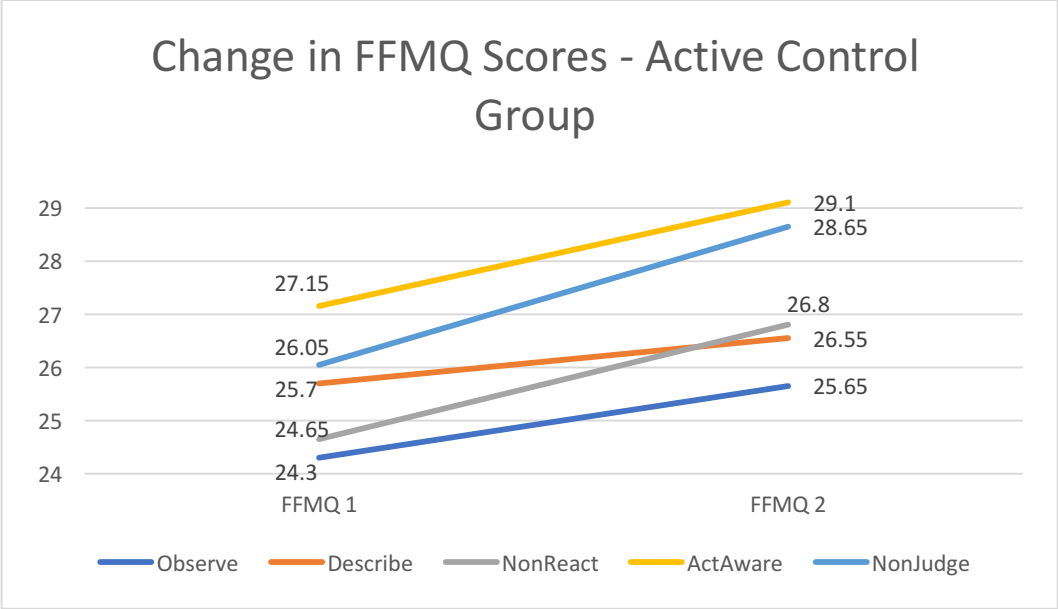

Figure 5. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for active control group from baseline to post-intervention. Results indicate a consistent increase for all five facets of mindfulness for the active control group in study 1.

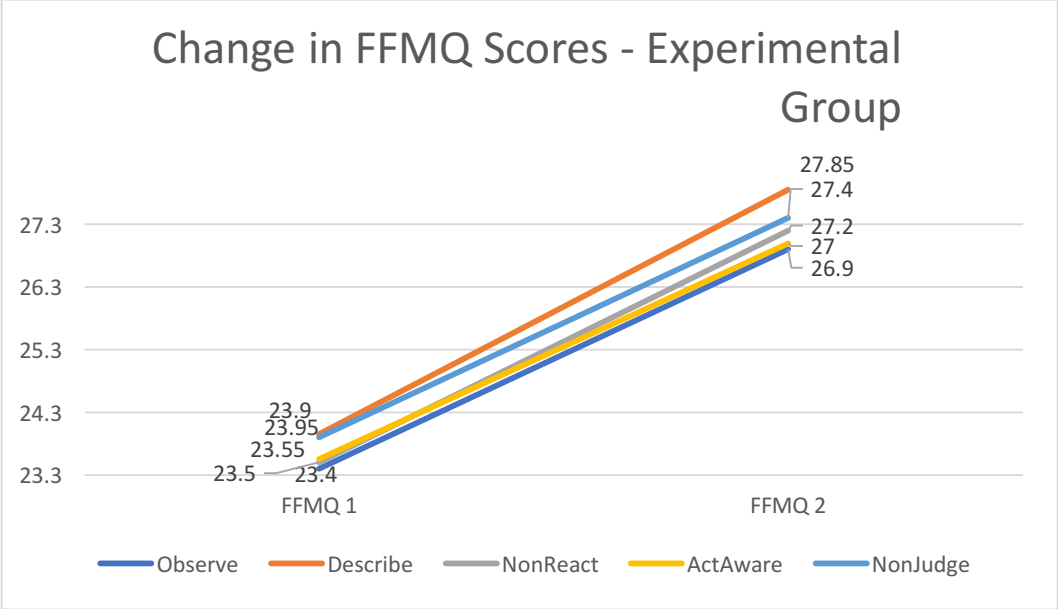

Figure 6. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for experimental group from baseline to post-intervention. Results indicate a significant increase for all five facets of mindfulness for the experimental group in study 1.

Self-Consciousness Scale-Revised

The results from repeated measures ANOVA showed a significant main effect of time (pretest versus posttest) in SCS-R scores, $F(1,57) = 128.10$, $p = .001$, $\eta_p^2 = 0.692$ with SCS-R 2 scores being significantly higher at posttest ($M = 17.67$, $SD = 4.22$) than pretest ($M = 14.23$, $SD = 3.95$). In addition, the data showed a significant main effect for group by showing an increase from the passive control ($M = 15.42$, $SD = 0.83$) to the active control ($M = 15.47$, $SD = 0.83$) and the experimental group ($M = 16.95$, $SD = 0.83$); $F(2,57) = 1.08$, $p = .34$, $\eta_p^2 = 0.037$.

ANOVA results demonstrated that there was also a significant interaction effect between time and group, $F(2,57) = 33.87$, $p = .001$, $\eta_p^2 = 0.543$. In order to investigate this interaction, paired sample *t*-tests, which were adjusted for multiple comparisons, were calculated. A paired sample *t*-test illustrated that there was no significant difference in the

passive control group SCS-R scores from pretest (M = 15.35, SD = 3.52) to posttest (M = 15.5, SD = 4.02); t (19) = .311, p = .75, d = 0.03, 95% CI [-1.16, 0.86]. On the other hand, data showed that there was a significant difference in the SCS-R scores for the active control group by showing increase from pretest (M = 13.5, SD = 3.92) to posttest (M = 17.45, SD = 3.69); t (19) = 8.558, p = .001, d = 1.03, 95% CI [-4.916, -2.984]. Also, there was a significant increase for the experimental group from pretest (M = 13.85, SD = 4.32) to posttest (M = 20.05, SD = 3.84); t (19) = 10.030, p = .001, d = 1.51, 95% CI [-7.494, -4.906].

There was no significant difference between all three groups at pretest, however, at posttest the experimental group (M = 20.05, SD = 3.84) had significantly higher scores than both the passive control group (M = 15.5, SD = 4.02); t (38) = 3.658, p = .001, d = 1.15, 95% CI [-7.068, -2.032], and active control group (M = 17.45, SD = 3.69); t (38) = 2.181, p = .035, d = 0.69, 95% CI [-5.013, -0.187]. Data demonstrated that there was no significant difference in SCS-R scores at posttest for the passive control and active control group; t (38) = 1.598, p = .11, d = 0.50, 95% CI [-4.421, 0.521]. Figure 7 illustrates the mean scores of all three groups from pretest to posttest.

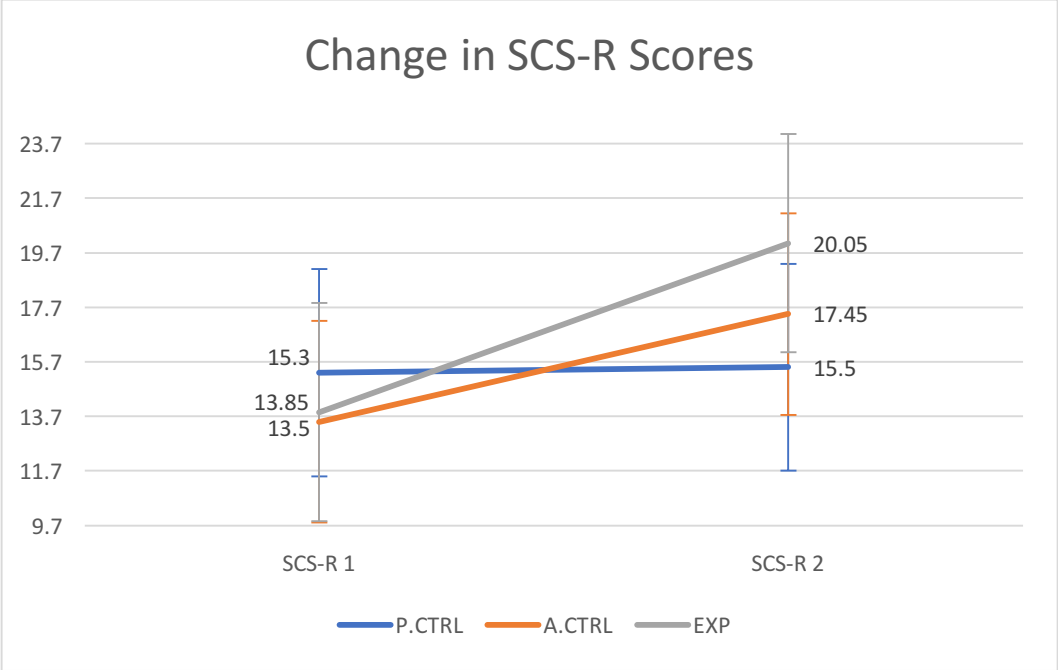

Figure 7. Mean Self Consciousness Scale – Revised (SCSR) scores for all three conditions at pretest and posttest in study 1.

Positive and Negative Affect Scale

Results from the repeated measures ANOVA showed a significant main effect of time (pretest versus posttest) in the PA scores, $F(1,57) = 115.62$, $p = .005$, $\eta_p^2 = 0.67$, with the PA 2 scores being significantly higher at posttest ($M = 37.82$, $SD = 6.75$) than the PA 1 at pretest ($M = 33.97$, $SD = 6.23$). In contrast, the data did not show any significant main effect for group, however still the pattern was in the predicted direction by showing increases from the passive control ($M = 34.7$, $SD = 1.40$), the active control ($M = 35.22$, $SD = 1.40$) and the experimental ($M = 37.67$, $SD = 1.40$); $F(2,57) = 1.24$, $p = .29$, $\eta_p^2 = 0.042$.

Based on the repeated measure ANOVA results, there was a significant interaction effect between time and group, $F(2,57) = 12.03$, $p = .001$, $\eta_p^2 = .297$. In order to investigate this interaction, paired sample *t*-tests with adjusted multiple comparisons, were calculated.

A paired sample *t*-test revealed that there was a significant difference in the passive control group PA scores by showing increase from pretest (M = 33.95, SD = 6.26) to posttest (M = 35.60, SD = 6.30); t (19) = 4.204, p = .001, d = 0.26, 95% CI [-2.472, -0.828]. Furthermore, there was a significant difference in the PA scores for the active control group by illustrating higher scores from pretest (M = 33.25, SD = 6.12) to posttest (M = 37.20, SD = 7.23); t (19) = 6.186, p = .001, d = 0.58, 95% CI [-5.287, -2.613]. Also, a significant increase was found for the experimental group from pretest (M = 34.7, SD = 6.54) to posttest (M = 40.65, SD = 5.95); t (19) = 7.733, p = .005, d = 0.95, 95% CI [-7.56, -4.34].

Although all three groups were identical at pretest with no significant difference, at posttest the experimental group (M = 40.65, SD = 5.95) had significantly higher scores than the passive control (M = 35.60, SD = 6.30); t (38) = 2.604, p = .013, d = 0.82, 95% CI [-8.976, -1.124]. However, data demonstrated that there was no significant difference in the PA scores at posttest for the passive control group (M = 35.60 SD = 6.30) and the active control (M = 37.20, SD = 7.23); t (38) = .746, p = .461, d = 0.23, 95% CI [-5.94, 2.74], and also for the active control and the experimental group; t (38) = 1.646, p = .108, d = 0.52, 95% CI [-7.67, 0.794]. Figure 8 illustrates the groups mean scores from pretest to posttest for positive affect. According to Figure 8, the interaction seems to come from the active control group, by being lower than the passive control group at pretest, but then being higher than the passive control group at posttest.

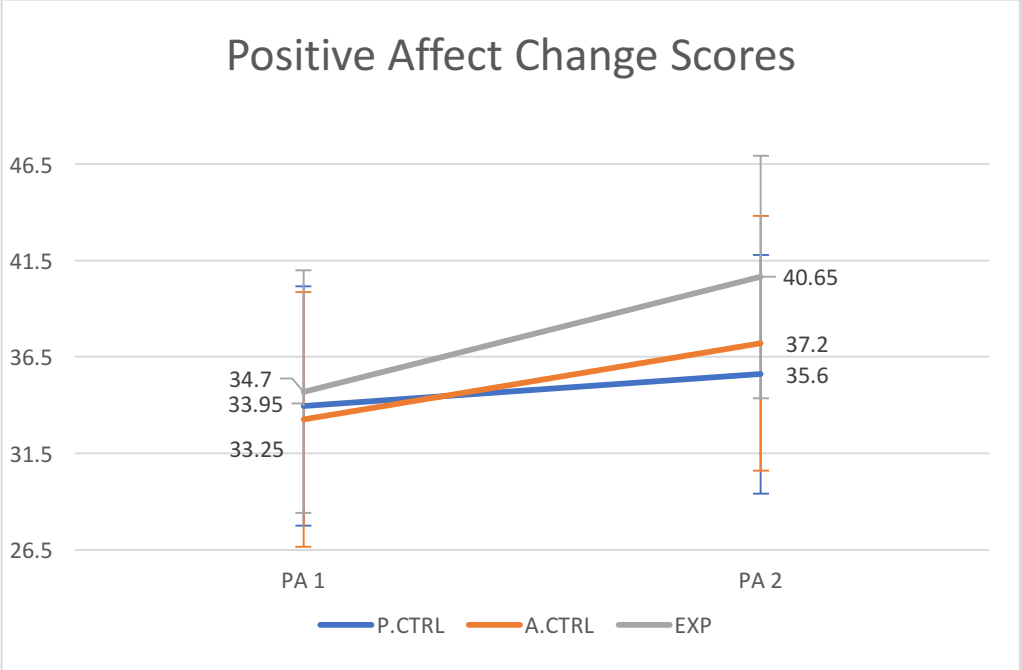

Figure 8. Mean Positive Affect (PA) scores for all three groups at pretest and posttest in study 1.

As Figure 9 shows, there is a decrease in the NA for all three conditions, although the most change belongs to the active control group and the experimental group. The results from repeated measures ANOVA showed a significant main effect of time (pretest versus posttest) in the NA scores, $F(1,57) = 122.72$, $p = .001$, $\eta_p^2 = 0.683$ with the NA 2 scores being significantly lower at posttest ($M = 25.02$, $SD = 5.04$) than the NA 1 at pretest ($M = 29.17$, $SD = 4.44$). On the other hand, the data did not show any significant main effect for group, from the passive control ($M = 27.60$, $SD = 1.00$) to the active control ($M = 27.72$, $SD = 1.00$) and the experimental group ($M = 25.95$, $SD = 1.00$); $F(2,57) = .978$, $p = .38$, $\eta_p^2 = 0.033$.

Results from the repeated measures ANOVA demonstrated a significant interaction effect between time and group, $F(2,57) = 6.75$, $p = .002$, $\eta_p^2 = 0.192$. In order to investigate this interaction, paired sample *t*-tests were conducted with adjustment for multiple comparisons. A paired sample *t*-test showed that there was a significant difference in the

passive control group NA scores by showing a decrease from pretest (M = 28.75, SD = 5.23) to posttest (M = 26.45, SD = 5.53); t (19) = 5.510, p =.001, d = 0.42, 95% CI [1.426, 3.174]. Furthermore, there was a significant decrease in the NA scores for the active control group from pretest (M = 30, SD = 3.81) to posttest (M = 25.45, SD = 4.26); t (19) = 5.667, p =.005, d = 1.12, 95% CI [2.87, 6.23], as well. Also, a significant difference was found for the experimental group by illustrating decrease in the NA scores from pretest (M = 28.75, SD = 4.27) to posttest (M = 23.15, SD = 4.91); t (19) = 8.402, p =.001, d = 1.21, 95% CI [4.205, 6.995].

There was no significant difference among the passive control, the active control and the experimental groups at pretest. Furthermore, at posttest the experimental group (M = 23.15, SD = 4.91) showed no significant difference comparing to the passive control group (M = 26.45, SD = 5.53); t (38) = 1.995, p =.053, d = 0.63, 95% CI [-0.048, 6.648]. Moreover, the data demonstrated that there was no significant difference in the NA scores at posttest for the passive control group (M = 26.45, SD = 5.53) and the active control (M = 25.45, SD = 4.26); t (38) = .641, p =.52, d = 0.20, 95% CI [-2.16, 4.16], and also the active control and the experimental group; t (38) = 1.582, p =.12, d = 0.50, 95% CI [-0.644, 5.244]. Figure 9 illustrates the groups mean scores from pretest to posttest for negative affect.

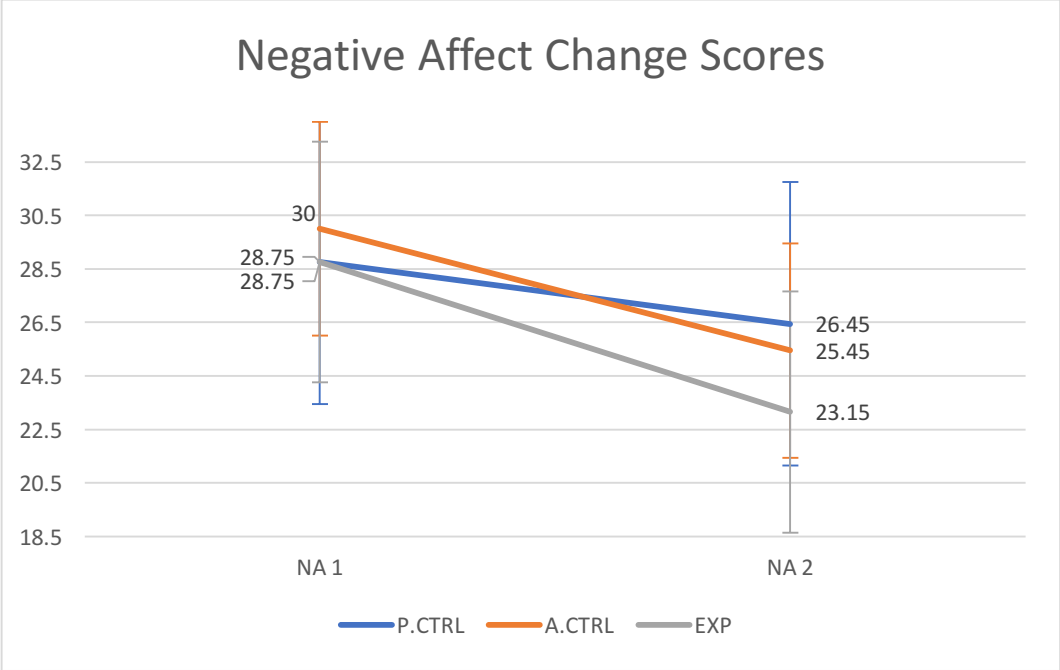

Figure 9. Mean Negative Affect (NA) scores for all three conditions at pretest and posttest in study 1.

Perceived Stress Scale

To compare the PSS scores from pretest to posttest, a repeated measures ANOVA was conducted. Results indicated a significant main effect of time (pretest versus posttest) in the PSS scores, $F(1,57) = 94.32$, $p = .001$, $\eta_p^2 = 0.623$, with the PSS 2 being significantly lower at posttest ($M = 18.38$, $SD = 4.13$) than the PSS 1 at pretest ($M = 21.53$, $SD = 3.75$). However, there was no significant main effect for group, from the passive control ($M = 21.55$, $SD = 0.78$) to the active control ($M = 19.10$, $SD = 0.78$) and the experimental ($M = 19.22$, $SD = 0.78$); $F(2,57) = 3.11$, $p = .052$, $\eta_p^2 = 0.098$.

ANOVA results with adjusted LSD for multiple comparisons, revealed a significant interaction effect between time and group, $F(2,57) = 17.42$, $p = .001$, $\eta_p^2 = 0.379$. In order to investigate this interaction, paired sample *t*-tests were calculated and illustrated that there was a significant difference in the passive control group PSS scores by showing decrease from pretest ($M = 22.05$, $SD = 3.63$) to posttest ($M = 21.05$, $SD = 3.18$); $t(19) = 2.653$, p

=.01, d = 0.29, 95% CI [0.211, 1.789]. Moreover, there was a significant decrease in the PSS scores for the active control group which received the label mindfulness, from pretest (M = 20.5, SD = 2.62) to posttest (M = 17.7, SD = 3.18); t (19) = 5.594, p =.001, d = 0.96, 95% CI [1.752, 3.848], as well as a decrease in the experimental group PSS scores from pretest (M = 22.05, SD = 4.68) to posttest (M = 16.4, SD = 4.53); t (19) = 7.590, p =.001, d = 1.22, 95% CI [4.092, 7.208].

All three groups did not significantly differ from one another at pretest. However, at posttest the passive control group (M = 21.05, SD = 3.18) had significantly higher PSS scores than both the active control group (M = 17.7, SD = 3.18); t (38) = 3.328, p = .002, d = 1.05, 95% CI [1.312, 5.388] and the experimental group (M = 16.4, SD = 4.53); t (38) = 3.752, p = .001, d = 1.18, 95% CI [2.141, 7.16]. Data showed that there was no significant difference in PSS scores at posttest for the active control and the experimental groups; t (38) = 1.050, p =.301, d = 0.33, 95% CI [-1.2017, 3.807]. Figure 10 presents the changes in mean scores from pretest to posttest in all three groups.

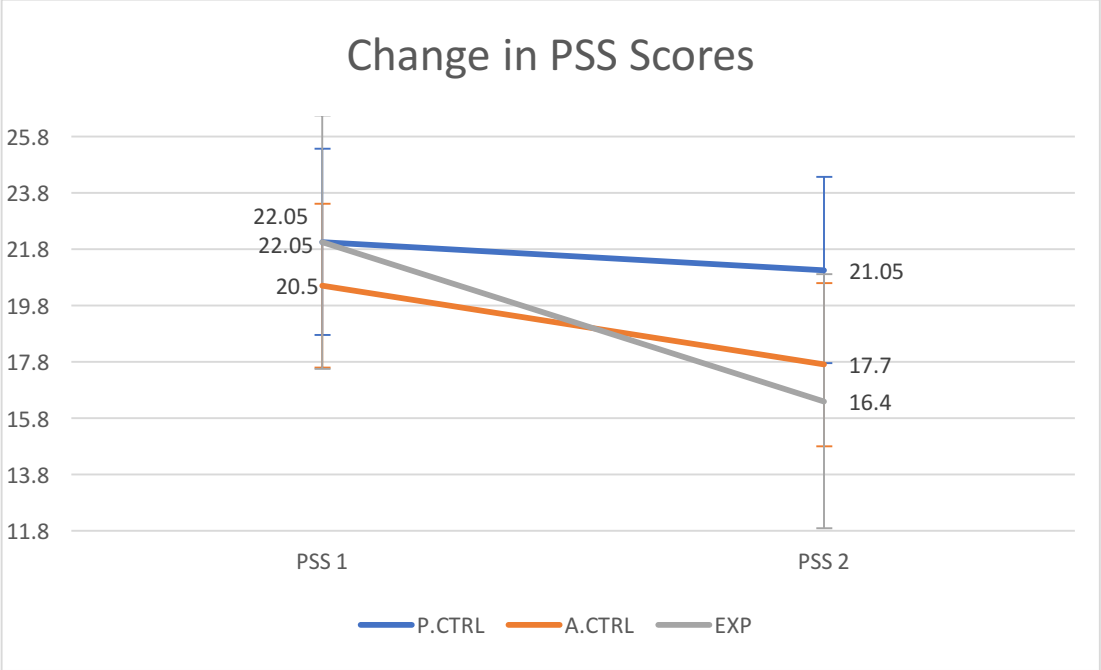

Figure 10. Mean Perceived Stress Scale (PSS) Scores for all three groups at pretest and posttest in study 1.

Experienced VS Non-Experienced Participants

As it has been discussed in the previous chapter, 45% of the passive control group along with 50% of the active control group and 45% of the experimental group indicated that they had previous mindfulness experience. As the data showed, these participants were equally distributed into the groups and their previous experience should have had no impact on the final results of this study. To be further assured about this the means and standard deviations from pretest to posttest for each questionnaire were compared between those with and without experience. Tables A, B, C, D, E and F in Appendix showing these

comparisons for AMPS[16], FFMQ[17], SCS-R[18], PANAS-PA[19], PANAS-NA[20], and PSS[21] measures respectively and illustrating that the numbers in some cells are too small for meaningful comparison. In general, there were no significant differences overall or by group hence, the results of this research do not appear to have been affected by knowledge of mindfulness.

Summary of Findings

This study aimed to investigate the relationship between mindfulness expectancy effects and labeling. For this purpose, it was hypothesised that simply using the label "mindfulness" on a task would produce the expectancy effects and act to improve self-reported measures for either mindfulness or wellbeing, or both. To see if the hypotheses of this study were supported, findings from the five self-report measurements which were used in this study, were considered separately for each group.

Results from the passive control group (P.CTRL) or the group who believed that they participated in a psychology and wellbeing study, supported the research hypothesis that there is no effect for mindfulness in the passive control group by illustrating that self-

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[16] Appendix N

[17] Appendix O

[18] Appendix P

[19] Appendix Q

[20] Appendix R

[21] Appendix S

report mindfulness scores (for both AMPS and FFMQ) did not show any change from pretest to posttest. The same results were found for self-consciousness by showing no difference in their self-report scores (SCS-R) over time. However, data showed that by just being part of a psychology and wellbeing research study, participants' mood and their perceived stress could be changed over time by self-reporting higher positive mood (PA-PANAS) and lower stress (PSS) and lower negative mood (NA-PANAS) from pretest to posttest. In summary, the P.CTRL supported my hypotheses that there is an expectancy effect for well-being and no effect for mindfulness in the passive control group as its data demonstrated higher wellbeing over time while their mindfulness scores did not show any change. The higher wellbeing scores might be because participants in this group were told that they are participating in a wellbeing study. It might have acted as a placebo as they expected to improve on wellbeing measures. Furthermore, according to social desirability bias and an individual's general tendency in showing better performance in group setting by doing jigsaw puzzle as a brain exercise in posttest, participants might have expected to show better results. The other possibility is the brain exercise (jigsaw puzzle), actually might have a real benefit of itself.

For the active control group (A.CTRL) or the group who received the mindfulness label without any training or practicing, data found support for the expectancy effects for mindfulness as their self-report scores showed a significant increase in their mindfulness scores for both AMPS and FFMQ questionnaires from pretest to posttest. This result supported the hypothesis that there is an expectancy effect for mindfulness in the A.CTRL. The same results were found for each facets of mindfulness in the FFMQ, as data showed a consistent increase for all five facets of mindfulness for the active control group.

Moreover, data illustrated higher self-report wellbeing scores for the A.CTRL group by showing higher self-consciousness scores (SCS-R) over time, along with higher positive mood (PA-PANAS), lower perceived stress (PSS) and lower negative mood (NA-PANAS). Again this results supported researcher's hypothesis that there is an expectancy effect for wellbeing in the A.CTRL group.

These expectancy effects for both mindfulness and wellbeing in the A.CTRL group, might be a result of the expectancy effect as participants in this group expected to show improvement on both mindfulness and wellbeing measures, based on the title "mindful jigsaw and wellbeing" which was given to them along with the introduction to the jigsaw session. According to what has been discussed here, the conclusion can be drawn that simply using the label mindfulness could produce the expectancy effects and act to improve self-report mindfulness along with general wellbeing status in the A.CTRL group. The other possibility for showing these improvements in both mindfulness and wellbeing scores could be due to social desirability as participant may answered questions in a favorable way rather than to give accurate answers.

As it was expected, data showed a high level of mindfulness and wellbeing over time in the experimental group (EXP) or the group that received actual mindfulness training. As results illustrated, participants in the EXP group showed improvement in all self-report questionnaires which were used in this study, by demonstrating increase in their AMPS, FFMQ, SCS-R and PA-PANAS, along with decrease in their NA-PANAS and PSS. In general, findings revealed that a brief mindfulness intervention can significantly improve self-report measures of mindfulness in the experimental group along with

wellbeing measures such as self-consciousness, mood and perceived stress compared to both the active control and passive control conditions.

In order to investigate more about these possibilities and to see if there was an active effect of mindfulness practice itself, study 2 was designed and conducted. The aim of the second study was to see if there was an effect of the mindfulness practice itself, and if yes, then it might have occurred regardless of giving positive or negative information about mindfulness to participants.

Study 2: Mindfulness Expectancy Effects; Positive and Negative Information

In this chapter, the study 2 will be explained along with its specific methods, results and a brief discussion. As it mentioned in the previous chapter, there was a significant difference between active control and experimental groups. The aim of the second study was to see if the experimental group did get the actual effect and benefit of practicing mindfulness (active ingredient of mindfulness). If that was the case, then this actual effect would persist regardless of giving positive or negative information about mindfulness to participants. Statistical analyses were completed by running the Statistical Package for the Social Sciences (SPSS, v23) to analyse quantitative data. Repeated measure (pre-posttest) with the group as a between subject variable was used, with follow up post-hoc tests. All post-hoc pairwise comparisons were adjusted for multiple comparisons to manage family-wise error. For this purpose, alpha (0.05) was divided by number of comparisons which was five in this study. Partial eta squared (η_p^2) and Cohen's *d* were calculated to assess effect sizes. P<.05 has been used as criteria for both studies of this research.

Participants

For study 2, more than half of participants (70%) were between 18 to 29 years, whilst nearly (25%) were between 30 to 46 years and (5%) were 50 years or older. The majority of participants (82%) had never had any meditation or mindfulness experience, the remaining (18%) were experienced or had heard about mindfulness. Among experienced participants 84% have found it useful. Less than one quarter of participants (13%) were students, with nearly (58%) psychology students. About (92%) were native English speakers. The majority of participants (78%) reported their ethnicity as

'Maori/Pacific', less than one quarter (8%) reported 'NZ' and (9%) European, whilst 'Asian' and 'Middle Eastern' participants made up 5% of the respondents. Over three quarters of them (88%) considered themselves spiritually affiliated.

Design

In the second study, as with study 1, mindfulness was not mentioned to the passive control group (P.CTRL). Participants were only asked to complete the jigsaw session, however, the active control group (A.CTRL) and the experimental group (EXP) differed from study 1. The A.CTRL received an introduction in the beginning of the session, about disadvantages of practicing mindfulness according to some recent studies, then they received mindfulness instructions (breathing exercise) and finally they were asked to complete the jigsaws, while the EXP received an introduction about benefits or advantages of practicing mindfulness based on current studies along with receiving the same mindfulness instructions (breathing exercise) and then were asked to do the jigsaws. This manipulating expectation was aimed to see if the study 1's results were due to expectation, then the results should have been able to alter.

Mindfulness Information

For this study, before starting the jigsaw session, participants in both the active control and the experimental group received an introduction about mindfulness particularly about what mindfulness is and its origin. Then participants in the active control group received some information about the possible disadvantages of practicing mindfulness based on some recent studies. Here is the information which was given to the active control:

"The definition of mindfulness is paying attention on purpose, to the present moment, with openness, curiosity and a willingness to be with whatever comes up. In one

recent study that is published in Psychological Science, the author team led by psychologist Brent Wilson found that after just one 15-minute mindfulness induction involving a guided breathing exercise, participants were more likely to form false memories compared to control participants who engaged in mind-wandering. The authors concluded that: When meditators embrace judgment-free awareness and acceptance, their reality-monitoring accuracy may be impaired, increasing their susceptibility to false memories. They called the formation of fake memories a potential unintended consequence of mindfulness meditation in which memories become less reliable. While the studies in the journal article were limited to rather innocuous tasks, we can only imagine the grim possibility of regular mindfulness practitioners forming entirely fictitious realities (and even past histories) for themselves which they then carry into the future, doing god knows what harm to themselves and others!

Many variations of mindfulness practice involve putting down mental baggage by separating ourselves from our thoughts, and then discarding thoughts that are seen as negative or harmful. But what if the same thing is done for positive thoughts? In another Psychological Science paper, an author team led by Pablo Briñol found that when participants physically discarded a representation of their thoughts such as by writing them down on a piece of paper and then tossing it in the trash, they tended to use them less in their decision making afterwards, mentally discarding them as well. Relevant to us, the authors found that positive thoughts also seemed to be discarded mentally just like negative ones. In their paper, the authors cautioned: This finding suggests that techniques involved in some mindfulness treatments can backfire—at least for some people and for some situations, particularly those in which positive thoughts are present.

By its definition and based on its Buddhist origin, the practice of mindfulness encourages detachment. A core aspect of practicing mindfulness is to attempt a withdrawal from the streams of thought that have to do with current challenges of every form, whether they have to do with difficulties with a particular relationship or the tasks that one has to perform on that day. Unfortunately, such a withdrawal supports our natural, hard-wired tendency to be "cognitive misers" leading mindfulness practitioners to use the practice as a mean of escape from having to think about difficult problems and arrive at reasonable solutions. Psychiatrist David Brendel summarizes this danger of mindfulness practice as

follows: Some people use mindfulness strategies to avoid critical thinking tasks. I've worked with clients who, instead of rationally thinking through a career challenge or ethical dilemma, prefer to disconnect from their challenges and retreat into a meditative mindset.

In a 2009 paper in Advances in Mind-Body medicine, the author team led by psychologist Kathleen Lustyk provided an in-depth review of mindfulness practice studies that reported adverse side effects to participants. There is a whole laundry list of psychological and physical effects in the paper. These included reports of depersonalization (feeling detached from one's mental processes or body), psychosis (loss of contact with reality) with delusions, hallucinations, and disorganized speech, feelings of anxiety, an increased risk of seizures, loss of appetite, and insomnia. The authors especially cautioned vulnerable people such as those with PTSD to be particularly careful when undertaking mindfulness practice. Their main point was that participants should be screened carefully for their suitability before undertaking this practice, and its teachers should be properly trained and supervised. As psychologists Miguel Farias and Catherine Wilkolm point out: Buddhist meditation was designed not to make us happier, but to radically change our sense of self and perception of the world. Given this, it is perhaps not surprising that some will experience negative effects such as dissociation, anxiety and depression. However, like the small print on medication, these side-effects in some individuals are not what the creators of this pill are concerned with promoting.

In simple words, mindfulness takes work, practice, and personal effort. It is just another thing you should do. Sometimes, being more aware can actually increase personal frustration or judgment. It doesn't always help. It won't make problems go away. It can impair your judgment of some thoughts that may be right or wrong. It may be a temporal solution to some negative emotions which might reappear after a while. This is not an independent problem solving technique, you will need other mechanisms to permanently tackle a problem. Some self-internal conflicts might be significant in making decisions. Meditation can make you overlook them and remain undecided."

While participants in the active control group received information about possible side effects of practicing mindfulness, participants in the experimental group received another kind of information about mindfulness with the main focus on benefits and advantages of practicing mindfulness based on relevant studies. Here is the information which was given to the experimental group:

"Mindfulness encourages us to intentionally disengage from automatic pilot and bring our full awareness back to the here and now. By doing this, we open up the full range of possibilities of how we can meet the present moment with absolute intention and awareness. In simple words, by practicing mindfulness, you can actually enjoy what you are doing. Your relationships are enriched. You can enjoy better connections and fewer misunderstandings with others because you actively listen, rather than allow your mind to wander elsewhere. You may build greater focus, attention, and a capacity to stay calm under pressure. You may feel more confident, more in control, and have greater participation in all areas of life. You may be able to tap in to gratitude, acceptance, and less judgment of the who, what, where, when, and whys of life. You may experience greater self and social awareness, two mental assets that help significantly in regulating mood and emotions. Furthermore, instead of being distracted by each incoming stimulus, you have a conscious intention to direct your focus to a chosen person/object/thought. Instead of your attention being completely taken by thoughts and concepts, you are open to experiencing the direct felt sensory experience of the present moment. Instead of analyzing and judging whatever is currently happening, you have an attitude of openness and acceptance to the unfolding moment.

Mindfulness practice is credited with numerous forms of psychological and physiological benefits, including long-term reductions in anxiety and depression, pain reduction, anger management, curbing addictions, and emotional well-being. There have been many studies backing up the idea that mindfulness reduces stress. One study on present-moment awareness found that it facilitates an adaptive response to daily stressors (Donald, Atkins, Parker, Christie, & Ryan, 2016). Another study by Donald and Atkins (2016) found evidence that mindfulness produced less avoidance and more approach

coping as a response to stress than relaxation or self-affirmation controls. Mindfulness can also help alleviate stress through improving emotion regulation, leading to a better mood and better ability to handle stress (Remmers, Topolinski, & Koole, 2016; p. 96).

When you induce a state of relaxation, which can be achieved through mindfulness, another kind of meditation, or other activities, you can reap the benefits, including:

- *Higher brain functioning*
- *Increased immune function*
- *Lowered blood pressure*
- *Lowered heart rate*
- *Increased awareness*
- *Increased attention and focus*
- *Increased clarity in thinking and perception*
- *Lowered anxiety levels*
- *Experience of being calm and internally still*
- *Experience of feeling connected*

Mindfulness cannot only help you deal with a chronic or potentially terminal illness or life-threatening event, it can also help you recover from it. A study in Chinese breast cancer survivors provided evidence that mindfulness can enhance posttraumatic growth and decrease stress and anxiety in cancer patients (Zhang, Zhou, Feng, Fan, Zeng, & Wei, 2017). Another study of young breast cancer survivors showed that women who practiced mindfulness were more likely to experience increased self-kindness, decreased rumination, and decreased stress (Boyle, Stanton, Ganz, Crespi, & Bower, 2017). Beyond the many mental health benefits of mindfulness, it can also improve your general health. For example, a study of how the two facets of mindfulness impact health behaviors found that practicing mindfulness can enhance or increase multiple behaviors related to health, like getting regular health check-ups, being physically active, using seat belts, and avoiding nicotine and alcohol (Jacobs, Wollny, Sim, & Horsch, 2016). Another study on mindfulness and health showed that mindfulness is related to improved cardiovascular health through a lower incidence of smoking, more physical activity, and a healthier body mass index (Loucks, Britton, Howe, Eaton, & Buka, 2015). Additionally, mindfulness has been

positively linked with lower blood pressure, especially when the practitioner is skilled in non-judging and non-reactivity (Tomfohr, Pung, Mills, & Edwards, 2015; p. 112).”

After giving this information to the active control and the experimental group, both groups received short mindfulness instructions and then along with the control group, they were asked to do and complete the jigsaw session, with filling in 5 questionnaires for the second time (posttest).

Results

To see if there were any significant differences among all three groups at pretest, descriptive and inferential statistics were calculated. Table 3 lists means and standard deviations at pretest for the all five questionnaires.

Table 3

Baseline Means and Standard Deviations for Self-Report Measures in Study 2

	P.CTRL	A.CTRL	EXP
Measure	***M (SD)***	***M (SD)***	***M (SD)***
AMPS	36.85 (5.99)	34.9 (6.24)	35.55 (7.74)
FFMQ	117.75 (11.73)	125.85 (10.92)	125.2 (9.32)
Observe	26.25 (3.38)	25.55 (3.38)	25.00 (4.74)
Describe	25.125 (2.57)	24.95 (2.54)	24.65 (1.56)
Non-React	22.75 (4.47)	22.70 (3.68)	22.20 (4.02)
Act-Aware	21.45 (5.93)	21.15 (3.41)	21.45 (4.72)
Non-Judge	21.35 (4.22)	22.30 (3.28)	21.40 (4.57)
PANAS-PA	36.10 (3.93)	34.90 (4.01)	33.55 (5.41)

PANAS-NA	30.35 (5.22)	33.85 (3.62)	30.65 (5.46)
PSS	20.90 (3.61)	19.95 (2.46)	20.90 (2.40)
SCS-R	16.60 (4.26)	16.05 (3.69)	15.65 (3.80)

Note. P.CTRL= the passive control group, A.CTRL= the active control group, EXP= the experimental group, M= Mean, SD= Standard Deviation, AMPS= Applied Mindfulness Process Scale, FFMQ= Five Facet Mindfulness Scale, PANAS= Positive and Negative Affect Scale, PA= Positive Affect, NA= Negative Affect, PSS= Perceived Stress Scale, SCS-R= Self-Consciousness Scale-Revised.

Data indicated no statistically significant difference among the passive control, active control and experimental groups at pretest for all the questionnaires used in this study with an exception for the active control group on the PANAS-NA scores. The independent *t*-test results demonstrated a significant difference in the PANAS-NA scores at pretest, between the passive control group ($M = 30.35$, $SD = 5.22$) and the active control group ($M = 33.85$, $SD = 3.62$); $t\ (38) = 2.463$, $p = .01$, $d = 0.77$, 95% CI [-6.376, -0.624], and between the active control group ($M = 33.85$, $SD = 3.62$) and the experimental group ($M = 30.65$, $SD = 5.46$); $t\ (38) = 2.185$, $p = .03$, $d = 0.69$, 95% CI [.230, 6.170]. Table 4 illustrates *t*-test results for all measures at baseline.

Table 4

T-test Results and P Value for Self-Report Measures at Baseline in Study 2

	P.CTRL vs A.CTRL		A.CTRL vs EXP		P.CTRL vs EXP	
Measure	*t*-test	*p*	*t*-test	*p*	*t*-test	*p*
AMPS	1.007	0.32	-0.292	0.77	0.594	0.55
FFMQ	-2.260	0.30	-0.202	0.84	-2.224	0.32
PANAS-PA	0.955	0.34	0.896	0.37	-1.704	0.09
PANAS-NA	-2.463	0.01*	2.185	0.03*	-0.178	0.86
PSS	-1.948	0.15	1.964	0.16	0.000	1.00
SCS-R	0.436	0.66	0.767	0.44	0.350	0.73

Note. 95% Confidence Interval for the Difference (P<.05), *: Indicates Significant Difference

All data was normally distributed. Repeated measures ANOVAs were run to identify changes in dependent variables from pretest to posttest (Preposttest), including changes in scores for the whole group (Group) and for the interaction between group and tests (Preposttest*Group).

Self-Report Questionnaires

Applied Mindfulness Scale

A repeated measures ANOVA was conducted to compare the AMPS scores over time for all three conditions. Results indicated no significant main effect of time (pretest versus posttest) in AMPS scores, $F(1,57) = 2.95$, $p = .09$, $\eta_p^2 = 0.49$, with an only little increase from pretest ($M = 35.77$, $SD = 6.64$) to posttest ($M = 36.27$, $SD = 7.15$). Also,

there was no significant main effect for group, from the passive control (M = 36.85, SD = 6.03) to the active control (M = 33.55, SD = 6.24) and the experimental (M = 37.65, SD = 7.49); $F(2,57) = 2.21$, $p = .12$, $\eta_p^2 = 0.072$.

On the other hand, data illustrated a significant interaction effect between time and group, $F(2,57) = 47.62$, $p = .001$, $\eta_p^2 = 0.626$, which in order to investigate this interaction, paired sample t-tests were calculated and adjusted for multiple comparisons. Results showed that there was no significant difference in the passive control group AMPS scores from pretest (M = 36.85, SD = 5.99) to posttest (M = 36.85, SD = 6.08); t (19) = .000, p = 1.00, d = 0.000, 95% CI [-0.644, 0.644]. However, as it was predicted, data found a significant difference in the AMPS scores for the active control group by showing a decrease from pretest (M = 34.90, SD = 6.25) to posttest (M = 32.20, SD = 6.24); t (19) = 6.029, p = .001, d = 0.43, 95% CI [1.763, 3.637]. In contrast, data showed a different direction for the experimental group by showing a significant increase from pretest (M = 35.55, SD = 7.74) to posttest (M = 39.75, SD = 7.24); t (19) = 6.150, p = .001, d = 0.56, 95% CI [-5.629, -2.771].

As previously indicated all three groups did not significantly differ in the AMPS scores from one another at pretest. However, at posttest, pairwise comparisons with adjusted LSD, revealed a significant difference between the passive control group (M = 36.85, SD = 6.08) and the active control group (M = 32.20, SD = 6.24); t (38) = 2.386, p = .02, d = 0.75, 95% CI [0.704, 8.596], by showing a decrease in the active control group scores. Moreover, data illustrated a significant difference between the active control group (M = 32.20, SD = 6.24) and the experimental group (M = 39.75, SD = 7.24); t (38) = 3.529, p = .001, d = 1.11, 95% CI [-11.881, -3.219] by illustrating a decrease in the active control

group's score. The independent *t*-test results did not show any significant difference between the passive control group (M = 36.85, SD = 6.08) and the experimental group (M = 39.75, SD = 7.24); t (38) = 1.371, p = .17, d = 0.43, 95% CI [-7.182, 1.382]. Figure 11 illustrates the means of all three conditions from pretest to posttest.

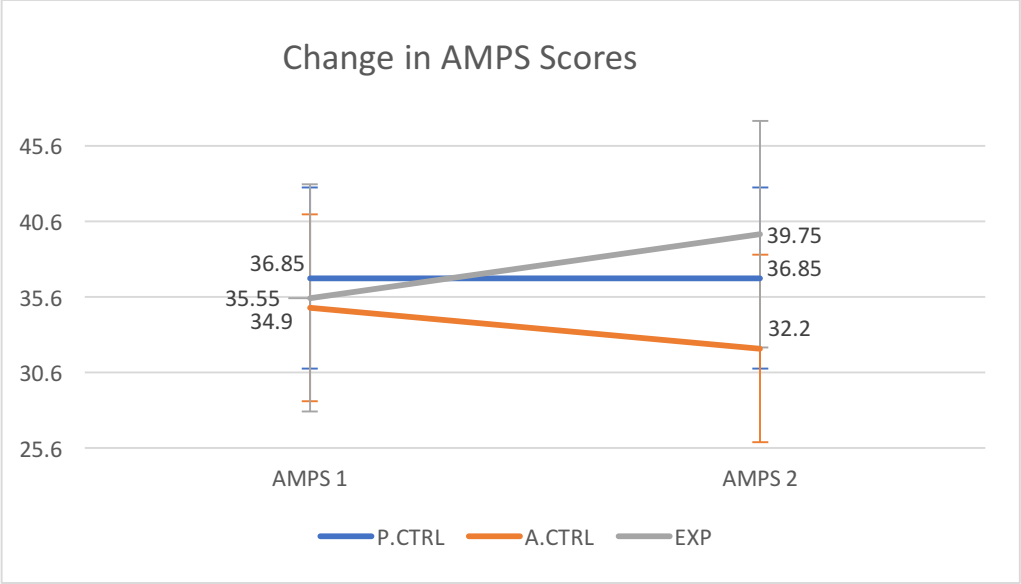

Figure 11. Applied Mindfulness Process Scale (AMPS) mean scores for all three groups from pretest to posttest in study 2.

Five Facet Mindfulness Questionnaire

To compare the FFMQ scores over time for all three conditions, a repeated measures ANOVA was conducted. Results indicated a significant main effect of time (pretest versus posttest) in FFMQ scores, $F(1,57) = 0.64$, $p = .025$, $\eta_p^2 = 0.86$, with FFMQ 2 being significantly higher at posttest (M = 123.82, SD = 11.86) than pretest (M = 122.93, SD = 11.15). There was also a significant main effect for group by demonstrating an increase from the passive control (M = 118.10, SD = 11.95) to the active control (M = 123.72, SD = 11.16) and an increase from the active control to the experimental group (M

= 128.30, *SD* = 9.02); $F(2,57) = 4.33$, $p = .018$, $\eta_p^2 = 0.132$. Furthermore, data showed a significant interaction effect between time and group, $F(2,57) = 47.78$, $p = .002$, $\eta_p^2 = 0.626$.

To investigate this interaction, paired sample *t*-tests that adjusted for multiple comparisons, were calculated which illustrated there was no significant difference in the passive control group FFMQ scores from pretest (*M* = 117.75, *SD* = 11.73) to posttest (*M* = 118.45, *SD* = 12.17); *t* (19) = 1.563, *p* =.13, *d* = 0.05, 95% CI [-1.637, 0.237]. However, as there was a significant difference in the FFMQ scores for the active control group, which received the information about downsides of practicing mindfulness, by illustrating decrease from pretest (*M* = 125.85, *SD* = 10.92) to posttest (*M* = 122.25, *SD* = 11.40); *t* (19) = 6.608, *p* =.001, *d* = 0.32, 95% CI [2.460, 4.740]. On the other hand, data showed a significant increase in the FFMQ scores for the experimental group, which received the information advantages of practicing mindfulness, from pretest (*M* = 125.20, *SD* = 9.32) to posttest (*M* = 130.75, *SD* = 8.68); *t* (19) = 6.135, *p* =.001, *d* = 0.61, 95% CI [-7.433, -3.657].

All three groups did not significantly differ from one another in the FFMQ scores at pretest, but at posttest, pairwise comparisons with adjusted LSD for multiple comparisons, revealed a significant difference between the passive control group (*M* = 118.45, *SD* = 12.17) and the experimental group (*M* = 130.75, *SD* = 8.68); *t* (38) = 3.678, *p* =.001, *d* = 1.16, 95% CI [-19.071, -5.529]. However, there were no significant differences between the passive control group (*M* = 118.45, *SD* = 12.17) and the active control group (*M* = 122.25, *SD* = 11.40); *t* (38) = 1.019, *p* =.31, *d* = 0.32, 95% CI [-11.352, 3.752], nor the active control group (*M* = 122.25, *SD* = 11.40) and the experimental group (*M* = 130.75,

SD = 8.68); *t* (38) = 2.651, *p* =.12, *d* = 0.83, 95% CI [-14.990, -2.010]. Figure 12 shows the mean scores from pretest to posttest for each group separately and illustrates that while they are not significant, they are in the predicted direction.

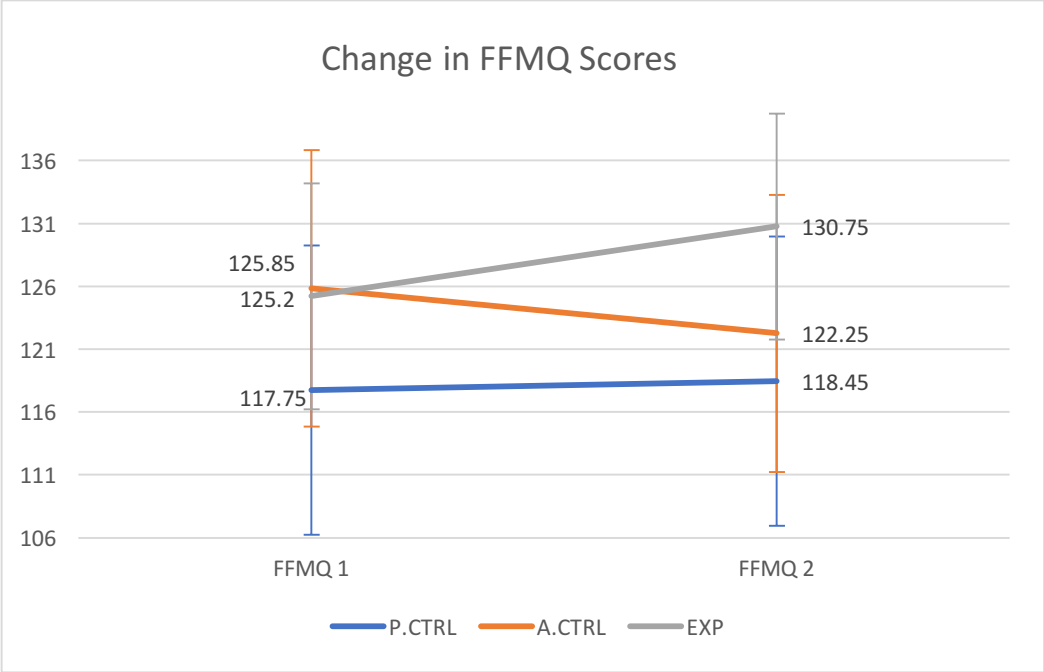

Figure 12. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for all three groups from pretest to posttest in study 2.

According to the five-factor model, facets of mindfulness on the FFMQ were evaluated as five separate factors. Figures 13, 14 and 15 showing the change in means of five facets of the FFMQ for all three conditions from pretest to posttest. All five facets behaved in a consistent manner across groups as there was a little change for the passive control group, decrease for the active control group and increase for the experimental group.

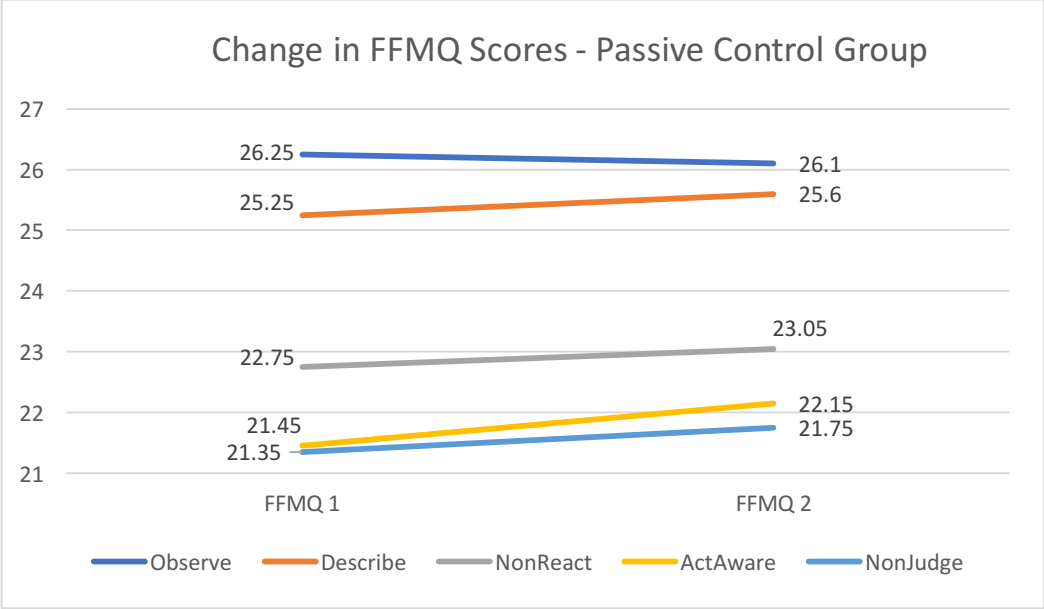

Figure 13. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for passive control group from baseline to post-intervention. Results indicate no significant change for any of five facets of mindfulness for the passive control group in study 2.

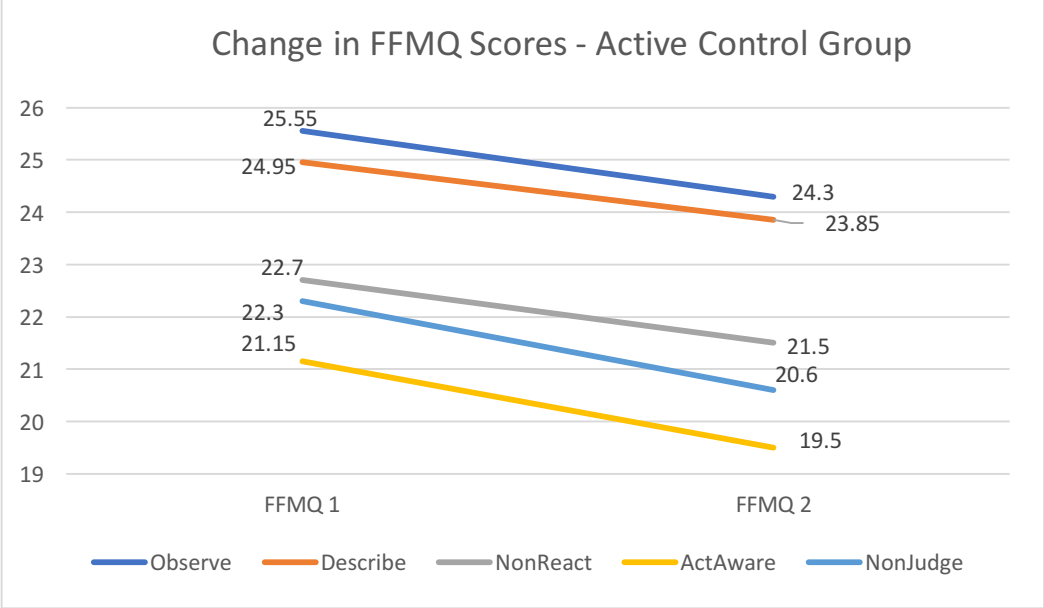

Figure 14. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for active control group from baseline to post-intervention. Results indicate a consistent decrease for all five facets of mindfulness for the active control group in study 2.

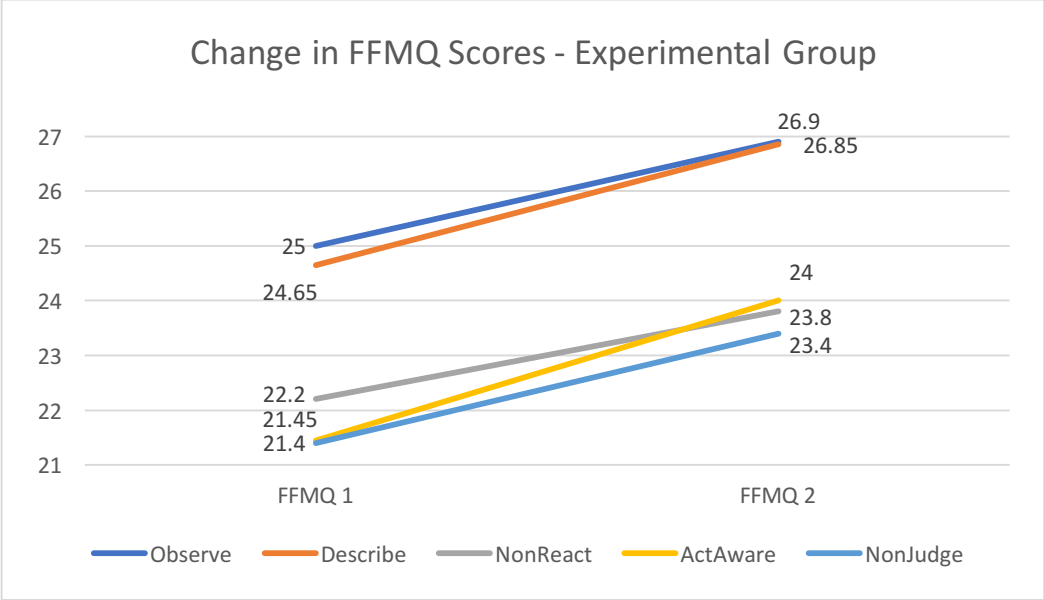

Figure 15. Mean Five Facet Mindfulness Questionnaire (FFMQ) scores for experimental group from baseline to post-intervention. Results indicate a consistent increase for all five facets of mindfulness for the experimental group in study 2.

Self-Consciousness Scale-Revised

The results from repeated measures ANOVA showed a significant main effect of time (pretest versus posttest) in SCS-R scores, $F(1,57) = 35.39$, $p = .001$, $\eta_p^2 = 0.383$ with SCS-R 2 scores being significantly higher at posttest ($M = 17.40$, $SD = 3.60$) than pretest ($M = 16.10$, $SD = 3.79$). However, the data showed no significant main effect for group, from the passive control ($M = 16.97$, $SD = 3.96$) to the active control ($M = 16.30$, $SD = 3.68$) and the experimental ($M = 16.97$, $SD = 3.49$); $F(2,57) = 0.23$, $p = .79$, $\eta_p^2 = 0.008$.

On the other hand, ANOVA results demonstrated that there was a significant interaction effect between time and group, $F(2,57) = 9.65$, $p = .001$, $\eta_p^2 = 0.253$. In order to investigate this interaction, paired sample *t*-tests, which were adjusted for multiple comparisons, were calculated. A paired sample *t*-test illustrated that there was a significant difference in the passive control group SCS-R scores by showing an increase from pretest

(M = 16.60, SD = 4.26) to posttest (M = 17.35, SD = 3.66); t (19) = 2.116, p =.04, d = 0.18, 95% CI [-1.492, -0.008]. Also, data showed that there was a significant difference in the SCS-R scores for the experimental group by illustrating a significant increase from pretest (M = 15.65, SD = 3.54) to posttest (M = 18.30, SD = 3.43); t (19) = 5.553, p =.00, d = 0.76, 95% CI [-3.649, -1.651], however, data demonstrated that there was no significant difference for the active control group from pretest (M = 16.05, SD = 3.69) to posttest (M = 16.55, SD = 3.67); t (19) = 1.810, p =.08, d = 0.13, 95% CI [-1.078, 0.078].

As mentioned earlier, there were no significant differences among all three groups in the SCS-R scores at pretest. Data from independent t-tests illustrated the same results for SCS-R scores at posttest as it showed no significant difference among all three groups at posttest either. There was no significant difference in the SCS-R scores at posttest for the passive control group (M = 17.35, SD = 3.66) and the active control group (M = 16.55, SD = 3.67); t (38) = 0.690, p =.49, d = 0.21, 95% CI [-1.549, 3.149]. Also, there was no significant difference for the passive control group (M = 17.35, SD = 3.66) and the experimental group (M = 18.30, SD = 3.43); t (38) = 0.846, p =.49, d = 0.26, 95% CI [-3.222, 1.322] and no significant difference was found between the active control group (M = 16.55, SD = 3.67) and the experimental group (M = 18.30, SD = 3.43); t (38) = 1.555, p =.12, d = 0.49, 95% CI [-4.028, 0.528]. Figure 16 illustrates the mean scores of all three groups from pretest to posttest.

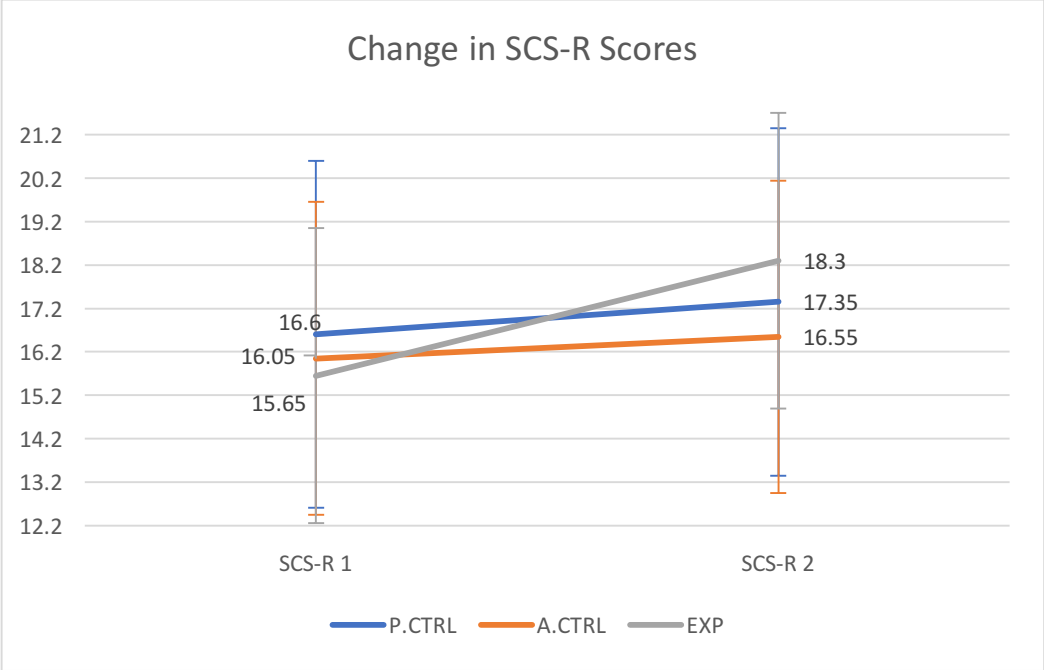

Figure 16. Mean Self Consciousness Scale – Revised (SCSR) scores for all three conditions at pretest and posttest in study 2.

Positive and Negative Affect Scale

Results from the repeated measure ANOVA showed a significant main effect of time (pretest versus posttest) in the PA scores, $F(1,57) = 7.09$, $p = .01$, $\eta_p^2 = 0.111$, with the PA 2 scores being significantly higher at posttest ($M = 35.52$, $SD = 4.80$) than the PA 1 at pretest ($M = 34.85$, $SD = 4.55$). Additionally, the data demonstrated a significant main effect for group by illustrating a decrease from the passive control ($M = 36.85$, $SD = 3.83$) to the active control ($M = 33.47$, $SD = 4.11$) and an increase from the active control to the experimental group ($M = 35.22$, $SD = 3.60$); $F(2,57) = 3.17$, $p = .04$, $\eta_p^2 = 0.100$.

Based on the results from repeated measure ANOVA, there was a significant interaction effect between time and group, $F(2,57) = 53.94$, $p = .001$, $\eta_p^2 = 0.654$. In order to investigate this interaction, paired sample *t*-tests adjusted for multiple comparisons, were calculated. A paired sample *t*-test revealed that there was a significant difference in the

passive control group PA scores by demonstrating increase from pretest (M = 36.10, SD = 3.93) to posttest (M = 37.60, SD = 3.73); t (19) = 5.090, p = .001, d = 0.39, 95% CI [-2.117, -0.883]. Furthermore, there was a significant difference in the PA scores for the active control group by showing decrease from pretest (M = 34.90, SD = 4.01) to posttest (M = 32.05, SD = 4.19); t (19) = 7.973, p = .001, d = 0.69, 95% CI [2.102, 3.598]. Also, a significant difference was found for the experimental group by illustrating increase from pretest (M = 33.55, SD = 5.41) to posttest (M = 36.90, SD = 4.57); t (19) = 5.672, p = .001, d = 0.66, 95% CI [-4.586, -2.114].

Although all three groups were identical in the PA scores at pretest with no significant difference, at posttest the passive control group (M = 37.60, SD = 3.73) had significantly higher scores than the active control group (M = 32.05, SD = 4.19); t (38) = 4.418, p =.001, d = 1.39, 95% CI [3.007, 8.093]. Also, data showed that the experimental group (M = 36.90, SD = 4.57) had significantly higher scores than the active control group (M = 32.05, SD = 4.19); t (38) = 3.493, p =.001, d = 1.10, 95% CI [-7.661, -2.039]. However, data demonstrated that there was no significant difference in the PA scores at posttest for the passive control group (M = 37.60, SD = 3.73) and the experimental (M = 36.90, SD = 4.57); t (38) = .530, p =.59, d = 0.16, 95% CI [-1.973, 3.373]. Figure 17 illustrates the groups mean scores from pretest to posttest for positive affect.

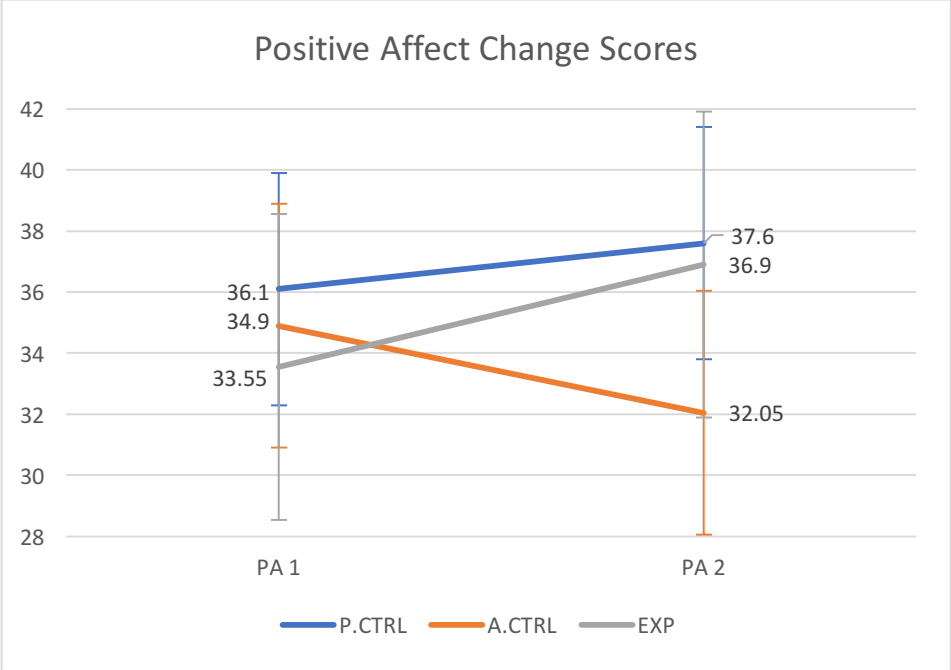

Figure 17. Mean Positive Affect (PA) scores for all three groups at pretest and posttest in study 2.

In the negative affect (NA) scores, the results from repeated measures ANOVA showed a significant main effect of time (pretest versus posttest), $F(1,57) = 5.26$, $p = .02$, $\eta_p^2 = 0.085$ with NA 2 scores being lower at posttest ($M = 31.07$, $SD = 6.16$) than pretest ($M = 31.62$, $SD = 5.01$). Moreover, the data demonstrated a significant main effect for group by showing an increase from the passive control ($M = 29.40$, $SD = 5.42$) to the active control ($M = 35.02$, $SD = 3.71$) and a decrease from the active control to the experimental group ($M = 29.60$, $SD = 5.49$); $F(2,57) = 8.66$, $p = .001$, $\eta_p^2 = 0.233$.

Results from the repeated measures ANOVA demonstrated a significant interaction effect between time and group, $F(2,57) = 38.03$, $p = .001$, $\eta_p^2 = 0.572$. The paired sample *t*-tests were conducted and showed that there was a significant decrease in the passive control group NA scores from pretest ($M = 30.35$, $SD = 5.22$) to posttest ($M = 28.85$, $SD = 5.54$); $t(19) = 3.943$, $p = .001$, $d = 0.27$, 95% CI [0.704, 2.296]. Furthermore, there was a significant increase in the NA scores for the active control group from pretest ($M = 33.85$,

SD = 3.61) to posttest (*M* = 36.20, *SD* = 3.80); *t* (19) = 4.982, *p* =.001, *d* = 0.63, 95% CI [-3.337, -1.363]. Also, a significant difference was found for the experimental group with showing decrease in the NA scores from pretest (*M* = 30.65, *SD* = 5.46) to posttest (*M* = 28.15, *SD* = 5.55); *t* (19) = 6.455, *p* =.001, *d* = 0.45, 95% CI [1.689, 3.311].

By considering a significant difference which was found in the NA scores at pretest among the passive control, active control and experimental groups[22], at posttest the same differences were found as again the passive control group (*M* = 28.85, *SD* = 5.54) had significantly lower scores than the active control group (*M* = 36.20, *SD* = 3.80); *t* (38) = 4.886, *p* =.001, *d* = 1.54, 95% CI [-10.395, -4.305]. Also, data showed that at posttest the experimental group (*M* = 28.15, *SD* = 5.55) had significantly lower scores than the active control group (*M* = 36.20, *SD* = 3.80); *t* (38) = 5.346, *p* =.001, *d* = 1.69, 95% CI [5.001, 11.099], which also occurred at pretest. However, data demonstrated that there was no significant difference in the NA scores at posttest for the passive control group (*M* = 28.85, *SD* = 5.54) and the experimental (*M* = 28.15, *SD* = 5.55); *t* (38) = .399, *p* =.69, *d* = 0.12, 95% CI [2.854, 4.254], which the same was found at pretest earlier. Figure 18 illustrates the groups mean scores from pretest to posttest for negative affect.

[22] Refer to Table 4

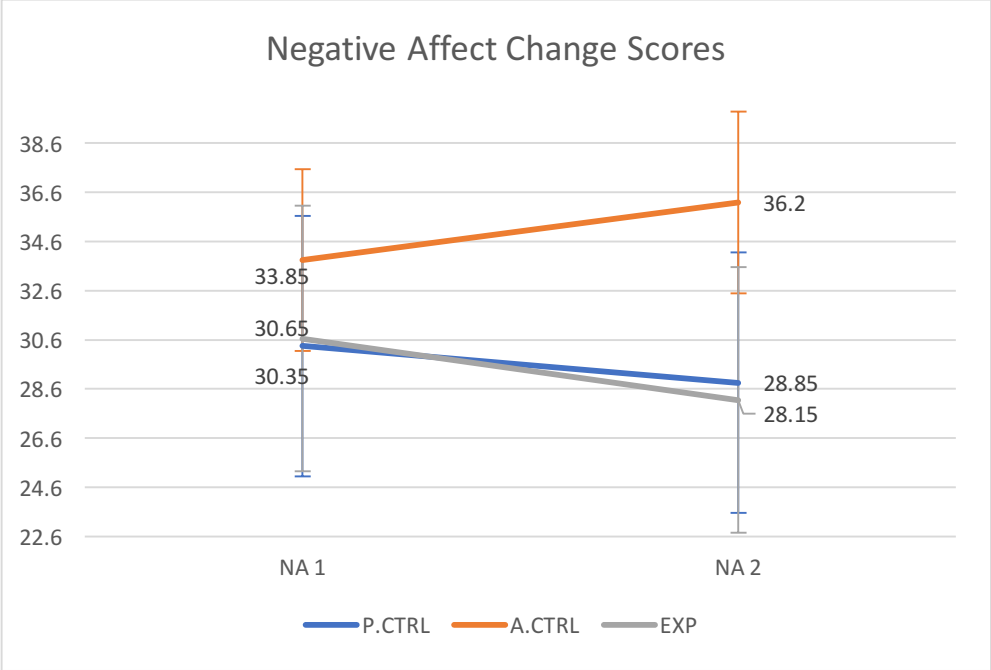

Figure 18. Mean Negative Affect (NA) scores for all three conditions at pretest and posttest in study 2.

Perceived Stress Scale

To compare the PSS scores from pretest to posttest, a repeated measures ANOVA was conducted. Results indicated a significant main effect of time (pretest versus posttest) in the PSS scores, $F(1,57) = 5.205$, $p = .02$, $\eta_p^2 = 0.084$, with PSS 2 being significantly lower at posttest ($M = 20.33$, $SD = 3.15$) than pretest ($M = 23.92$, $SD = 3.75$). Also, there was a significant main effect for group by demonstrating an increase from the passive control ($M = 20.82$, $SD = 2.23$) to the active control ($M = 21.0$, $SD = 2.62$) and a decrease from the active control to the experimental group ($M = 19.55$, $SD = 2.46$); $F(2,57) = 5.872$, $p = .001$, $\eta_p^2 = 0.171$.

ANOVA results revealed that there was no significant interaction effect between time and group, $F(2,57) = 2.108$, $p = .13$, $\eta_p^2 = .069$. The results from paired sample *t*-test illustrated that there was no significant difference in the passive control group PSS scores from pretest ($M = 20.90$, $SD = 3.61$) to posttest ($M = 20.75$, $SD = 3.38$). However, data

revealed a significant difference in the PSS scores for the active control group, by showing increase from pretest (M = 19.95, SD = 2.62) to posttest (M = 22.05, SD = 2.25); t (19) = 3.690, p =.07, d = 0.85, 95% CI [1.885, 2.685]. Furthermore, data showed a significant difference in the PSS scores for the experimental group by showing decrease from pretest (M = 20.90, SD = 2.40) to posttest (M = 18.20, SD = 2.50); t (19) = 5.366, p =.001, d = 1.10, 95% CI [1.647, 3.753].

As previously mentioned, no significant difference was found in the PSS scores at pretest among the passive control, active control and experimental groups. However, at posttest the experimental group (M = 18.20, SD = 2.50) had significantly lower PSS scores than both the active control (M = 22.05, SD = 2.25); t (38) = 5.105, p =.001, d = 1.61, 95% CI [2.323, 5.377] and the passive control group (M = 20.75, SD = 3.38); t (38) = 2.708, P =.01, d = 0.85, 95% CI [0.644, 4.456]. In contrast, data showed no significant difference in the PSS scores at posttest for the passive control group (M = 20.75, SD = 3.38) and the active control (M = 22.05, SD = 2.25); t (38) = 1.429, p =.16, d = 0.45, 95% CI [-3.142, 0.542]. Figure 19 presents the changes in mean scores from pretest to posttest in all three groups.

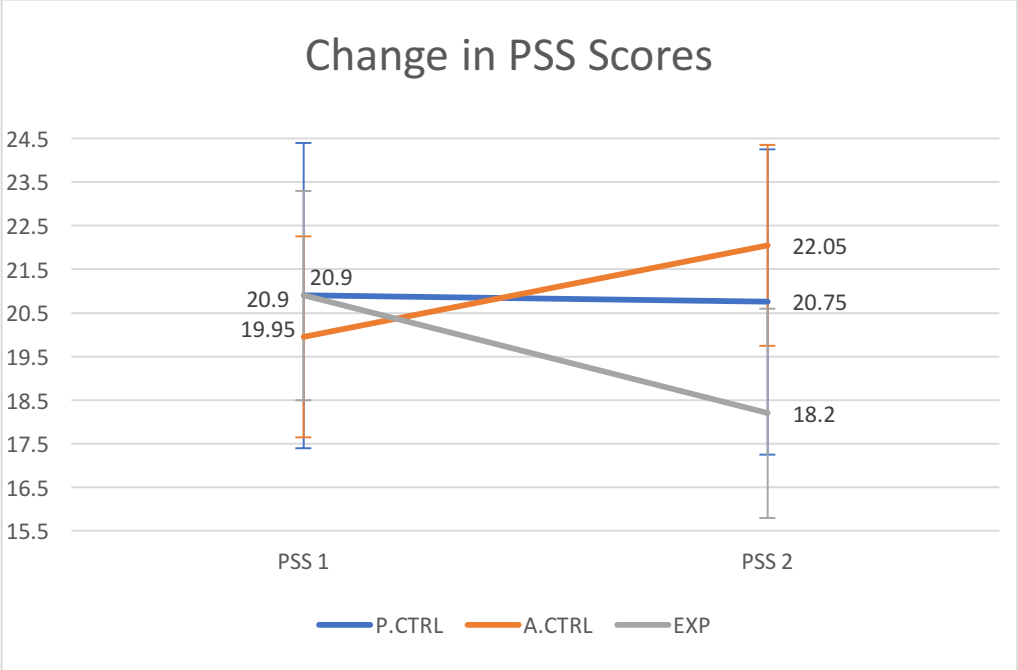

Figure 19. Mean Perceived Stress Scale (PSS) scores for all three groups at pretest and posttest in study 2.

Experienced VS Non-Experienced Participants

As it has been discussed in the general method chapter, 20% of the passive control group along with 10% of the active control and 25% of experimental group indicated that they had previous mindfulness experience. Participants were equally and randomly distributed in the groups and their previous experience should have had no impact on the final results of this study. However, as with Study 1, the means and standard deviations from pretest to posttest for each questionnaire were compared. Tables G, H, I, J, K and L

in Appendix show these comparisons for AMPS[23], FFMQ[24], SCS-R[25], PANAS-PA[26], PANAS-NA[27], and PSS[28] measures respectively and illustrate that the numbers in some cells are too small for meaningful comparison. In general, there were no significant differences overall or by group hence, the results of this research do not appear to have been affected by knowledge of mindfulness.

Study 1 & Study 2: P.CTRL & EXP Results

The passive control group and the experimental group of studies 1 and 2 (n = 80) were analysed together, as the P.CTRL and EXP groups of both studies used the same procedure. Although EXP groups in the first and second study, received a slightly different introduction, the actual mindfulness practice for both experimental groups were the same. This combined analysis would allow comparison as well as increasing statistical power. Repeated measures ANOVAs were conducted to identify overall changes in dependent variables from pretest to posttest (Preposttest), including changes in scores for the whole group (Group) and for the interaction between group and tests (Preposttest*Group).

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[23] Appendix T

[24] Appendix U

[25] Appendix V

[26] Appendix W

[27] Appendix X

[28] Appendix Y

ANOVA results for the AMPS indicated a significant main effect of time (pretest versus posttest), $F(1,78) = 81.89$, $p = .001$, $\eta_p^2 = .512$, by showing an increase from pretest ($M = 35.19$, $SD = 7.02$) to posttest ($M = 37.95$, $SD = 7.29$). Data also illustrated a significant main effect for group, by indicating an increase from the passive control ($M = 34.75$, $SD = 6.63$) to the experimental ($M = 39.65$, $SD = 7.09$); $F(1,78) = 6.04$, $p = .01$, $\eta_p^2 = .072$. Moreover, data demonstrated a significant interaction effect between time and group, $F(1,78) = 67.74$, $p = .001$, $\eta_p^2 = .465$. In order to investigate this interaction, paired sample *t*-tests were calculated. Results showed that there was no significant difference in the passive control group AMPS scores from pretest ($M = 34.60$, $SD = 6.52$) to posttest ($M = 34.85$, $SD = 6.73$); $t(39) = .896$, $p = .37$, $d = 0.03$, 95% CI [-0.814, 0.314]. However, paired sample *t*-tests found a significant increase in the experimental group from pretest ($M = 35.78$, $SD = 7.52$) to posttest ($M = 41.05$, $SD = 6.54$); $t(39) = 9.714$, $p = .001$, $d = 0.74$, 95% CI [-6.373, -4.177].

Independent *t*-test results revealed a significant difference at posttest between the passive control group ($M = 34.85$, $SD = 6.73$) and the experimental group ($M = 41.05$, $SD = 6.54$); $t(78) = 4.176$, $p = .001$, $d = 0.93$, 95% CI [-9.156, -3.244], by showing increase in the experimental group scores. However, the independent *t*-test results did not show any significant difference between the passive control group ($M = 34.60$, $SD = 6.52$) and the experimental group ($M = 35.78$, $SD = 7.52$); $t(78) = .746$, $p = .45$, $d = 0.16$, 95% CI [-4.309, 1.959], at pretest. Figure 20 illustrates the means of both conditions from pretest to posttest.

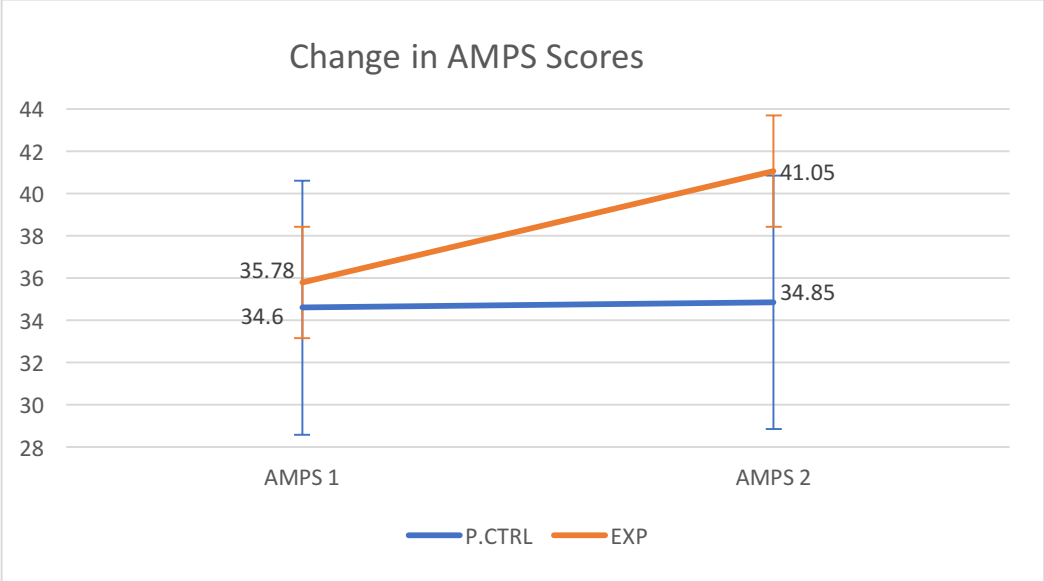


Figure 20. Applied Mindfulness Process Scale (AMPS) mean scores for the P.CTRL and the EXP groups from pretest to posttest in study 1 and study 2.

Repeated measures ANOVAs results for the FFMQ scores indicated a significant main effect of time, $F(1,78) = 64.91$, $p = .001$, $\eta_p^2 = .454$, by showing a significant increase from pretest ($M = 118.99$, $SD = 11.95$) to posttest ($M = 125.88$, $SD = 15.28$). There was also a significant main effect for group by demonstrating an increase from the passive control ($M = 117.08$, $SD = 12.59$) to the experimental group ($M = 129.78$, $SD = 12.08$); $F(1,78) = 15.93$, $p = .001$, $\eta_p^2 = .17$. Furthermore, data showed a significant interaction effect between time and group, $F(1,78) = 52.81$, $p = .001$, $\eta_p^2 = .404$. To investigate this interaction, paired sample *t*-tests were run which illustrated there was no significant difference in the passive control group FFMQ scores from pretest ($M = 116.85$, $SD = 12.54$) to posttest ($M = 117.53$, $SD = 12.62$); $t\ (39) = 1.684$, $p = .10$, $d = 0.05$, 95% CI [-1.486, 0.136]. On the other hand, data showed a significant increase in the FFMQ scores for the experimental group, from pretest ($M = 121.13$, $SD = 11.07$) to posttest ($M = 134.23$, $SD = 13.08$); $t\ (39) = 7.882$, $p = .001$, $d = 1.08$, 95% CI [-16.462, -9.738].

Also, independent *t*-test results revealed a significant difference at posttest between the passive control group (M = 117.53, SD = 12.62) and the experimental group (M = 134.23, SD = 13.08); t (78) = 5.810, p = .001, d = 1.29, 95% CI [-22.422, -10.978], by showing an increase in the experimental group FFMQ scores. However, *t*-test results did not show any significant difference at pretest between the passive control group (M = 116.85, SD = 12.55) and the experimental group (M = 121.13, SD = 11.07); t (78) = 1.615, p = .11, d = 0.36, 95% CI [-9.544, 0.994]. Figure 21 illustrates the means of both groups over time.

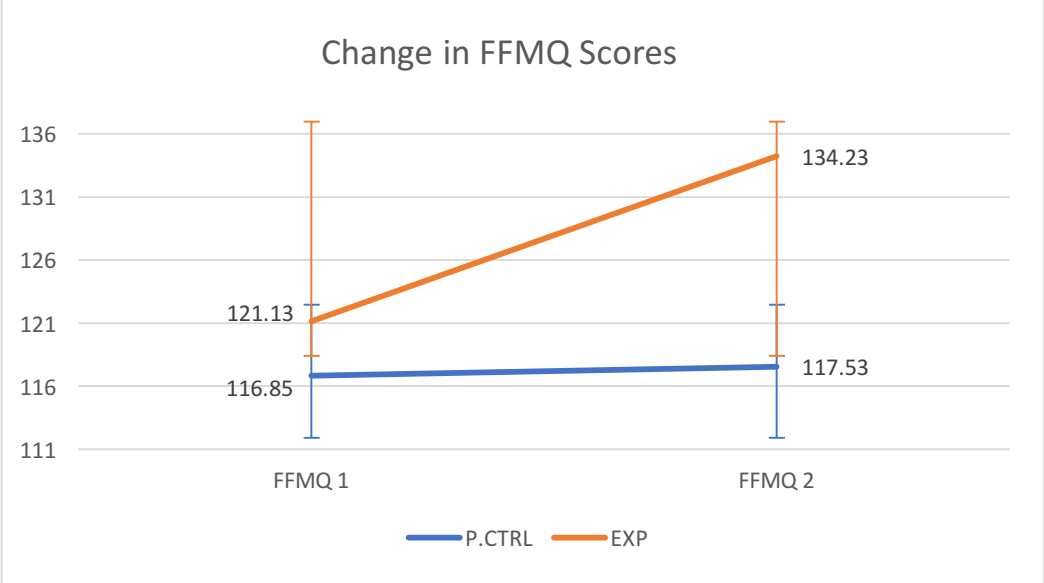


Figure 21. Mean Five Facet Mindfulness Questionnaire (FFMQ) mean scores for the P.CTRL and the EXP groups from pretest to posttest in study 1 and study 2.

The results from repeated measures ANOVAs showed a significant main effect of time (pretest versus posttest) in the SCS-R scores, $F(1,78) = 74.49$, $p = .001$, $\eta_p^2 = .489$, by showing an increase from pretest (M = 15.36, SD = 3.98) to posttest (M = 17.80, SD = 4.03). However, ANOVA results indicated no significant main effect for group, from the passive control (M = 16.05, SD = 3.90) to the experimental (M = 16.75, SD = 3.79); $F(1,78)$

= .86, p = .35, η_p^2 = .011. On the other hand, data found a significant interaction effect between time and group, $F(1,78) = 49.52$, p = .001, η_p^2 = .388. In order to investigate this interaction, paired sample *t*-tests were analysed and showed that there was no significant difference in the passive control group SCS-R scores from pretest (M = 15.98, SD = 3.91) to posttest (M = 16.43, SD = 3.90); t (39) = 1.503, p = .14, d = 0.11, 95% CI [-1.056, 0.156]. However, paired sample *t*-test found a significant increase in the experimental group SCS-R scores from pretest (M = 14.75, SD = 4.01) to posttest (M = 19.18, SD = 3.70); t (39) = 9.240, p = .001, 95% CI [-5.394, -3.456].

The results from independent *t*-test demonstrated a significant difference at posttest between the passive control group (M = 16.43, SD = 3.90) and the experimental group (M = 19.18, SD = 3.70); t (78) = 3.299, p = .001, d = 1.14, 95% CI [-4.446, -1.054], by showing an increase in the experimental group SCS-R scores. However, the independent *t*-test results did not show any significant difference at pretest between the passive control group (M = 15.98, SD = 3.91) and the experimental group (M = 14.75, SD = 4.01); t (78) = 1.384, p = .17, d = 0.31, 95% CI [-0.527, 2.987]. Figure 22 illustrates the means of both conditions from pretest to posttest.

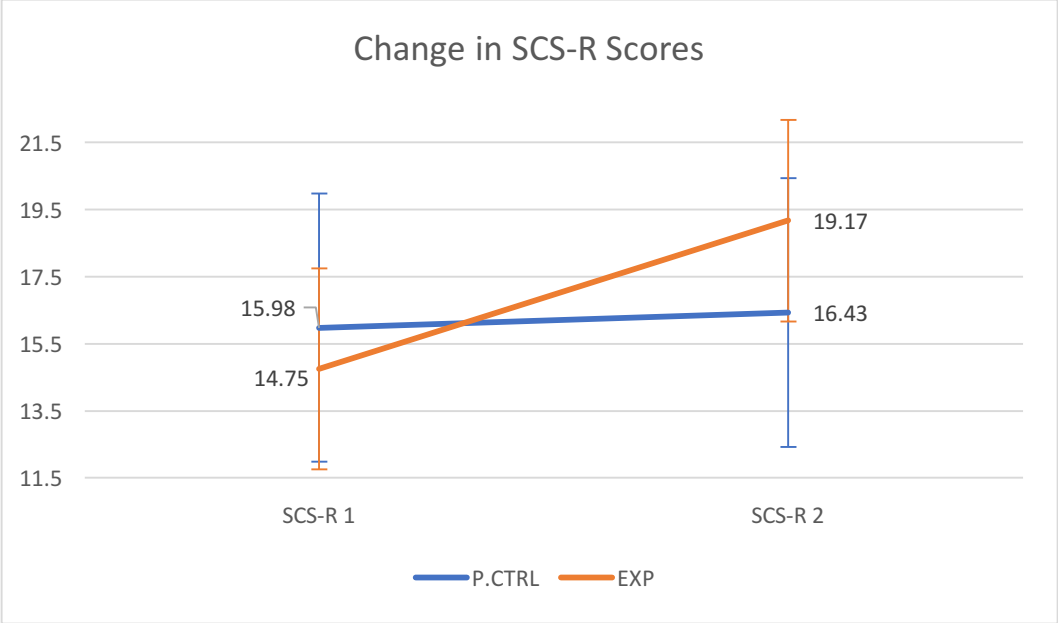


Figure 22. Mean Self Consciousness Scale – Revised (SCSR) scores for the P.CTRL and the EXP groups from pretest to posttest in study 1 and study 2.

The ANOVA results for the PA scores indicated a significant main effect of time, $F(1,78) = 116.95$, $p = .001$, $\eta_p^2 = .600$, by showing a significant increase from pretest ($M = 34.57$, $SD = 5.61$) to posttest ($M = 37.69$, $SD = 5.47$). However, there was no significant main effect for group from the passive control ($M = 35.98$, $SD = 5.24$) to the experimental group ($M = 36.78$, $SD = 5.78$); $F(1,78) = .283$, $p = .59$, $\eta_p^2 = .004$. The ANOVA results found a significant interaction effect between time and group, $F(1,78) = 28.53$, $P = .001$, $\eta_p^2 = .268$. To investigate this interaction, paired sample *t*-tests were calculated which showed a significant increase in the passive control group PA scores from pretest ($M = 35.03$, $SD = 5.27$) to posttest ($M = 36.60$, $SD = 5.21$); $t\ (39) = 6.494$, $p = .001$, $d = 0.29$, 95% CI [-2.066, -1.084]. Furthermore, *t*-test results showed a significant increase in the PA scores for the experimental group, from pretest ($M = 34.13$, $SD = 5.95$) to posttest ($M = 38.78$, $SD = 5.57$); $t\ (39) = 8.908$, $p = .001$, $d = 0.80$, 95% CI [-5.706, -3.594].

Results from independent *t*-test indicated a significant difference at posttest between the passive control group ($M = 36.60$, $SD = 5.21$) and the experimental group ($M = 38.78$, $SD = 5.57$); $t\,(78) = 1.802$, $p = .07$, $d = 0.39$, 95% CI [-4.578, 0.228], by showing an increase in the experimental group PA scores. However, the independent *t*-test results did not show any significant difference between the passive control group ($M = 35.03$, $SD = 5.27$) and the experimental group ($M = 34.13$, $SD = 5.95$); $t\,(78) = .715$, $p = .47$, $d = 0.16$, 95% CI [-1.605, 3.405], at pretest. Figure 23 illustrates the means of both groups from pretest to posttest.

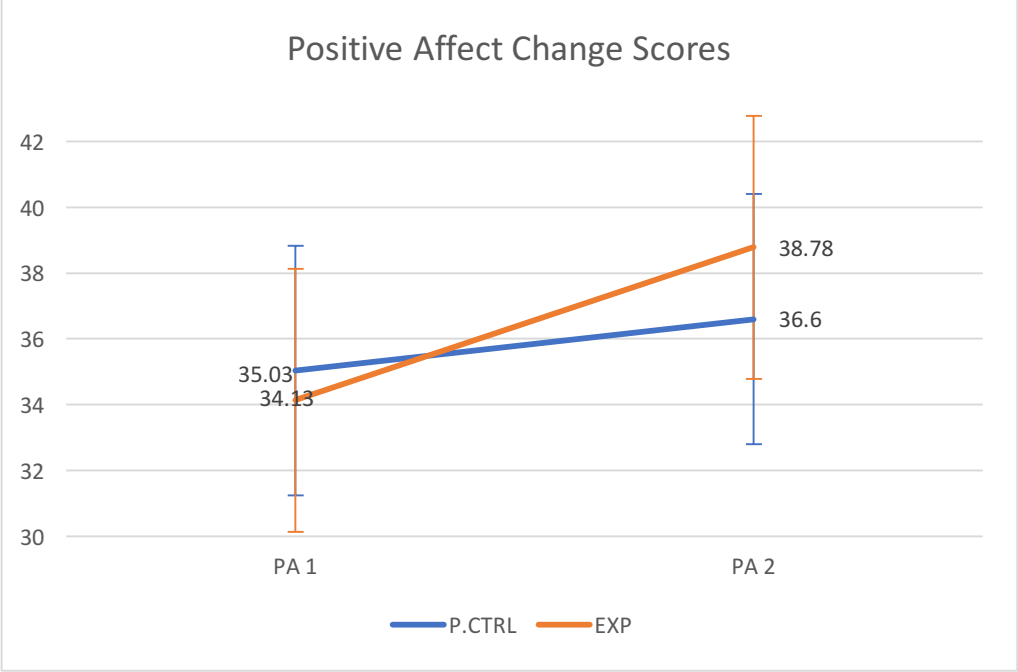


Figure 23. Mean Positive Affect (PA) scores for the P.CTRL and the EXP groups from pretest to posttest in study 1 and study 2.

Repeated measures ANOVAs for the NA scores illustrated a significant main effect of time by showing a significant decrease from pretest ($M = 29.62$, $SD = 5.05$) to posttest ($M = 26.65$, $SD = 5.73$), $F(1,78) = 122.86$, $p = .001$, $\eta_p^2 = .612$. However, no significant main effect for group was found, from the passive control ($M = 28.55$, $SD = 5.46$) to the

experimental (M = 27.75, SD = 5.33); F(1,78) = .62, p = .43, η_p^2 = .008. In contrast, data demonstrated a significant interaction effect between time and group, F(1,78) = 16.04, p = .001, η_p^2 = .171. A paired sample t-tests were analysed and the results showed a significant difference in the passive control group NA scores, by showing decrease from pretest (M = 29.55, SD = 5.22) to posttest (M = 27.65, SD = 5.60); t (39) = 6.643, p = .001, d = 0.35, 95% CI [1.322, 2.478]. Moreover, paired sample t-test found a significant decrease in the experimental group NA scores, from (M = 29.70, SD = 4.93) in pretest to (M = 25.65, SD = 5.76) in posttest; t (39) = 8.916, p = .001, d = 0.75, 95% CI [3.131, 4.969]. The results from independent t-test demonstrated no significant difference between the passive control group and the experimental group at pretest; t (78) = .132, p = .89, d = 0.02, 95% CI [-2.412, 2.112] and at posttest; t (78) = 1.574, p = .12, d = 0.35, 95% CI [-0.529, 4.529]. Figure 24 shows the means of both conditions over time.

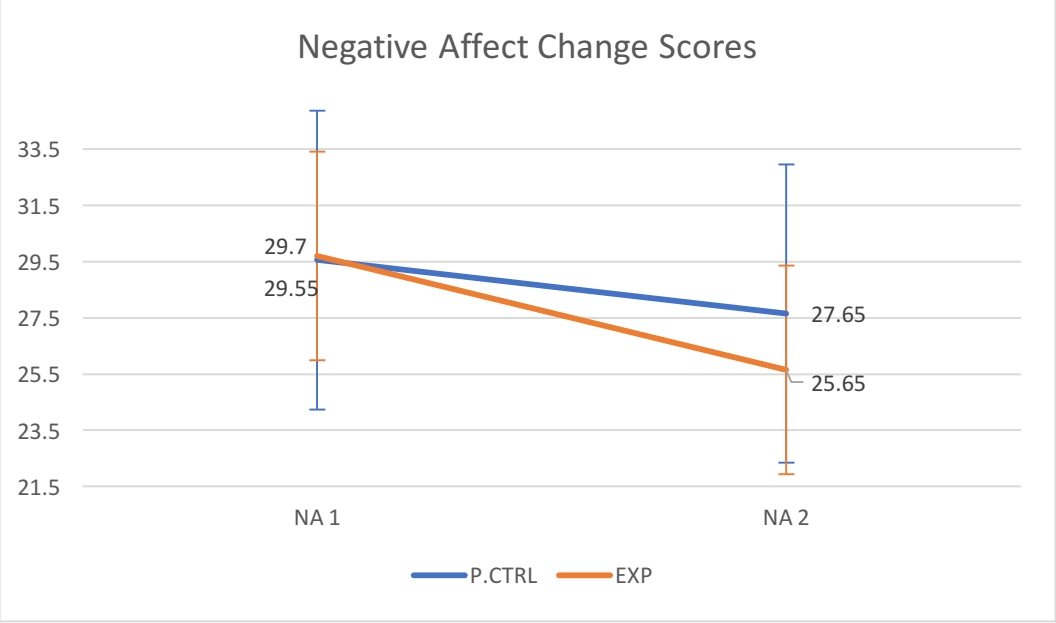


Figure 24. Mean Negative Affect (NA) scores for the P.CTRL and the EXP groups from pretest to posttest in study 1 and study 2.

The ANOVA results for the PSS scores demonstrated a significant main effect of time by showing a significant decrease from pretest (M = 21.47, SD = 3.65) to posttest (M = 19.10, SD = 3.92), $F(1,78) = 71.89$, $p = .001$, $\eta_p^2 = .480$. Data also found a significant main effect for group, by indicating that the passive control (M = 21.55, SD = 3.46) was higher than the experimental (M = 19.73, SD = 3.72); $F(1,78) = 5.74$, $p = .01$, $\eta_p^2 = .069$. Furthermore, a significant interaction effect was found between time and group, $F(1,78) = 41.29$, $p = .001$, $\eta_p^2 = .346$. A paired sample t-test was calculated to analyse this interaction. The result showed a significant difference in the passive control group PSS scores, by showing decrease from pretest (M = 21.48, SD = 3.62) to posttest (M = 20.90, SD = 3.25); t (39) = 2.321, p = .02, d = 0.16, 95% CI [0.074, 1.076]. Also, paired sample t-test found a significant decrease in the experimental group from pretest (M = 21.48, SD = 3.72) to posttest (M = 17.30, SD = 3.73); t (39) = 8.310, p = .001, d = 1.12, 95% CI [3.159, 5.191].

The results from independent t-test demonstrated no significant difference between the passive control group (M = 21.48, SD = 3.62) and the experimental group (M = 21.48, SD = 3.72) at pretest, t (78) = .000, p = 1.00, d = 0.000, 95% CI [-1.635, 1.635]. However, data found a significant difference between the passive control group (M = 20.90, SD = 3.25) and the experimental group (M = 17.30, SD = 3.73) at posttest, t (78) = 4.604, p = .001, d = 1.02, 95% CI [2.043, 5.157]. Figure 25 illustrates the means of both groups over time.

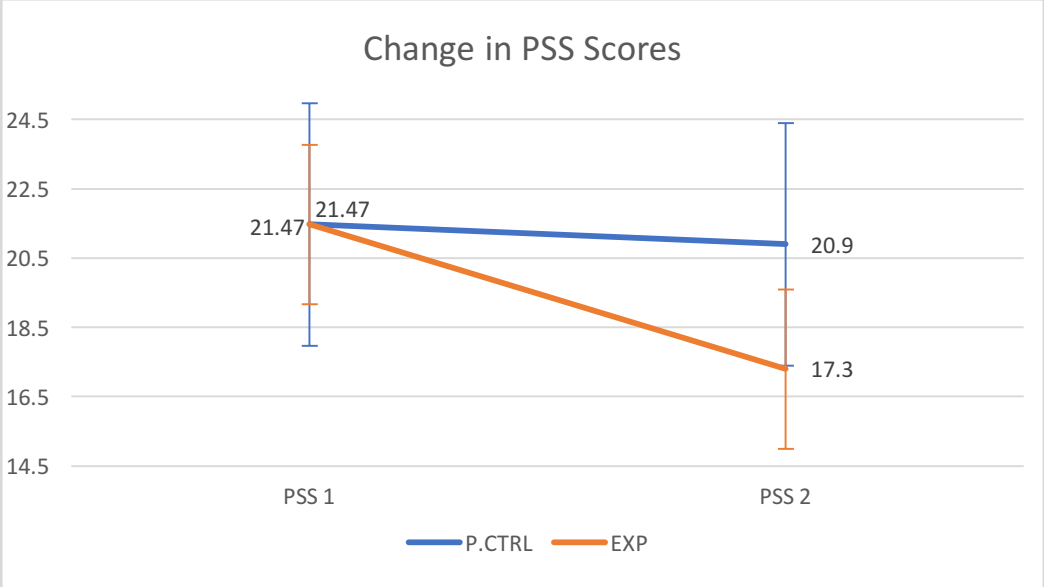


Figure 25. Mean Perceived Stress Scale (PSS) scores for the P.CTRL and the EXP groups from pretest to posttest in study 1 and study 2.

Summary of Findings

In the second study the initial focus of investigating the relationship between mindfulness expectancy effects and labeling, shifted to manipulating participants' expectations of mindfulness in both positive and negative directions, to determine how it would affect their self-report mindfulness along with other proposed wellbeing measurements. To see if the hypotheses of this study were supported, findings from the five self-report measurements which were used in this study, were considered separately for each group.

Results from the passive control group (P.CTRL) or the group who believed that they participated in a psychology and wellbeing study, demonstrated no change in both mindfulness questionnaires which were used in this research (AMPS and FFMQ) over time. As mentioned in previous chapter, also in study 1, no effect for mindfulness was found in the passive control group. Data analysis from study 1 and study 2, supported

researcher's hypothesis that there is no effect for mindfulness in the passive control group by illustrating that self-report mindfulness scores did not show any change from pretest to posttest.

Although due to using the same procedure in both studies, the results from study 2 were expected to be the same as study 1 for the P.CTRL, data revealed different results for self-consciousness (SCS-R) and perceived stress (PSS) measures. In study 1, self-consciousness did not show any change over time, however data found higher self-consciousness in study 2 by showing higher scores in participants' self-report scores from pretest to posttest. Results from study 1 and study 2 revealed no overall significant difference in the P.CTRL group SCS-R scores over time. Also, data illustrated no difference in their perceived stress (PSS) over time in study 2, while in study 1 participants reported lower perceived stress from pretest to posttest. Overall results from study 1 and study 2 demonstrated a significant decrease in the P.CTRL group PSS scores from pretest to posttest. Furthermore, data showed higher self-report positive mood (PA) and lower self-report negative mood (NA) over time in study 2, which were the same as study 1. These results along with data analysis from study 1 and study 2, showed that by just being a part of a psychology and wellbeing research, participants' mood and their perceived stress could improve over time by self-reporting higher positive mood (PA-PANAS) along with lower negative mood (NA-PANAS) and lower stress (PSS) from pretest to posttest.

In summary, the P.CTRL supported researcher's hypotheses that there is an expectancy effect for well-being and no effect for mindfulness in the passive control group as its data demonstrated higher wellbeing over time while their mindfulness scores did not show any change. The higher wellbeing scores might be because participants in this group

were told that they are participating in a wellbeing study. It might have acted as the expectancy effects as they expected to improve on wellbeing measures. Furthermore, according to social desirability bias and an individual's general tendency in showing better performance in group setting by doing jigsaw puzzle as a brain exercise in posttest, participants might have expected to show better results. The other possibility is the brain exercise (jigsaw puzzle), actually might have a real benefit of itself.

For the active control group (A.CTRL) or the group who received information about possible disadvantages of practicing mindfulness, data found a significant decrease in their mindfulness scores for both AMPS and FFMQ questionnaires from pretest to posttest. This result supported the hypothesis that focusing on disadvantages of practicing mindfulness would significantly decrease self-report mindfulness in the A.CTRL. The same results were found for each facets of mindfulness in the FFMQ, as data showed a consistent decrease for all five facets of mindfulness for the active control group, however, this decrease was not significant by comparing to the passive control group.

Likewise, as it was hypothesised, data illustrated lower overall well-being scores in the A.CTRL by showing decrease in positive mood (PA-PANAS) and increase in negative mood (NA-PANAS) from pretest to posttest. Data also showed no change in self-consciousness scores (SCS-R) and perceived stress (PSS) over time. Again these results supported researcher's hypothesis that focusing on disadvantages of practicing mindfulness would significantly decrease well-being in the A.CTRL group. As it mentioned previously, the aim of the second study was to see if there was an active effect of mindfulness practice itself. Data from study 2 did not support this by showing that giving negative information about mindfulness could affect participants' answers negatively.

As it was expected, data from the experimental group (EXP) or the group that received information about advantages of practicing mindfulness, showed a high level of mindfulness and wellbeing over time. As results illustrated, participants in the EXP group showed higher scores in all self-report questionnaires which were used in this study by showing increase in their self-report mindfulness scores (for both AMPS, FFMQ), self-report self-consciousness (SCS-R), and positive mood (PA-PANAS), along with showing decrease in their negative mood (NA-PANAS) and perceived stress (PSS). These findings demonstrated that focusing on advantages of practicing mindfulness would significantly improve self-report mindfulness as well as self-report well-being in the EXP group. The same results were found for this group in study 1, by illustrating improve in all self-report questionnaires. Results from the EXP groups in study 1 and study 2 also showed the same results by showing significant improvement, with the similar patterns, in all self-report measures. Hence, these improvements might be considered as result of expectancy rather than a real effect.

General Discussion

While several studies have supported the positive role of mindfulness in mental and psychological health (Addante et al., 2019; Alexander, Kronk, Sekula, Short, & Abatemarco, 2019; Khoo et al., 2019; Zou, Cao, Geng, & Chair, 2020), it would be difficult to draw casual relationships and confirm whether the improvements were due to an increase in mindfulness, or whether there were other contributory factors (Baer, 2009). As far as the effects observed in some studies did not compare to a control group (Morrison Wylde, Mahrer, Meyer, & Gold, 2017; Wen, Sweeney, Welton, Trockel, & Katznelson, 2017), therefore the results they observed may not be true effects. This research aimed to add to the literature by investigating if there were expectancy effects for mindfulness. By including two mindfulness self-report questionnaires as well as a self-consciousness measure, it was intended to provide information about the active components of mindfulness with relevance to other wellbeing measures such as mood and perceived stress. Also, to control other possibilities of expectation that could influence the results, two control conditions were included as the passive control and the active control groups.

Findings from all of the five self-report measurements which were used in both studies of the current research, revealed that the primary hypothesis (H_A) was supported which said there is a difference in self-report measures among the passive control, active control and experimental groups over time. To see if other hypotheses were supported as well, each group was considered separately.

Discussion of Findings

Study1: The Passive Control Group

In the first study of this current research, it was aimed to investigate the relationship between mindfulness expectancy effects and labeling. For this purpose, it was hypothesised that there would be no expectancy effect for mindfulness in the passive control group. Results supported the researcher's hypothesis that there was no effect for mindfulness in the P.CTRL group by illustrating that self-report mindfulness scores for both AMPS and FFMQ self-report questionnaires did not show any change from pretest to posttest. This result is consistent with Lee-Fan and colleagues study that indicated there was no effect for mindfulness meditation in the no-treatment control group (Lee-Fan, Zoltan, Ashok, & Sing-Yau, 2014).

On the other hand, it was hypothesised that there would be an expectancy effect for wellbeing in the P.CTRL group as participants in this group believed that they participated in a psychology and wellbeing study so there was a possibility of expectation of improvement. As it was predictable from the mindfulness findings, the results found no difference in the P.CTRL participants' self-consciousness by showing no change in their self-report SCS-R scores from pretest to posttest. The rational around using SCS-R as one of the questionnaires of the current research, was that this was a measure that would be expected to correlate with mindfulness, however, it was not a mindfulness measure per se. In contrast, data showed that by just being part of a psychology and wellbeing research study involving jigsaw puzzles in a group setting, participants' mood and their perceived stress changed over time according to their self-report scores in PANAS by showing higher positive mood (PA-PANAS) and lower negative mood (NA-PANAS) from pretest to

posttest, and their self-report scores in PSS by demonstrating lower stress scores over time. These results match previous studies in this field such as Rune and colleagues' study that showed participants' psychological wellbeing would be increased by intrinsic goal expectancy (Rune, Halgeir, Knut, & Egil, 2013). Also, in support of our findings, another study demonstrated that participants in the control group showed a wellbeing improvement by comparing to the treatment group (Eccleston et al., 2017). On the other hand, several studies suggested that compared with a no-treatment control condition, treatment groups showed reduce distress and improve positive mood states (Jain et al., 2007; Lomas, Medina, Ivtzan, Rupprecht, et al., 2018). One possible reason for this contrast could be the difference in the title that was used in current study.

In summary, the P.CTRL group supported the hypotheses that there would be an expectancy effect for wellbeing and no effect for mindfulness in the passive control group as its data demonstrated higher wellbeing over time while their mindfulness scores did not show any change. The higher wellbeing scores might be because participants in this group were told that they are participating in a wellbeing study. It might have acted as the expectancy effects as they expected to improve on wellbeing measures. Furthermore, according to the social desirability bias and an individual's general tendency in showing better performance in group setting by doing jigsaw puzzle as a brain exercise in posttest, participants might have wanted to show better results. The other possibility is the brain exercise (jigsaw puzzle), actually might have a real benefit in and of itself.

Study1: The Active Control Group

For the active control group (A.CTRL) or the group who received the mindfulness label without any training or practice, it was hypothesised that simply using the label

"mindfulness" on a task would produce the expectancy effects and act to improve self-reported measures for either mindfulness or wellbeing, or both. Data supported the expectancy effects for mindfulness as participants' self-report scores showed a significant increase in their mindfulness for both AMPS and FFMQ questionnaires from pretest to posttest while they did not receive actual mindfulness practice. This result supported the hypothesis that there is an expectancy effect for mindfulness in the A.CTRL group. As mentioned in the previous chapters, the P.CTRL, A.CTRL and EXP groups were shown to be equivalent at baseline hence this result was not affected by other contributing factors.

The finding of this study is consistent with previous studies in this field which illustrated even sham mindfulness would be able to produce the real improvement in mood and cardiovascular variables (Zeidan, Johnson, Gordon, et al., 2010), significant increases in mindfulness dispositions and critical thinking scores (Noone & Hogan, 2018), and pain relief (Zeidan et al., 2015), when compared to a control group. Also, in support of these findings another systematic review suggested that mindfulness based interventions were more effective than no treatment group and treatment-as-usual group, but not in comparison to placebo or other active treatment condition (Hedman-Lagerlöf et al., 2018).

However, in contrast with our findings here, another research study suggested that only patients receiving actual mindfulness training showed significant increases in the ability to monitor and observe thoughts and feelings as measured by the Toronto Mindfulness Scale (Bieling et al., 2012). One possible reason could be the title "Mindful Jigsaw and Wellbeing" which was given to participants in the A.CTRL group and their expectancy to show improvements on both their mindfulness and wellbeing scores.

The results for each facet of mindfulness in the FFMQ showed a consistent increase for all five facets of mindfulness for the active control group. Data illustrated that by just receiving the label mindfulness on a task, five facets of mindfulness; acting with awareness, non-judging, observing, describing, and non-reactivity, showed a steady improvement from pretest to posttest, without actually practicing mindfulness. However, according to Zeidan and colleagues study, although participants in the sham mindfulness group showed improvement in all facets of mindfulness, actual mindfulness meditation produced greater results and employed distinct neural mechanisms than sham mindfulness meditation by activating higher order brain regions, including the orbitofrontal and cingulate cortices (Zeidan et al., 2015). This finding also matches with current research as this study found stronger and more significant self-report scores in the mindfulness group (EXP), which will be discussed further in this chapter.

Moreover, as mentioned earlier, for the A.CTRL group it was hypothesised that there is an expectancy effect for wellbeing. The results illustrated higher self-report wellbeing scores for the A.CTRL group by showing higher self-consciousness scores (SCS-R) over time, along with higher positive mood (PA-PANAS), lower negative mood (NA-PANAS) and lower perceived stress (PSS). Again this results supported researcher's hypothesis that there is an expectancy effect for wellbeing in the A.CTRL group. These findings are supported by Noone and Hogan study which observed significant increases in critical thinking and wellbeing scores in sham mindfulness meditation group (Noone & Hogan, 2018). The sham mindfulness in their study referred to a guided breathing exercise but without giving guidance on how to control their awareness of their body or breath, whilst the actual mindfulness group received the concept of mindfulness and some practical

tips for practicing mindfulness meditation along with a guided body-scan meditation (Noone & Hogan, 2018). Also in support of our results, Ito and colleagues suggested that mindfulness meditation placebo can reduce stress and anxiety (Ito et al., 2019). In another study, Adler-Neal also showed that actual mindfulness meditation and sham-mindfulness meditation which consisted of a breathing-based control, similarly reduced pain ratings (Adler-Neal et al., 2019).

Furthermore, Chiesa and colleagues study indicated although mindfulness meditation seems to target specific brain areas related to emotions and emotional regulation, similar mechanisms have been observed also in other interventions, particularly in placebo group (Chiesa et al., 2010). However, based upon a quasi-randomized trial and long-term observational follow-up study, results indicated mindfulness intervention to be of potential long-term benefit in comparison with the sham intervention (Grossman et al., 2007). Also, Prothero and colleagues showed that attention, education, and placebo control groups produced some improvements but not as large as those produced by the psychological and mindfulness interventions (Prothero et al., 2018).

Other research demonstrated that only mindful individuals feel less pain and evoke greater deactivation of brain regions supporting the engagement sensory, cognitive, and affective appraisals, in comparison with the placebo condition (Zeidan et al., 2018). However, the observed expectancy effects for both mindfulness and wellbeing in the A.CTRL group, might be a result of participants expectations in this group as they expected to show improvement on both mindfulness and wellbeing measures, based on the title which was given to them along with the introduction to the jigsaw session. According to what has been discussed here, the conclusion can be drawn that simply using the label

mindfulness could produce the expectancy effects and act to improve self-report mindfulness along with general wellbeing status in the A.CTRL group compare to the P.CTRL group. The other possibility for showing these improvements in both mindfulness and wellbeing scores could be due to the social desirability as participant may answered questions in a favorable way rather than to give accurate answers. Generally based on current research's findings, expectation plays a role in the how people report on the mindfulness along with other wellbeing measures which very few researchers have looked at this so far.

Study1: The Experimental Group

As was expected for the experimental group (EXP) or the group that received actual mindfulness training, data showed a high score of mindfulness and wellbeing over time. As results illustrated, participants in the EXP group showed improvement in their self-report mindfulness scores from both AMPS and FFMQ questionnaires. These results are consistent with Keng and colleagues study that compared mindfulness practice group to a no-practice control condition and found that mindfulness group resulted in significant improvements in trait mindfulness and self-compassion (Keng, Lee, & Eisenlohr-Moul, 2019). Also, a few studies have shown that the state of mindfulness can be enhanced through practicing meditation (Lutz et al., 2007). A randomized trial suggested that mindfulness training was associated with reduced mental health symptoms via improvements in self-consciousness and awareness (Fung et al., 2019).

Fangtham and colleagues in a systematic review compared control conditions with non-pharmacological interventions such as mindfulness, and suggested that mindfulness treatment was associated with a significant improvement in fatigue in four out of six studies

(Fangtham et al., 2019). They also mentioned that five out of eight studies reported improved anxiety and depression, and one study reported improved pain after mindfulness interventions (Fangtham et al., 2019). Data form another study also suggested that compared with a no-treatment control, brief training in mindfulness meditation reduced distress and improved positive mood states (Jain et al., 2007). In addition, several studies suggested that mindfulness meditation may be specific in its ability to reduce distractive and ruminative thoughts and behaviors, and this ability may provide a unique mechanism by which mindfulness meditation reduces distress (Jain et al., 2007; Prothero et al., 2018).

However, Esch and colleagues' randomized control trial questioned these findings. They showed the meditation group produced fewer errors in attention, paradoxically, increases in pain tolerance occurred in both control groups and correlated with reported mindfulness by FMI questionnaire (Esch et al., 2016). But the question remains open whether lack of meditation effects on pain tolerance was due to these intended 'non-placebo' conditions, cultural effects, or other confounders, or on an unsuitable paradigm (Esch et al., 2016). Also data from Scheepers and colleague systematic review suggested that these findings might be subject to the methodological limitations of studies such as the use of self-selected participants, lack of placebo interventions, use of self-reported outcomes (Scheepers, Emke, Epstein, & Lombarts, 2019). However, the current study was able to compare the observed increase in mindfulness measures in the EXP group, to the control conditions in order to test for expectancy effects.

Participants in the EXP group also showed higher self-report wellbeing scores by demonstrating increase in their self-consciousness (SCS-R) and positive affect (PA-PANAS), along with decrease in their negative affect (NA-PANAS) and perceived stress

(PSS). In support of these findings, it appears that people in high mindfulness state, are able to show better physical and psychological health than others (Clarke & Draper, 2020). As mentioned in the literature, psychological wellbeing and mindfulness practice have been associated with each other which match the results of current research as well (Brown & Ryan, 2003; Clarke & Draper, 2020; Davis et al., 2007; Perach et al., 2019; Tambyah et al., 2010). Some researchers found that the mindfulness group had fewer overall symptoms of stress (Bränström, Kvillemo, Brandberg, & Moskowitz, 2010; Campagne, 2019; Matchim, Armer, & Stewart, 2011; Pérula-de Torres et al., 2019; Shapiro et al., 2011; Sood et al., 2019; Speca, Carlson, Goodey, & Angen, 2000); fewer cardiopulmonary and gastrointestinal symptoms (Speca et al., 2000); less emotional irritability (Conner et al., 2019), depression and cognitive disorganization (Frick et al., 2020; Lönnberg et al., 2020), and fewer habitual patterns of stress (Farhang, Miranda-Castillo, Rubio, & Furtado, 2019; Lönnberg et al., 2020).

Several studies also have highlighted that mindfulness is related to increases in positive affect and decreases in negative affect, and lower perceived stress and physiological reactivity (Campagne, 2019; Creswell et al., 2015; Hara et al., 2018; Lönnberg et al., 2020; Snippe, Dziak, Lanza, Nyklíček, & Wichers, 2017; Suyi, Meredith, & Khan, 2017; Wu et al., 2019; Zimmaro et al., 2019). In addition, Spears and colleagues study supported these findings that mindfulness predicted lower NA, higher PA and lower affective volatility (Spears et al., 2019). Moreover, other research study has also specifically demonstrated that mindfulness is associated with reduced negative affect and increased positive affect (Brown, Wilson, Goodale, & Gribble, 2007). Results of the

current research were consistent with all these studies by showing increase in participants' positive affect scores and decrease in their negative affect sores.

In general, findings revealed that a brief mindfulness intervention can significantly improve self-report measures of mindfulness in the experimental group along with wellbeing measures such as self-consciousness, mood and perceived stress compared to both the active control and passive control conditions. Some studies have linked the high scores in self-report mindfulness measurements to higher scores in creativity (Ball & Dibble, 1980; Colzato et al., 2012). Other studies have related positive mental health to regular practicing mindfulness (Campagne, 2019; Eskic et al., 2019). Some believed that people who are more mindful than others particularly during their daily routines, showed to have stronger wellbeing and mental health (Armani Kian et al., 2018; Rowland, Wenzel, & Kubiak, 2018).

However, Volanen and colleagues found different results that do not match the findings of current study. They indicated that overall mindfulness did not show more beneficial effects on the primary outcomes of mental health, except for resilience for which a positive intervention effect was found compared to the control group (Volanen et al., 2020). It is important to note that they also mentioned in their study that the inactive control group was smaller than the intervention and active control groups which reduced the statistical power (Volanen et al., 2020).

Considering that few mindfulness studies to date have used control groups, it is possible that some of the positive outcomes reported in earlier studies are not true or real effects. Without a control condition, there is no verification that the effects were due to the intervention alone, and not some other factors. The current research demonstrated an

increase in both mindfulness and wellbeing in the active control and experimental groups, which is compared to two control conditions. The strength of the current study is the ability to compare the observed increase in mindfulness and wellbeing in the experimental group to the passive and active control conditions in order to test for expectancy effects. Whereas, the effects observed in some studies did not compare to a control group (Morrison Wylde et al., 2017; Wen et al., 2017), therefore the results they observed may not be true effects. In addition, although the experimental group of the current study showed the biggest increase, this group also had the biggest expectation as they received more information about mindfulness along with some instructions on how to practice it. That alone may have led to the bigger increase in their self-report scores.

In order to further investigate these effects, study 2 was designed and conducted by manipulating the content in terms of positive and negative information. The aim of the second study was to see if there was an effect of the mindfulness practice itself, and if yes, then it might have occurred regardless of giving positive or negative information about mindfulness to participants.

In the second study of current research, the initial focus of investigating the relationship between mindfulness expectancy effects and labeling, shifted to manipulating participants' expectations of mindfulness in both positive and negative directions, to determine how it would affect their self-report mindfulness scores along with other proposed wellbeing measurements.

Study2: The Passive Control Group

Results from the passive control group (P.CTRL) or the group who believed that they participated in a psychology and wellbeing study, demonstrated the same results as

the study 1 due to using the same procedure. Data showed no change in both mindfulness questionnaires which were used in this research (AMPS and FFMQ) from pretest to posttest. Data analysis from study 1 and study 2, supported researcher's hypothesis that there is no effect for mindfulness in the passive control group by illustrating that self-report mindfulness scores did not show any change over time. In support of this finding, Jain and colleagues found that the data from non-treatment control group that compared with mindfulness training group revealed no change in their mindfulness state over time (Jain et al., 2007).

Although due to using the same procedure in both studies, the results from study 2 were expected to be the same as study 1 for the P.CTRL, data revealed different results for self-consciousness (SCS-R) and perceived stress (PSS) measures. In study 1, self-consciousness did not show any change over time, however data found higher self-consciousness in study 2 by showing higher scores in participants' self-report scores from pretest to posttest. Results from the combined data of study 1 and study 2, revealed no overall significant difference in the P.CTRL group SCS-R scores over time. Also, data illustrated no difference in their perceived stress (PSS) over time in study 2, while in study 1 participants reported lower perceived stress from pretest to posttest. Overall results from study 1 and study 2 demonstrated a significant decrease in the P.CTRL group PSS scores from pretest to posttest. Furthermore, data showed higher self-report positive mood (PA) and lower self-report negative mood (NA) over time in study 2, which were the same as study 1. These results along with data analysis from study 1 and study 2, showed that by just being a part of a psychology and wellbeing research, participants' mood and their perceived stress could improve over time by self-reporting higher positive mood (PA-

PANAS) along with lower negative mood (NA-PANAS) and lower stress (PSS) from pretest to posttest. These findings match the results from other researchers systematic and randomized controlled trials that found non-treatment control group might show some improvements in their health and wellbeing overtime (Jain et al., 2007; Volanen et al., 2020). Pyke and Clayton suggested that according to their findings, medication and mindfulness practice had the largest effect size while the effect size of placebo condition was moderate and the effect size of wait-list control condition was very small, about one quarter that of placebo condition (Pyke & Clayton, 2018). Findings from Pyke's study is also consistent with current research as they both showed improvement in the control condition's general wellbeing, even if it was a small one.

In summary, the P.CTRL supported researcher's hypotheses that there is an expectancy effect for well-being and no effect for mindfulness in the passive control group as its data demonstrated higher wellbeing over time while their mindfulness scores did not show any change. The higher wellbeing scores might be because participants in this group were told that they are participating in a wellbeing study. It might have acted as the expectancy effects as they expected to improve on wellbeing measures. Furthermore, as mentioned in the literature, according to the social desirability bias and an individual's general tendency in showing better performance in group setting by doing jigsaw puzzle as a brain exercise in posttest, participants might have expected to show better results. The other possibility is the brain exercise (jigsaw puzzle), actually might have a real benefit of itself.

Study2: The Active Control Group

For the active control group (A.CTRL) or the group who received negative information about possible disadvantages of practicing mindfulness, it was hypothesised that focusing on disadvantages of practicing mindfulness would significantly decrease self-report mindfulness in this group. Data supported this hypothesis by finding a significant decrease in participants' mindfulness scores for both AMPS and FFMQ questionnaires from pretest to posttest. This result is consistent with a lot of research that suggested researchers should be cautious in using self-report measures to evaluate mindfulness (Baer, 2018, 2019; Grossman, 2011; Kim et al., 2016). At the time of writing this chapter, no previous research has looked at this issue that participants understanding of mindfulness can be manipulated and consequently the information that is given to them might have direct effect on their self-report scores.

Also, the results observed for each facet of mindfulness in the FFMQ showed a consistent decrease for all five facets of mindfulness; acting with awareness, non-judging, observing, describing, and non-reactivity, in the A.CTRL group, although this decrease was not significant by comparing to the passive control group. In support of this finding, Baer and colleagues showed that decrease in overall mindfulness score could be associated with decrease in each five facets of mindfulness as well (Baer et al., 2006; Baer et al., 2008).

Likewise, as it was hypothesised, data illustrated lower overall wellbeing scores in the A.CTRL by showing decrease in the positive mood (PA-PANAS) and increase in the negative mood (NA-PANAS) from pretest to posttest. But data showed no change in self-consciousness scores (SCS-R) and perceived stress (PSS) over time. The conclusion could

be that these results supported researcher's hypothesis that focusing on disadvantages of practicing mindfulness would decrease overall wellbeing in the A.CTRL group. Based on our findings, when mindfulness scores decreased, the same happened to wellbeing scores. It cannot be said for sure here, but the decreases may have happened because participants wanted to dissociate from something that they perceived to be bad for them. The results of our research suggested that the self-report scales were unreliable.

As mentioned previously, the aim of the second study was to see if there was an active effect of mindfulness practice itself. Data from study 2 did not support this by showing that giving negative information about mindfulness could affect participants' answers negatively. Also, this can be concluded that researchers need to be cautious in evaluating self-reports of mindfulness practice. Even though previous research has not looked at this topic yet, other researchers believe that mindfulness is more than just an expectancy effect and it has an active effect on itself (Beadman et al., 2015; Huppert et al., 2004; Shawyer et al., 2012; Vujanovic et al., 2007). However, our findings from the A.CTRL, failed to support other researcher's findings as participants in this group showed decrease in both their mindfulness and wellbeing scores. Further research in this field will make researchers able to use self-report questionnaires more confidently, especially when it comes to abstract psychological concepts such as mindfulness and wellbeing.

Study2: The Experimental Group

As it was expected, the group that received information about advantages of practicing mindfulness or the experimental group (EXP), showed a high level of mindfulness and wellbeing over time. It was hypothesised that focusing on advantages of practicing mindfulness would significantly increase self-report mindfulness score in this

group. As results illustrated, participants in the EXP group showed higher scores in both self-report mindfulness questionnaires which were used in this study (AMPS and FFMQ) by showing increase in their self-report mindfulness scores. Again, the conclusion can be drawn here that researchers need to be cautious in evaluating self-reports of mindfulness practice. This finding is match with other studies in this field (Baer, 2018, 2019; Grossman, 2011; Kim et al., 2016).

Moreover, it was hypothesised that focusing on advantages of practicing mindfulness would significantly increase self-report wellbeing scores in the EXP group. In supporting researcher's hypothesis, data demonstrated higher self-report self-consciousness (SCS-R), higher positive mood (PA-PANAS), along with showing lower negative mood (NA-PANAS) and lower perceived stress (PSS). These findings match with a research by Baer and colleagues that has demonstrated a positive significant connection in people who report higher state of mindfulness in their daily lives (either by training or dispositional) and enhanced psychological health and wellbeing (Baer et al., 2012).

Furthermore, the general research overview of mindfulness, with the main focus on advantages of practicing mindfulness illustrated that people who were highly mindful reported to have higher general wellbeing as they believe that they are in charge of their lives (Aliche & Onyishi, 2019; Birtwell, Williams, van Marwijk, Armitage, & Sheffield, 2019). Based on these studies, these individuals feel the freedom to choose right, appropriate and appealing reactions to different situations and behave in general, without being concerned of being judge or evaluated by others (Brown, Abrantes, et al., 2007; Lopez & Wiley InterScience (Online service), 2009; Louise, Rossell, & Thomas, 2019). As Dionne and colleagues suggested, more than seventy randomized clinical trials and a

meta-analysis including eighteen randomized control trials conclude that mindfulness practice is more effective than waiting list, placebo and treatment as usual control conditions (Dionne, Ngô, & Blais, 2013). Findings of current research did not necessary contradict this study as the time of most of these interventions was longer and there might have been a difference in the effects they observed. In current research, the intervention was brief, hence expectancy played a significant role in the results. Even though, based on Lomas and colleagues systematic review of the impact of mindfulness on the wellbeing of healthcare professionals, the similarity of the studies was inconsistent so further research is needed, especially high quality randomized controlled trials (Lomas, Medina, Ivtzan, Rupprecht, et al., 2018), the power of the current study is the ability to compare the witnessed improvement in mindfulness and wellbeing in the experimental group to the passive and active control conditions in order to test for expectancy effects.

However, there are some critical and systematic reviews of mindfulness that believe that when it comes to demonstrating the positive relationship between mindfulness and especially mental health, it is vital to analyse its various components separately (Lomas, Medina, Ivtzan, Rupprecht, et al., 2018; Lomas et al., 2017). In current research, we used the Five Facet of Mindfulness Questionnaire in order to avoid simplistic statements about effectiveness of mindfulness practice in wellbeing. Data showed a consistent increase in all five facets of mindfulness in the EXP group from pretest to posttest.

These findings demonstrated that focusing on advantages of practicing mindfulness would significantly improve self-report mindfulness as well as self-report wellbeing in the EXP group compared to the both control groups. The same results were found for the EXP group in study 1, by illustrating higher mindfulness and wellbeing over time by reporting

improving scores in all self-report questionnaires. As both experimental groups in study 1 and study 2 had the similar procedure, a combined data analysis was conducted. The results from the combined data analysis from study 1 and study 2 also showed the same findings for the EXP group by indicating a significant improvement in both mindfulness and wellbeing scores over time. As with all self-report measures there is the possibility of social desirability and expectancy effects that may have therefore affected the results of the current study.

Generally based on the results that have been discussed in this chapter, the conclusion can be drawn that the hypotheses of this research are supported. It means the label mindfulness led to expectancy effects. According to the findings of this research, even simply using the label mindfulness on a task could produce the expectancy effects. The results indicated that while positive information led to improvements in scores compared to the control group, negative information led to a deterioration in scores compared to the control group, suggesting researchers need to be cautious in evaluating self-reports of mindfulness practice. Furthermore, based on what have been discussed, the results of this research do not only challenge the validity of mindfulness research that uses self-report measures, but also other self-report scales for other psychological constructs. Hence, there were also expectancy effects for other wellbeing concepts. This interesting finding indicates that researchers should demonstrate the same amount of cautiousness in assessing self-report measures of wellbeing.

Researcher's suggestion could be of using mixed methods research in evaluating psychological concepts, in which qualitative and quantitative approaches are utilized together. Qualitative analyses employ descriptive and inferential statistics, whereas

qualitative analyses produce expressive data provide descriptive details to examine the study's research hypotheses. Using mixed methods approach ideally include the benefits of both methods. Furthermore, using of objective measures along with self-report questionnaires could be considered as another way to assist researchers with their future psychological studies, such as implementing a cognitive task that relies on performance rather than only relying on participant's self-report. This can ensure researchers that their results are not confounded by expectancy effects.

Limitations and Future Directions

When research is conducted, various influences and errors might occur that affect the results of the study. This research was single-blind which participants were not aware of which group (P.CTRL, A.CTRL, and EXP) they were assigned to. However, the experimenter was fully aware of this. This might have led to the most common experimenter effect which mentioned in the literature. The experimenter effects usually happen when the experimenter communicates their expectations for the outcome of the study to the participants, causing them to alter their behaviour to conform to those expectations. To eliminate this issue, participants were not told the study's hypotheses and all the necessary communications (introduction, instruction, and debrief)[29] were planned ahead. However, the experimenter's mood and knowledge might have been picked up on by the different groups, especially with the study 2 and the positive and negative

[29] Check the Appendix

information. Future research that is double-blind and includes more than one experimenter would be useful.

All of the measures used in this study were self-report questionnaires. As with all self-reported measures, there is the possibility of social desirability and response biases. Assessment of mindfulness with the use of self-report questionnaires continues to develop. Some authors have raised concerns about ambiguous or abstract mindfulness terms used that may be difficult for participants to understand, especially those new to mindfulness practice (Joss, Khan, Lazar, & Teicher, 2019; Salgado & Kingo, 2020; Vujanovic et al., 2007). It is important that future research continues to test methods of mindfulness assessment in various sample groups to determine their relevance and acceptability. Future research that evaluates item understanding in sample populations with different meditation experience may point to aspects of mindfulness that cannot be meaningfully self-evaluated by individuals who lack a certain degree of mindfulness. Also, there is a need to have some kind of objective measure for mindfulness.

The findings of this research were based on short term, one-off interventions. The results may differ for longer (e.g. 8 weeks and more) mindfulness courses. Although there are some studies that suggested the brief interventions should be looked at differently from long term interventions (Miller-Matero et al., 2019; Podgurski et al., 2019), other researchers do not actually make a difference when touting about the positive impacts of mindfulness (Britton, 2019; Van Dam et al., 2018). However, our results suggested that short term, one-off interventions were most like showing an expectancy effect and not much else. This finding will improve the field and help other researchers to think more carefully about designing their future research.

Language may have influenced the outcome measures of interest as the researcher noted that some participants spoke English as their second language. Some participants had difficulty interpreting and understanding the self-report questionnaires and asked the experimenter for clarification of words and terms. Although English fluency was considered as one of the demography measurement's questions, still there was a chance of misunderstanding. In addition to English language proficiency, given that participants were new to mindfulness meditation, they may have found the mindfulness questionnaires difficult to interpret. There is some evidence to suggest that novice meditators find mindfulness questionnaires hard to understand and difficult to differentiate between aspects of mindfulness (Eisenlohr-Moul et al., 2012).

As research in this area is in its infancy, there are limited studies available to contrast and compare with. Of those available, several have methodological weaknesses and do not compare the outcomes to a control condition. Future research that employs Randomized Control Trials (RTCs) designs will advance the understanding of the efficacy of mindfulness practice. Very few studies assess expectancy effects in mindfulness. Future studies that utilise this topic will help to determine whether participants truly learn mindfulness and related skills, and if the mindfulness practice actually has a real benefit in and of itself.

Conclusion

Developing valid tools for assessing mindfulness requires operationalizing the construct. Mindfulness is difficult to conceptualise due to interrelated and subtle aspects of mindful processes and mindfulness as a construct remains contentious in the literature. Several measures have been put forward with varied definitions of the active components

of mindfulness (Baer, 2009). Some authors have cautioned, that considering the complex epistemology of the mindfulness construct, the use of mindfulness assessments needs to be done with care (Goodman et al., 2014). The same findings were found in the current research by showing that giving positive information can lead to increases in self-report mindfulness and wellbeing, whilst giving negative information will consequently lead to decrease in self-report mindfulness and wellbeing scores. Measurement of mindfulness with the use of self-report measures is a relatively recent development. Understanding how different items are interpreted across varied sample groups is not yet resolved. Participants that are new to mindfulness meditation may find it hard to understand and differentiate mindfulness concepts and consequently may find it difficult to report accurately on their own tendencies to be mindful (Bergomi, Ströhle, Michalak, Funke, & Berking, 2013; Eisenlohr-Moul et al., 2012).

The development and use of mindfulness measures continues to advance and further testing and evaluation across different populations is necessary to clarify some of the issues raised in this chapter. As with any instrument designed to capture a construct, there will be strengths and weaknesses which may affect the usefulness of the data, generated. As the literature on the assessment of mindfulness highlighted, it is possible the sample population, or the mindfulness measures used, impacted the results of the current research. Given the difficulty operationalizing mindfulness into concrete scientific terms to company across studies, it is essential that future research continues to question and test methods of mindfulness assessment.

This research consisted of two separate studies. They were both single-blind randomized control trails (RCTs) that tested the possible expectancy effects for

mindfulness and wellbeing in meditating and non-meditating population. It was hypothesised that there were expectancy effects for mindfulness and wellbeing in the active control and experimental groups. Data supported this hypothesis in both studies of the current research. In study 1, it was hypothesised that using the label mindfulness on a task would produce expectancy effects. Data supported this hypothesis by comparing the findings from the active control group to the passive control condition and the actual mindfulness (experimental) group as participants showed higher self-report mindfulness and wellbeing scores over time. In study 2, it was hypothesised that focusing on disadvantages of practicing mindfulness would lead to decrease self-report mindfulness and wellbeing scores, and in contrast, focusing on advantages of practicing mindfulness would lead to increase self-report mindfulness and wellbeing scores. Findings supported both of these hypotheses by comparing to the passive control group. As with all self-report measures there was the possibility of social desirability and expectancy effects. Non-compliance with the control condition or response bias may have therefore affected the results of the current research. The difficulty assessing mindfulness in randomized control trials which this research was mostly able to handle, was the problem with creating an adequate passive and active control conditions that could blind participants to the experimental conditions.

The experimental findings provide some provisional support that there might be expectancy effects for mindfulness. More studies are needed to assess the expectancy effects for mindfulness, compared to a control condition.

The conclusion can be drawn here that the results of this study supported the possible expectancy effects for mindfulness. The effects observed in this study indicate

that simply using the label mindfulness acts to improve self-reported mindfulness measure, as well as other wellbeing measures. Also, two different definitions of mindfulness by focusing on advantages and disadvantages of practicing mindfulness, would manipulate participants understanding of mindfulness by showing change in their self-report mindfulness measures along with other wellbeing measures. However, future studies should employ randomized control trials and include both measures of mindfulness and psychological wellbeing outcomes, to compare effects in different populations. A research that will help to determine whether the mindfulness practice actually has a real benefit in and of itself and is responsible for the improvements observed in psychological functioning.

REFERENCE

A-Tjak, J. G., Davis, M. L., Morina, N., Powers, M. B., Smits, J. A., & Emmelkamp, P. M. (2015). A meta-analysis of the efficacy of acceptance and commitment therapy for clinically relevant mental and physical health problems. *Psychother Psychosom, 84*(1), 30-36. doi:10.1159/000365764

Addante, R., Naliboff, B., Shih, W., Presson, A. P., Tillisch, K., Mayer, E. A., & Chang, L. (2019). Predictors of Health-related Quality of Life in Irritable Bowel Syndrome Patients Compared With Healthy Individuals. *J Clin Gastroenterol, 53*(4), e142-e149. doi:10.1097/MCG.0000000000000978

Adler-Neal, A. L., Waugh, C. E., Garland, E. L., Shaltout, H. A., Diz, D. I., & Zeidan, F. (2019). The role of heart rate variability in mindfulness-based pain relief. *J Pain*. doi:10.1016/j.jpain.2019.07.003

Alexander, K., Kronk, R., Sekula, K., Short, V., & Abatemarco, D. (2019). Implementation of a Mindfulness Intervention for Women in Treatment for Opioid Use Disorder and Its Effects on Depression Symptoms. *Issues Ment Health Nurs, 40*(8), 690-696. doi:10.1080/01612840.2019.1585499

Aliche, J. C., & Onyishi, I. E. (2019). Mindfulness and wellbeing in older adults' survivors of herdsmen attack. The mediating effect of positive reappraisal. *Aging Ment Health*, 1-9. doi:10.1080/13607863.2019.1602592

Amaro, H., & Black, D. S. (2017). Moment-by-Moment in Women's Recovery: Randomized controlled trial protocol to test the efficacy of a mindfulness-based intervention on treatment retention and relapse prevention among women in residential treatment for substance use disorder. *Contemp Clin Trials, 62*, 146-152. doi:10.1016/j.cct.2017.09.004

Arch, J. J., & Craske, M. G. (2006). Mechanisms of mindfulness: emotion regulation following a focused breathing induction. *Behav Res Ther, 44*(12), 1849-1858. doi:10.1016/j.brat.2005.12.007

Arch, J. J., Fishbein, J. N., Ferris, M. C., Mitchell, J. L., Levin, M. E., Slivjak, E. T., . . . Kutner, J. S. (2020). Acceptability, Feasibility, and Efficacy Potential of a Multimodal Acceptance and Commitment Therapy Intervention to Address Psychosocial and Advance Care Planning Needs among Anxious and Depressed Adults with Metastatic Cancer. *J Palliat Med*. doi:10.1089/jpm.2019.0398

Armani Kian, A., Vahdani, B., Noorbala, A. A., Nejatisafa, A., Arbabi, M., Zenoozian, S., & Nakhjavani, M. (2018). The Impact of Mindfulness-Based Stress Reduction on Emotional Wellbeing and Glycemic Control of Patients with Type 2 Diabetes Mellitus. *J Diabetes Res, 2018*, 1986820. doi:10.1155/2018/1986820

Baer, R. (2018). Assessment of mindfulness by self-report. *Curr Opin Psychol, 28*, 42-48. doi:10.1016/j.copsyc.2018.10.015

Baer, R. (2019). Assessment of mindfulness by self-report. *Curr Opin Psychol, 28*, 42-48. doi:10.1016/j.copsyc.2018.10.015

Baer, R. A. (2009). Self-focused attention and mechanisms of change in mindfulness-based treatment. *Cogn Behav Ther, 38 Suppl 1*, 15-20. doi:10.1080/16506070902980703

Baer, R. A., Carmody, J., & Hunsinger, M. (2012). Weekly change in mindfulness and perceived stress in a mindfulness-based stress reduction program. *J Clin Psychol, 68*(7), 755-765. doi:10.1002/jclp.21865

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: the Kentucky inventory of mindfulness skills. *Assessment, 11*(3), 191-206. doi:10.1177/1073191104268029

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27-45. doi:10.1177/1073191105283504

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., . . . Williams, J. M. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329-342. doi:10.1177/1073191107313003

Baer, Ruth A. (Ed.) (2006). *Mindfulness-based treatment approaches : clinician's guide to evidence base and applications*. Amsterdam Boston: Elsevier Academic Press.

Ball, W., & Dibble, Z. (1980). Perceived movement in the visual crib. *J Genet Psychol, 137*(2d Half), 191-198. doi:10.1080/00221325.1980.10532818

Barnes, V. A., Monto, A., Williams, J. J., & Rigg, J. L. (2016). Impact of Transcendental Meditation on Psychotropic Medication Use Among Active Duty Military Service Members With Anxiety and PTSD. *Mil Med, 181*(1), 56-63. doi:10.7205/MILMED-D-14-00333

Beadman, M., Das, R. K., Freeman, T. P., Scragg, P., West, R., & Kamboj, S. K. (2015). A comparison of emotion regulation strategies in response to craving cognitions: Effects on smoking behaviour, craving and affect in dependent smokers. *Behav Res Ther, 69*, 29-39. doi:10.1016/j.brat.2015.03.013

Becke, Guido (Ed.). *Mindful change in times of permanent reorganization : organizational, institutional and sustainability perspectives*.

Beitel, M., Ferrer, E., & Cecero, J. J. (2005). Psychological mindedness and awareness of self and others. *J Clin Psychol, 61*(6), 739-750. doi:10.1002/jclp.20095

Benedetti, F. (2008). Mechanisms of placebo and placebo-related effects across diseases and treatments. *Annu Rev Pharmacol Toxicol, 48*, 33-60. doi:10.1146/annurev.pharmtox.48.113006.094711

Benson, H., & Friedman, R. (1996). Harnessing the power of the placebo effect and renaming it "remembered wellness"

. *Annual Review of Medicine, Vol. 47: (Volume publication date February 1996)*

https://doi.org/10.1146/annurev.med.47.1.193, 193-199.

Bergomi, C., Ströhle, G., Michalak, J., Funke, F., & Berking, M. (2013). Facing the dreaded: does mindfulness facilitate coping with distressing experiences? A moderator analysis. *Cogn Behav Ther, 42*(1), 21-30. doi:10.1080/16506073.2012.713391

Bernier, P. M., Burle, B., Hasbroucq, T., & Blouin, J. (2009). Spatio-temporal dynamics of reach-related neural activity for visual and somatosensory targets. *Neuroimage, 47*(4), 1767-1777. doi:10.1016/j.neuroimage.2009.05.028

Bieling, P. J., Hawley, L. L., Bloch, R. T., Corcoran, K. M., Levitan, R. D., Young, L. T., . . . Segal, Z. V. (2012). Treatment-specific changes in decentering following mindfulness-based cognitive therapy versus antidepressant medication or placebo for prevention of depressive relapse. *J Consult Clin Psychol, 80*(3), 365-372. doi:10.1037/a0027483

Birnie, K., Garland, S. N., & Carlson, L. E. (2010). Psychological benefits for cancer patients and their partners participating in mindfulness-based stress reduction (MBSR). *Psychooncology, 19*(9), 1004-1009. doi:10.1002/pon.1651

Birtwell, K., Williams, K., van Marwijk, H., Armitage, C. J., & Sheffield, D. (2019). An Exploration of Formal and Informal Mindfulness Practice and Associations with Wellbeing. *Mindfulness (N Y), 10*(1), 89-99. doi:10.1007/s12671-018-0951-y

Bishop, J. R., Lee, A. M., Mills, L. J., Thuras, P. D., Eum, S., Clancy, D., . . . Lim, K. O. (2018). Methylation of. *Front Psychiatry, 9*, 418. doi:10.3389/fpsyt.2018.00418

Bishop, S. R. (2002). What do we really know about mindfulness-based stress reduction? *Psychosom Med, 64*(1), 71-83.

Black, D. S., & Slavich, G. M. (2016). Mindfulness meditation and the immune system: a systematic review of randomized controlled trials. *Ann N Y Acad Sci, 1373*(1), 13-24. doi:10.1111/nyas.12998

Block-Lerner, J., Adair, C., Plumb, J. C., Rhatigan, D. L., & Orsillo, S. M. (2007). The case for mindfulness-based approaches in the cultivation of empathy: does nonjudgmental, present-moment awareness increase capacity for perspective-taking and empathic concern? *J Marital Fam Ther, 33*(4), 501-516. doi:10.1111/j.1752-0606.2007.00034.x

Bögels, Susan M., & Restifo, Kathleen. *Mindful parenting : a guide for mental health practitioners*.

Bohus, M., Schmahl, C., Fydrich, T., Steil, R., Müller-Engelmann, M., Herzog, J., . . . Priebe, K. (2019). A research programme to evaluate DBT-PTSD, a modular treatment approach for Complex PTSD after childhood abuse. *Borderline Personal Disord Emot Dysregul, 6*, 7. doi:10.1186/s40479-019-0099-y

Bondolfi, G., Jermann, F., der Linden, M. V., Gex-Fabry, M., Bizzini, L., Rouget, B. W., . . . Bertschy, G. (2010). Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: replication and extension in the Swiss health care system. *J Affect Disord, 122*(3), 224-231. doi:10.1016/j.jad.2009.07.007

Bränström, R., Kvillemo, P., Brandberg, Y., & Moskowitz, J. T. (2010). Self-report mindfulness as a mediator of psychological well-being in a stress reduction intervention for cancer patients--a randomized study. *Ann Behav Med, 39*(2), 151-161. doi:10.1007/s12160-010-9168-6

Bravo, A. J., Pearson, M. R., Wilson, A. D., & Witkiewitz, K. (2018). When Traits Match States: Examining the Associations between Self-Report Trait and State Mindfulness following a State Mindfulness Induction. *Mindfulness (N Y), 9*(1), 199-211. doi:10.1007/s12671-017-0763-5

Britton, W. B. (2019). Can mindfulness be too much of a good thing? The value of a middle way. *Curr Opin Psychol, 28*, 159-165. doi:10.1016/j.copsyc.2018.12.011

Brown, D. C., & Hammond, D. C. (2007). Evidence-based clinical hypnosis for obstetrics, labor and delivery, and preterm labor. *Int J Clin Exp Hypn, 55*(3), 355-371. doi:10.1080/00207140701338654

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol, 84*(4), 822-848.

Brown, L. E., Wilson, E. T., Goodale, M. A., & Gribble, P. L. (2007). Motor force field learning influences visual processing of target motion. *J Neurosci, 27*(37), 9975-9983. doi:10.1523/JNEUROSCI.1245-07.2007

Brown, R. A., Abrantes, A. M., Strong, D. R., Mancebo, M. C., Menard, J., Rasmussen, S. A., & Greenberg, B. D. (2007). A pilot study of moderate-intensity aerobic exercise for obsessive compulsive disorder. *J Nerv Ment Dis, 195*(6), 514-520. doi:10.1097/01.nmd.0000253730.31610.6c

Brown, S. J., Ryan, H. J., & Brown, J. A. (2007). Age-Associated Changes In VO2 and Power Output - A Cross-Sectional Study of Endurance Trained New Zealand Cyclists. *J Sports Sci Med, 6*(4), 477-483.

Büssing, A., Hedtstück, A., Khalsa, S. B., Ostermann, T., & Heusser, P. (2012). Development of Specific Aspects of Spirituality during a 6-Month Intensive Yoga Practice. *Evid Based Complement Alternat Med, 2012*, 981523. doi:10.1155/2012/981523

Büssing, A., Walach, H., Kohls, N., Zimmermann, F., & Trousselard, M. (2013). Conscious Presence and Self Control as a measure of situational awareness in soldiers - A validation study. *Int J Ment Health Syst, 7*(1), 1. doi:10.1186/1752-4458-7-1

Campagne, D. M. (2019). Stress and perceived social isolation (loneliness). *Arch Gerontol Geriatr, 82*, 192-199. doi:10.1016/j.archger.2019.02.007

Cardaciotto, L., Herbert, J. D., Forman, E. M., Moitra, E., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance: the Philadelphia Mindfulness Scale. *Assessment, 15*(2), 204-223. doi:10.1177/1073191107311467

Carlson, L. E., & Brown, K. W. (2005). Validation of the Mindful Attention Awareness Scale in a cancer population. *J Psychosom Res, 58*(1), 29-33. doi:10.1016/j.jpsychores.2004.04.366

Carlson, L. E., Speca, M., Patel, K. D., & Goodey, E. (2004). Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress and levels of

cortisol, dehydroepiandrosterone sulfate (DHEAS) and melatonin in breast and prostate cancer outpatients. *Psychoneuroendocrinology, 29*(4), 448-474.

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *J Behav Med, 31*(1), 23-33. doi:10.1007/s10865-007-9130-7

Carmody, J., Reed, G., Kristeller, J., & Merriam, P. (2008). Mindfulness, spirituality, and health-related symptoms. *J Psychosom Res, 64*(4), 393-403. doi:10.1016/j.jpsychores.2007.06.015

Carriere, J. S., Cheyne, J. A., & Smilek, D. (2008). Everyday attention lapses and memory failures: the affective consequences of mindlessness. *Conscious Cogn, 17*(3), 835-847. doi:10.1016/j.concog.2007.04.008

Cash, D. K., Heisick, L. L., & Papesh, M. H. (2018). Expectancy effects in the Autonomous Sensory Meridian Response. *PeerJ, 6*, e5229. doi:10.7717/peerj.5229

Cashwell, Craig S., & Young, J. Scott (Eds.). (2011). *Integrating spirituality and religion into counseling : a guide to competent practice* (2nd ed.). Alexandria, VA: American Counseling Association.

Cavanagh, K., Churchard, A., O'Hanlon, P., Mundy, T., Votolato, P., Jones, F., . . . Strauss, C. (2018). A Randomised Controlled Trial of a Brief Online Mindfulness-Based Intervention in a Non-clinical Population: Replication and Extension. *Mindfulness (N Y), 9*(4), 1191-1205. doi:10.1007/s12671-017-0856-1

Chadwick, D. W., Baker, G. A., Jacoby, A., Marson, A. G., & Smith, P. E. (2008). What is the optimal management of partial epilepsy uncontrolled by a first choice anticonvulsant? *BMJ, 337*, a2199.

Chadwick, O., Kusel, Y., Cuddy, M., & Taylor, E. (2005). Psychiatric diagnoses and behaviour problems from childhood to early adolescence in young people with severe intellectual disabilities. *Psychol Med, 35*(5), 751-760.

Chadwick, P., Hember, M., Symes, J., Peters, E., Kuipers, E., & Dagnan, D. (2008). Responding mindfully to unpleasant thoughts and images: reliability and validity of the Southampton mindfulness questionnaire (SMQ). *Br J Clin Psychol, 47*(Pt 4), 451-455. doi:10.1348/014466508X314891

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clin Psychol Rev, 29*(6), 560-572. doi:10.1016/j.cpr.2009.06.005

Charles, C., Boinon, D., Renvoisé, N., Pallubicki, G., Borch-Jacobsen, C., Laplanche, O., . . . Dauchy, S. (2019). [Feedback on a complementary care program combining

physical activity, mindfulness-based meditation and socio-aesthetic care]. *Bull Cancer*. doi:10.1016/j.bulcan.2019.01.013

Chen, J. H., Tsai, P. H., Lin, Y. C., Chen, C. K., & Chen, C. Y. (2019). Mindfulness training enhances flow state and mental health among baseball players in Taiwan. *Psychol Res Behav Manag, 12*, 15-21. doi:10.2147/PRBM.S188734

Chiesa, A., Brambilla, P., & Serretti, A. (2010). Functional neural correlates of mindfulness meditations in comparison with psychotherapy, pharmacotherapy and placebo effect. Is there a link? *Acta Neuropsychiatr, 22*(3), 104-117. doi:10.1111/j.1601-5215.2010.00460.x

Chiesa, A., & Serretti, A. (2010). A systematic review of neurobiological and clinical features of mindfulness meditations. *Psychol Med, 40*(8), 1239-1252. doi:10.1017/S0033291709991747

Clarke, J., & Draper, S. (2020). Intermittent mindfulness practice can be beneficial, and daily practice can be harmful. An in depth, mixed methods study of the "Calm" app's (mostly positive) effects. *Internet Interv, 19*, 100293. doi:10.1016/j.invent.2019.100293

Coelho, H. F., Canter, P. H., & Ernst, E. (2007). Mindfulness-based cognitive therapy: evaluating current evidence and informing future research. *J Consult Clin Psychol, 75*(6), 1000-1005. doi:10.1037/0022-006X.75.6.1000

Coffey, C. E. (2008). Some brief thoughts on brief and ultra-brief pulse ECT. *Brain Stimul, 1*(2), 86-87. doi:10.1016/j.brs.2008.03.002

Cohen, C. I., McKenzie, S. E., Rahmani, M., Singh, J., & Prospere, E. (2012). Historical changes in the severity of dementia and accompanying neuropsychiatric symptoms in persons presenting for evaluation in a multiracial urban dementia center. *Alzheimer Dis Assoc Disord, 26*(4), 352-357. doi:10.1097/WAD.0b013e31823cfbdd

Cohen, Jacob. (1992). Power Primer. *Psychological Assessment, 112*(1), 155-159.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *J Health Soc Behav, 24*(4), 385-396.

Cohen, S., Tyrrell, D. A., & Smith, A. P. (1991). Psychological stress and susceptibility to the common cold. *N Engl J Med, 325*(9), 606-612. doi:10.1056/NEJM199108293250903

Cohen-Katz, J., Wiley, S. D., Capuano, T., Baker, D. M., & Shapiro, S. (2004). The effects of mindfulness-based stress reduction on nurse stress and burnout: a quantitative and qualitative study. *Holist Nurs Pract, 18*(6), 302-308.

Colzato, L. S., Ozturk, A., & Hommel, B. (2012). Meditate to create: the impact of focused-attention and open-monitoring training on convergent and divergent thinking. *Front Psychol, 3*, 116. doi:10.3389/fpsyg.2012.00116

Conner, C. M., White, S. W., Beck, K. B., Golt, J., Smith, I. C., & Mazefsky, C. A. (2019). Improving emotion regulation ability in autism: The Emotional Awareness and Skills Enhancement (EASE) program. *Autism, 23*(5), 1273-1287. doi:10.1177/1362361318810709

Cook, J. W., Spring, B., McChargue, D. E., Borrelli, B., Hitsman, B., Niaura, R., . . . Kristeller, J. (2004). Influence of fluoxetine on positive and negative affect in a clinic-based smoking cessation trial. *Psychopharmacology (Berl), 173*(1-2), 153-159. doi:10.1007/s00213-003-1711-8

Cornelius-White, Jeffrey H., Motschnig-Pitrik, Renate, & Lux, Michael. (2013). Interdisciplinary handbook of the person-centered approach research and theory. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://dx.doi.org/10.1007/978-1-4614-7141-7

Crane, R. S., Brewer, J., Feldman, C., Kabat-Zinn, J., Santorelli, S., Williams, J. M., & Kuyken, W. (2016). What defines mindfulness-based programs? The warp and the weft. *Psychol Med*, 1-10. doi:10.1017/S0033291716003317

Crane, R. S., Brewer, J., Feldman, C., Kabat-Zinn, J., Santorelli, S., Williams, J. M., & Kuyken, W. (2017). What defines mindfulness-based programs? The warp and the weft. *Psychol Med, 47*(6), 990-999. doi:10.1017/S0033291716003317

Creswell, C., Cruddace, S., Gerry, S., Gitau, R., McIntosh, E., Mollison, J., . . . Cooper, P. J. (2015). Treatment of childhood anxiety disorder in the context of maternal anxiety disorder: a randomised controlled trial and economic analysis. *Health Technol Assess, 19*(38), 1-184, vii-viii. doi:10.3310/hta19380

Creswell, J. D., Way, B. M., Eisenberger, N. I., & Lieberman, M. D. (2007). Neural correlates of dispositional mindfulness during affect labeling. *Psychosom Med, 69*(6), 560-565. doi:10.1097/PSY.0b013e3180f6171f

Dalrymple, K. L., & Herbert, J. D. (2007). Acceptance and commitment therapy for generalized social anxiety disorder: a pilot study. *Behav Modif, 31*(5), 543-568. doi:10.1177/0145445507302037

Davis, L. W., Strasburger, A. M., & Brown, L. F. (2007). Mindfulness: an intervention for anxiety in schizophrenia. *J Psychosoc Nurs Ment Health Serv, 45*(11), 23-29.

Delgado-Pastor, L. C., Ciria, L. F., Blanca, B., Mata, J. L., Vera, M. N., & Vila, J. (2015). Dissociation between the cognitive and interoceptive components of mindfulness in the treatment of chronic worry. *J Behav Ther Exp Psychiatry, 48*, 192-199. doi:10.1016/j.jbtep.2015.04.001

Didonna, Fabrizio. (2009). Clinical handbook of mindfulness. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://dx.doi.org/10.1007/978-0-387-09593-6

Diener, E. (2000). Subjective well-being. The science of happiness and a proposal for a national index. *Am Psychol, 55*(1), 34-43.

Digdon, N. L., & Howell, A. J. (2008). College students who have an eveningness preference report lower self-control and greater procrastination. *Chronobiol Int, 25*(6), 1029-1046. doi:10.1080/07420520802553671

Dionne, F., Ngô, T. L., & Blais, M. C. (2013). [The psychological flexibility model: a new approach to mental health]. *Sante Ment Que, 38*(2), 111-130. doi:10.7202/1023992ar

Dobkin, R. D., Rubino, J. T., Allen, L. A., Friedman, J., Gara, M. A., Mark, M. H., & Menza, M. (2012). Predictors of treatment response to cognitive-behavioral therapy for depression in Parkinson's disease. *J Consult Clin Psychol, 80*(4), 694-699. doi:10.1037/a0027695

Dunkley, Christine, & Stanton, Maggie. (2013). Teaching clients to use mindfulness skills a practical guide. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://massey.eblib.com.au/patron/FullRecord.aspx?p=1323334

Eccleston, C., Fisher, E., Thomas, K. H., Hearn, L., Derry, S., Stannard, C., . . . Moore, R. A. (2017). Interventions for the reduction of prescribed opioid use in chronic non-cancer pain. *Cochrane Database Syst Rev, 11*, CD010323. doi:10.1002/14651858.CD010323.pub3

Eddy, P., Wertheim, E. H., Hale, M. W., & Wright, B. J. (2019). Trait Mindfulness Helps Explain the Relationships Between Job Stress, Physiological Reactivity, and Self-Perceived Health. *J Occup Environ Med, 61*(1), e12-e18. doi:10.1097/JOM.0000000000001493

Edwards, A. L. (1957). he social desirability variable in personality assessment and research. . *Dryden Press*.

Eisenlohr-Moul, T. A., Walsh, E. C., Charnigo, R. J., Lynam, D. R., & Baer, R. A. (2012). The "what" and the "how" of dispositional mindfulness: using interactions among subscales of the five-facet mindfulness questionnaire to understand its relation to substance use. *Assessment, 19*(3), 276-286. doi:10.1177/1073191112446658

Elices, M., Tejedor, R., Pascual, J. C., Carmona, C., Soriano, J., & Soler, J. (2019). Acceptance and present-moment awareness in psychiatric disorders: Is mindfulness mood dependent? *Psychiatry Res, 273*, 363-368. doi:10.1016/j.psychres.2019.01.041

Esch, T., Winkler, J., Auwärter, V., Gnann, H., Huber, R., & Schmidt, S. (2016). Neurobiological Aspects of Mindfulness in Pain Autoregulation: Unexpected Results from a Randomized-Controlled Trial and Possible Implications for Meditation Research. *Front Hum Neurosci, 10*, 674. doi:10.3389/fnhum.2016.00674

Eskic, J., Kuhlmann, S. M., Kreinbihl, K., & Hammerle, F. (2019). Mindfulness-based and cognitive-based stress prevention in student teachers (start. *BMJ Open, 9*(2), e021941. doi:10.1136/bmjopen-2018-021941

Evans, Nicola, & Hannigan, Ben (Eds.). (2016). *Therapeutic skills for mental health nurses*. London: Open University Press/McGraw-Hill Education.

Fang, Y., Kang, X., Feng, X., Zhao, D., Song, D., & Li, P. (2019). Conditional effects of mindfulness on sleep quality among clinical nurses: the moderating roles of extraversion and neuroticism. *Psychol Health Med, 24*(4), 481-492. doi:10.1080/13548506.2018.1492731

Fangtham, M., Kasturi, S., Bannuru, R. R., Nash, J. L., & Wang, C. (2019). Non-pharmacologic therapies for systemic lupus erythematosus. *Lupus, 28*(6), 703-712. doi:10.1177/0961203319841435

Farhang, M., Miranda-Castillo, C., Rubio, M., & Furtado, G. (2019). Impact of mind-body interventions in older adults with mild cognitive impairment: a systematic review. *Int Psychogeriatr*, 1-24. doi:10.1017/S1041610218002302

Farias, M., & Wikholm, C. (2016). Has the science of mindfulness lost its mind? *BJPsych Bull, 40*(6), 329-332. doi:10.1192/pb.bp.116.053686

Fehr, Scott Simon. (2017). 101 interventions in group therapy. 2nd. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://massey.eblib.com.au/patron/FullRecord.aspx?p=4578947

Feldman, G. (2007). Cognitive and behavioral therapies for depression: overview, new directions, and practical recommendations for dissemination. *Psychiatr Clin North Am, 30*(1), 39-50. doi:10.1016/j.psc.2006.12.001

Feldman, M., McDonald, L., Serbin, L., Stack, D., Secco, M. L., & Yu, C. T. (2007). Predictors of depressive symptoms in primary caregivers of young children with or at risk for developmental delay. *J Intellect Disabil Res, 51*(Pt 8), 606-619. doi:10.1111/j.1365-2788.2006.00941.x

Fix, Rebecca L., & Fix, Spencer T. (2013). The effects of mindfulness-based treatments for aggression: A critical review *Aggression and Violent Behavior, 18*, 219-227.

Frick, A., Thinnes, I., & Stangier, U. (2020). Metta-based group meditation and individual cognitive behavioral therapy (MeCBT) for chronic depression: study protocol for a randomized controlled trial. *Trials, 21*(1), 20. doi:10.1186/s13063-019-3815-4

Fung, J., Kim, J. J., Jin, J., Chen, G., Bear, L., & Lau, A. S. (2019). A Randomized Trial Evaluating School-Based Mindfulness Intervention for Ethnic Minority Youth: Exploring Mediators and Moderators of Intervention Effects. *J Abnorm Child Psychol, 47*(1), 1-19. doi:10.1007/s10802-018-0425-7

Gayner, B., Esplen, M. J., DeRoche, P., Wong, J., Bishop, S., Kavanagh, L., & Butler, K. (2012). A randomized controlled trial of mindfulness-based stress reduction to manage affective symptoms and improve quality of life in gay men living with HIV. *J Behav Med, 35*(3), 272-285. doi:10.1007/s10865-011-9350-8

Geiger, P. J., Boggero, I. A., Brake, C. A., Caldera, C. A., Combs, H. L., Peters, J. R., & Baer, R. A. (2016). Mindfulness-Based Interventions for Older Adults: A Review of the Effects on Physical and Emotional Well-being. *Mindfulness (N Y), 7*(2), 296-307. doi:10.1007/s12671-015-0444-1

Germer, C. K., & Neff, K. D. (2013). Self-compassion in clinical practice. *J Clin Psychol, 69*(8), 856-867. doi:10.1002/jclp.22021

Germer, Christopher K., Siegel, Ronald D., & Fulton, Paul R. (Eds.). (2005). *Mindfulness and psychotherapy* (1st ed.). New York: Guilford Press.

Goletiani, N. V., Mendelson, J. H., Sholar, M. B., Siegel, A. J., & Mello, N. K. (2009). Opioid and cocaine combined effect on cocaine-induced changes in HPA and HPG axes hormones in men. *Pharmacol Biochem Behav, 91*(4), 526-536. doi:10.1016/j.pbb.2008.09.007

Goodman, M., Carpenter, D., Tang, C. Y., Goldstein, K. E., Avedon, J., Fernandez, N., . . . Hazlett, E. A. (2014). Dialectical behavior therapy alters emotion regulation and amygdala activity in patients with borderline personality disorder. *J Psychiatr Res, 57*, 108-116. doi:10.1016/j.jpsychires.2014.06.020

Gotink, R. A., Younge, J. O., Wery, M. F., Utens, E. M. W.J, Michels, M., Rizopoulos, D., . . . Hunink, M. M. G. (2017). Online mindfulness as a promising method to improve exercise capacity in heart disease: 12-month follow-up of a randomized controlled trial. *PLoS One, 12*(5), e0175923. doi:10.1371/journal.pone.0175923

Griffith, G. M., Jones, R., Hastings, R. P., Crane, R. S., Roberts, J., Williams, J., . . . Edwards, R. T. (2016). Can a mindfulness-informed intervention reduce aggressive behaviour in people with intellectual disabilities? Protocol for a feasibility study. *Pilot Feasibility Stud, 2*, 58. doi:10.1186/s40814-016-0098-3

Grossman, P. (2011). Defining mindfulness by how poorly I think I pay attention during everyday awareness and other intractable problems for psychology's (re)invention of mindfulness: comment on Brown et al. (2011). *Psychol Assess, 23*(4), 1034-1040; discussion 1041-1036. doi:10.1037/a0022713

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits. A meta-analysis. *J Psychosom Res, 57*(1), 35-43. doi:10.1016/S0022-3999(03)00573-7

Grossman, P., Tiefenthaler-Gilmer, U., Raysz, A., & Kesper, U. (2007). Mindfulness training as an intervention for fibromyalgia: evidence of postintervention and 3-year follow-up benefits in well-being. *Psychother Psychosom, 76*(4), 226-233. doi:10.1159/000101501

Gu, J., Strauss, C., Crane, C., Barnhofer, T., Karl, A., Cavanagh, K., & Kuyken, W. (2016). Examining the factor structure of the 39-item and 15-item versions of the Five Facet Mindfulness Questionnaire before and after mindfulness-based cognitive therapy for people with recurrent depression. *Psychol Assess, 28*(7), 791-802. doi:10.1037/pas0000263

Hara, K. W., Borchgrevink, P. C., Jacobsen, H. B., Fimland, M. S., Rise, M. B., Gismervik, S., & Woodhouse, A. (2018). Transdiagnostic group-based occupational rehabilitation for participants with chronic pain, chronic fatigue and common mental disorders. A feasibility study. *Disabil Rehabil, 40*(21), 2516-2526. doi:10.1080/09638288.2017.1339298

Hawton, K., Witt, K. G., Salisbury, T. L. T., Arensman, E., Gunnell, D., Hazell, P., . . . van Heeringen, K. (2016). Psychosocial interventions following self-harm in adults: a

systematic review and meta-analysis. *Lancet Psychiatry, 3*(8), 740-750. doi:10.1016/S2215-0366(16)30070-0

Hayes, Steven C., Follette, Victoria M., & Linehan, Marsha (Eds.). (2004). *Mindfulness and acceptance : expanding the cognitive-behavioral tradition*. New York: Guilford Press.

Hedman-Lagerlöf, M., Hedman-Lagerlöf, E., & Öst, L. G. (2018). The empirical support for mindfulness-based interventions for common psychiatric disorders: a systematic review and meta-analysis. *Psychol Med, 48*(13), 2116-2129. doi:10.1017/S0033291718000259

Heidegger, Martin, Emad, Parvis, & Kalary, Thomas. (2006). *Mindfulness*. London New York: Continuum.

Herbert, James D., & Forman, Evan M. (2011). Acceptance and mindfulness in cognitive behavior therapy understanding and applying the new therapies. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://onlinelibrary.wiley.com/book/10.1002/9781118470886

Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011). Loving-kindness and compassion meditation: potential for psychological interventions. *Clin Psychol Rev, 31*(7), 1126-1132. doi:10.1016/j.cpr.2011.07.003

Hülsheger, U. R., Alberts, H. J., Feinholdt, A., & Lang, J. W. (2013). Benefits of mindfulness at work: the role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *J Appl Psychol, 98*(2), 310-325. doi:10.1037/a0031313

Huppert, J. D., Schultz, L. T., Foa, E. B., Barlow, D. H., Davidson, J. R., Gorman, J. M., . . . Woods, S. W. (2004). Differential response to placebo among patients with social phobia, panic disorder, and obsessive-compulsive disorder. *Am J Psychiatry, 161*(8), 1485-1487. doi:10.1176/appi.ajp.161.8.1485

Iani, L., Lauriola, M., & Cafaro, V. (2017). The assessment of mindfulness skills: the "what" and the "how". *J Ment Health*, 1-8. doi:10.1080/09638237.2017.1385738

Ionescu, D. F., Bentley, K. H., Eikermann, M., Taylor, N., Johnson-Akeju, O., Swee, M. B., . . . Cusin, C. (2019). Repeat-dose ketamine augmentation for treatment-resistant depression with chronic suicidal ideation: A randomized, double blind, placebo controlled trial. *J Affect Disord, 243*, 516-524. doi:10.1016/j.jad.2018.09.037

Ito, E., Shima, R., & Yoshioka, T. (2019). A novel role of oxytocin: Oxytocin-induced well-being in humans. *Biophys Physicobiol, 16*, 132-139. doi:10.2142/biophysico.16.0_132

Jackson, W., Zale, E. L., Berman, S. J., Malacarne, A., Lapidow, A., Schatman, M. E., . . . Vranceanu, A. M. (2019). Physical functioning and mindfulness skills training in chronic pain: a systematic review. *J Pain Res, 12*, 179-189. doi:10.2147/JPR.S172733

Jago, R., Baranowski, T., Baranowski, J. C., Cullen, K. W., & Thompson, D. I. (2007). Social desirability is associated with some physical activity, psychosocial variables and sedentary behavior but not self-reported physical activity among adolescent males. *Health Educ Res, 22*(3), 438-449. doi:10.1093/her/cyl107

Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G. E. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: effects on distress, positive states of mind, rumination, and distraction. *Ann Behav Med, 33*(1), 11-21. doi:10.1207/s15324796abm3301_2

Jha, A. P., Krompinger, J., & Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cogn Affect Behav Neurosci, 7*(2), 109-119.

Joss, D., Khan, A., Lazar, S. W., & Teicher, M. H. (2019). Effects of a Mindfulness-Based Intervention on Self-Compassion and Psychological Health Among Young Adults With a History of Childhood Maltreatment. *Front Psychol, 10*, 2373. doi:10.3389/fpsyg.2019.02373

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *Gen Hosp Psychiatry, 4*(1), 33-47.

Kabat-Zinn, J. (2005). Jon Kabat-Zinn, PhD. Bringing mindfulness to medicine. Interview by Karolyn A. Gazella. *Altern Ther Health Med, 11*(3), 56-64.

Kabat-Zinn, J., & Chapman-Waldrop, A. (1988). Compliance with an outpatient stress reduction program: rates and predictors of program completion. *J Behav Med, 11*(4), 333-352.

Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *J Behav Med, 8*(2), 163-190.

Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., Fletcher, K. E., Pbert, L., . . . Santorelli, S. F. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *Am J Psychiatry, 149*(7), 936-943. doi:10.1176/ajp.149.7.936

Kabat-Zinn, J., Wheeler, E., Light, T., Skillings, A., Scharf, M. J., Cropley, T. G., . . . Bernhard, J. D. (1998). Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosom Med, 60*(5), 625-632.

Kabat-Zinn, Jon. (2014). *Wherever you go, there you are : mindfulness meditation in everyday life* (10th anniversary edition. ed.). New York: Hatchett Books.

Kashdan, Todd, & Ciarrochi, Joseph (Eds.). (2013). *Mindfulness, acceptance, and positive psychology : the seven foundations of well-being*. Oakland, CA: Context Press.

Kee, P. H., Abruzzo, T. A., Smith, D. A., Kopechek, J. A., Wang, B., Huang, S. L., . . . McPherson, D. D. (2008). Synthesis, acoustic stability, and pharmacologic activities of papaverine-loaded echogenic liposomes for ultrasound controlled drug delivery. *J Liposome Res, 18*(4), 263-277. doi:10.1080/08982100802354558

Kemeny, M. E., Foltz, C., Cavanagh, J. F., Cullen, M., Giese-Davis, J., Jennings, P., . . . Ekman, P. (2012). Contemplative/emotion training reduces negative emotional behavior and promotes prosocial responses. *Emotion, 12*(2), 338-350. doi:10.1037/a0026118

Keng, S. L., Lee, C. S. L., & Eisenlohr-Moul, T. A. (2019). Effects of brief daily mindfulness practice on affective outcomes and correlates in a high BPD trait sample. *Psychiatry Res, 280*, 112485. doi:10.1016/j.psychres.2019.112485

Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: a review of empirical studies. *Clin Psychol Rev, 31*(6), 1041-1056. doi:10.1016/j.cpr.2011.04.006

Khoo, E. L., Small, R., Cheng, W., Hatchard, T., Glynn, B., Rice, D. B., . . . Poulin, P. A. (2019). Comparative evaluation of group-based mindfulness-based stress reduction and cognitive behavioural therapy for the treatment and management of chronic pain: A systematic review and network meta-analysis. *Evid Based Ment Health, 22*(1), 26-35. doi:10.1136/ebmental-2018-300062

Khoury, B., Knäuper, B., Schlosser, M., Carrière, K., & Chiesa, A. (2017). Effectiveness of traditional meditation retreats: A systematic review and meta-analysis. *J Psychosom Res, 92*, 16-25. doi:10.1016/j.jpsychores.2016.11.006

Khoury, B., Langer, E. J., & Pagnini, F. (2014). The DSM: mindful science or mindless power? A critical review. *Front Psychol, 5*, 602. doi:10.3389/fpsyg.2014.00602

Kiken, L. G., Garland, E. L., Bluth, K., Palsson, O. S., & Gaylord, S. A. (2015). From a state to a trait: Trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Pers Individ Dif, 81*, 41-46. doi:10.1016/j.paid.2014.12.044

Kiken, L. G., Lundberg, K. B., & Fredrickson, B. L. (2017). Being present and enjoying it: Dispositional mindfulness and savoring the moment are distinct, interactive predictors of positive emotions and psychological health. *Mindfulness (N Y), 8*(5), 1280-1290. doi:10.1007/s12671-017-0704-3

Kim, S. M., Park, J. M., & Seo, H. J. (2016). Effects of mindfulness-based stress reduction for adults with sleep disturbance: a protocol for an update of a systematic review and meta-analysis. *Syst Rev, 5*, 51. doi:10.1186/s13643-016-0228-2

Kirsch, Irving. (2019). *The Placebo Effect*.

Kopacz, M. S., Connery, A. L., Bishop, T. M., Bryan, C. J., Drescher, K. D., Currier, J. M., & Pigeon, W. R. (2016). Moral injury: A new challenge for complementary and alternative medicine. *Complement Ther Med, 24*, 29-33. doi:10.1016/j.ctim.2015.11.003

Krause, M., Gutsmiedl, K., Bighelli, I., Schneider-Thoma, J., Chaimani, A., & Leucht, S. (2019). Efficacy and tolerability of pharmacological and non-pharmacological interventions in older patients with major depressive disorder: A systematic review, pairwise and network meta-analysis. *Eur Neuropsychopharmacol*. doi:10.1016/j.euroneuro.2019.07.130

Krieger, T., Reber, F., von Glutz, B., Urech, A., Moser, C. T., Schulz, A., & Berger, T. (2019). An Internet-Based Compassion-Focused Intervention for Increased Self-Criticism: A Randomized Controlled Trial. *Behav Ther, 50*(2), 430-445. doi:10.1016/j.beth.2018.08.003

Kring, Ann M., & Sloan, Denise M. (Eds.). (2010). *Emotion regulation and psychopathology : a transdiagnostic approach to etiology and treatment*. New York, NY: Guilford Press.

Kristeller, J. L., & Hallett, C. B. (1999). An Exploratory Study of a Meditation-based Intervention for Binge Eating Disorder. *J Health Psychol, 4*(3), 357-363. doi:10.1177/135910539900400305

Kristeller, J. L., & Jordan, K. D. (2018). Mindful Eating: Connecting With the Wise Self, the Spiritual Self. *Front Psychol, 9*, 1271. doi:10.3389/fpsyg.2018.01271

Kristeller, J. L., & Wolever, R. Q. (2011). Mindfulness-based eating awareness training for treating binge eating disorder: the conceptual foundation. *Eat Disord, 19*(1), 49-61. doi:10.1080/10640266.2011.533605

Lakey, C. E., Campbell, W. K., Brown, K. W., & Goodie, A. S. (2007). Dispositional Mindfulness as a Predictor of the Severity of Gambling Outcomes. *Pers Individ Dif, 43*(7), 1698-1710. doi:10.1016/j.paid.2007.05.007

Lang, C., & Jansen, E. (2013). Appropriating depression: biomedicalizing Ayurvedic psychiatry in Kerala, India. *Med Anthropol, 32*(1), 25-45. doi:10.1080/01459740.2012.674584

Lang, H., France, E., Williams, B., Humphris, G., & Wells, M. (2013). The psychological experience of living with head and neck cancer: a systematic review and meta-synthesis. *Psychooncology, 22*(12), 2648-2663. doi:10.1002/pon.3343

Langer, ÁI, Cangas, A. J., Salcedo, E., & Fuentes, B. (2012). Applying mindfulness therapy in a group of psychotic individuals: a controlled study. *Behav Cogn Psychother, 40*(1), 105-109. doi:10.1017/S1352465811000464

Langer, E. J., & Imber, L. (1980). Role of mindlessness in the perception of deviance. *J Pers Soc Psychol, 39*(3), 360-367.

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. *J Clin Psychol, 62*(12), 1445-1467. doi:10.1002/jclp.20326

Leary, M. R., Tate, E. B., Adams, C. E., Allen, A. B., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: the implications of treating oneself kindly. *J Pers Soc Psychol, 92*(5), 887-904. doi:10.1037/0022-3514.92.5.887

Lee-Fan, Tan, Zoltan, Dienes, Ashok, Jansari, & Sing-Yau, Goh. (2014). Effects of mindfulness meditation on brain-computer interface perfomance. *Consciousness and Cognition, 23*, 12-21.

Leigh, J., Bowen, S., & Marlatt, G. A. (2005). Spirituality, mindfulness and substance abuse. *Addict Behav, 30*(7), 1335-1341. doi:10.1016/j.addbeh.2005.01.010

Li, M. J., Black, D. S., & Garland, E. L. (2016). The Applied Mindfulness Process Scale (AMPS): A process measure for evaluating mindfulness-based interventions. *Pers Individ Dif, 93*, 6-15. doi:10.1016/j.paid.2015.10.027

Lilja, Josefine L., Lundh, Lars-Gunnar, Josefsson, Torbjörn, & Falkenström, Fredrik. (2012). Observing as an Essential Facet of Mindfulness: A Comparison of FFMQ Patterns in Meditating and Non-Meditating Individuals. *Mindfulness, 4*(3), 203-212. doi:10.1007/s12671-012-0111-8

Lindal, E., & Breivik, H. (2010). Dialectical behavioural therapy for complex chronic pain conditions. *Scand J Pain, 1*(1), 9. doi:10.1016/j.sjpain.2009.09.010

Lindsay, E. K., Chin, B., Greco, C. M., Young, S., Brown, K. W., Wright, A. G. C., . . . Creswell, J. D. (2018). How mindfulness training promotes positive emotions: Dismantling acceptance skills training in two randomized controlled trials. *J Pers Soc Psychol, 115*(6), 944-973. doi:10.1037/pspa0000134

Linehan, M. M., Armstrong, H. E., Suarez, A., Allmon, D., & Heard, H. L. (1991). Cognitive-behavioral treatment of chronically parasuicidal borderline patients. *Arch Gen Psychiatry, 48*(12), 1060-1064. doi:10.1001/archpsyc.1991.01810360024003

Lomas, T., Medina, J. C., Ivtzan, I., Rupprecht, S., & Eiroa-Orosa, F. J. (2018). A systematic review of the impact of mindfulness on the well-being of healthcare professionals. *J Clin Psychol, 74*(3), 319-355. doi:10.1002/jclp.22515

Lomas, Tim, Medina, Juan Carlos, Ivtzan, Itai, Ruppercht, Silke, & Eiroa-Orosa, Franscisco Jose. (2018). A systematic review of the impact of mindfulness of the well-being of healthcare professionals. *Wiley Interdiscip Rev Cogn Sci, 74*, 319-355.

Lomas, Tim, Medina, Juan Carlos, Ivtzan, Itai, Ruppercht, Silke, Hart, Rona, & Eiroa-Orosa, Francisco Jose. (2017). The impact of mindfulness on wellbeing and performance in the workplace: an inclusive systematice review of the empirical literature. *European Journal of Work and Organizational Psychology, 4*, 492-513.

Lönnberg, G., Jonas, W., Unternaehrer, E., Bränström, R., Nissen, E., & Niemi, M. (2020). Effects of a mindfulness based childbirth and parenting program on pregnant women's perceived stress and risk of perinatal depression-Results from a randomized controlled trial. *J Affect Disord, 262*, 133-142. doi:10.1016/j.jad.2019.10.048

Lopez, Shane J., & Wiley InterScience (Online service). (2009). The encyclopedia of positive psychology. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://onlinelibrary.wiley.com/book/10.1002/9781444306002

Louise, S., Rossell, S. L., & Thomas, N. (2019). The Acceptability, Feasibility and Potential Outcomes of an Individual Mindfulness-Based Intervention for Hearing Voices. *Behav Cogn Psychother, 47*(2), 200-216. doi:10.1017/S1352465818000425

Lundgren, T., Dahl, J., Yardi, N., & Melin, L. (2008). Acceptance and Commitment Therapy and yoga for drug-refractory epilepsy: a randomized controlled trial. *Epilepsy Behav, 13*(1), 102-108. doi:10.1016/j.yebeh.2008.02.009

Lutz, R. S., Lochbaum, M. R., Lanning, B., Stinson, L. G., & Brewer, R. (2007). Cross-lagged relationships among leisure-time exercise and perceived stress in blue-collar workers. *J Sport Exerc Psychol, 29*(6), 687-705.

Ma, Y., & Fang, S. (2019). Adolescents' Mindfulness and Psychological Distress: The Mediating Role of Emotion Regulation. *Front Psychol, 10*, 1358. doi:10.3389/fpsyg.2019.01358

Mace, Chris. (2008). *Mindfulness and mental health : therapy, theory, and science*. London New York: Routledge.

MacKillop, J., Mattson, R. E., Anderson Mackillop, E. J., Castelda, B. A., & Donovick, P. J. (2007). Multidimensional assessment of impulsivity in undergraduate hazardous drinkers and controls. *J Stud Alcohol Drugs, 68*(6), 785-788.

Majumdar, M., Grossman, P., Dietz-Waschkowski, B., Kersig, S., & Walach, H. (2002). Does mindfulness meditation contribute to health? Outcome evaluation of a German sample. *J Altern Complement Med, 8*(6), 719-730; discussion 731-715. doi:10.1089/10755530260511720

Mancke, F., Schmitt, R., Winter, D., Niedtfeld, I., Herpertz, S. C., & Schmahl, C. (2017). Assessing the marks of change: how psychotherapy alters the brain structure in women with borderline personality disorder. *J Psychiatry Neurosci, 43*(1), 170132. doi:10.1503/jpn.170132

Massey, C. N., Feig, E. H., Duque-Serrano, L., Wexler, D., Moskowitz, J. T., & Huffman, J. C. (2019). Well-being interventions for individuals with diabetes: A systematic review. *Diabetes Res Clin Pract, 147*, 118-133. doi:10.1016/j.diabres.2018.11.014

Massion, A. O., Teas, J., Hebert, J. R., Wertheimer, M. D., & Kabat-Zinn, J. (1995). Meditation, melatonin and breast/prostate cancer: hypothesis and preliminary data. *Med Hypotheses, 44*(1), 39-46.

Matchim, Y., Armer, J. M., & Stewart, B. R. (2011). Mindfulness-based stress reduction among breast cancer survivors: a literature review and discussion. *Oncol Nurs Forum, 38*(2), E61-71. doi:10.1188/11.ONF.E61-E71

Mayberg, H. S., Silva, J. A., Brannan, S. K., Tekell, J. L., Mahurin, R. K., McGinnis, S., & Jerabek, P. A. (2002). The functional neuroanatomy of the placebo effect. *Am J Psychiatry, 159*(5), 728-737. doi:10.1176/appi.ajp.159.5.728

McFetridge, M. A., Milner, R., Gavin, V., & Levita, L. (2015). Borderline personality disorder: patterns of self-harm, reported childhood trauma and clinical outcome. *BJPsych Open, 1*(1), 18-20. doi:10.1192/bjpo.bp.115.000117

McKenzie, S. P., Hassed, C. S., & Gear, J. L. (2012). Medical and psychology students' knowledge of and attitudes towards mindfulness as a clinical intervention. *Explore (NY), 8*(6), 360-367. doi:10.1016/j.explore.2012.08.003

Miller, J. J., Fletcher, K., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *Gen Hosp Psychiatry, 17*(3), 192-200.

Miller-Matero, L. R., Coleman, J. P., Smith-Mason, C. E., Moore, D. A., Marszalek, D., & Ahmedani, B. K. (2019). A Brief Mindfulness Intervention for Medically Hospitalized Patients with Acute Pain: A Pilot Randomized Clinical Trial. *Pain Med*. doi:10.1093/pm/pnz082

Morrison Wylde, C., Mahrer, N. E., Meyer, R. M. L., & Gold, J. I. (2017). Mindfulness for Novice Pediatric Nurses: Smartphone Application Versus Traditional Intervention. *J Pediatr Nurs, 36*, 205-212. doi:10.1016/j.pedn.2017.06.008

Muto, T., Hayes, S. C., & Jeffcoat, T. (2011). The effectiveness of acceptance and commitment therapy bibliotherapy for enhancing the psychological health of Japanese college students living abroad. *Behav Ther, 42*(2), 323-335. doi:10.1016/j.beth.2010.08.009

Myers, D. G. (2000). The funds, friends, and faith of happy people. *Am Psychol, 55*(1), 56-67.

Naranjo, J. R., & Schmidt, S. (2012). Is it me or not me? Modulation of perceptual-motor awareness and visuomotor performance by mindfulness meditation. *BMC Neurosci, 13*, 88. doi:10.1186/1471-2202-13-88

Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The role of trait mindfulness in reducing defensive responses to mortality salience. *J Pers Soc Psychol, 99*(2), 344-365. doi:10.1037/a0019388

Noone, C., & Hogan, M. J. (2018). A randomised active-controlled trial to examine the effects of an online mindfulness intervention on executive control, critical thinking and key thinking dispositions in a university student sample. *BMC Psychol, 6*(1), 13. doi:10.1186/s40359-018-0226-3

Ong, J. C., Crawford, M. R., Kong, A., Park, M., Cvengros, J. A., Crisostomo, M. I., . . . Wyatt, J. K. (2017). Management of Obstructive Sleep Apnea and Comorbid

Insomnia: A Mixed-Methods Evaluation. *Behav Sleep Med, 15*(3), 180-197. doi:10.1080/15402002.2015.1087000

Ong, J. C., & Smith, C. E. (2017). Using Mindfulness for the Treatment of Insomnia. *Curr Sleep Med Rep, 3*(2), 57-65. doi:10.1007/s40675-017-0068-1

Ong, J., & Sholtes, D. (2010). A mindfulness-based approach to the treatment of insomnia. *J Clin Psychol, 66*(11), 1175-1184. doi:10.1002/jclp.20736

Ong, Jason C. *Mindfulness-based therapy for insomnia*.

Ong, W. Y., Stohler, C. S., & Herr, D. R. (2019). Role of the Prefrontal Cortex in Pain Processing. *Mol Neurobiol, 56*(2), 1137-1166. doi:10.1007/s12035-018-1130-9

Orsillo, S. M., & Batten, S. V. (2005). Acceptance and commitment therapy in the treatment of posttraumatic stress disorder. *Behav Modif, 29*(1), 95-129. doi:10.1177/0145445504270876

Ostafin, B. D., & Palfai, T. P. (2006). Compelled to consume: the Implicit Association Test and automatic alcohol motivation. *Psychol Addict Behav, 20*(3), 322-327. doi:10.1037/0893-164X.20.3.322

Ostafin, Brian D., Brooks, Jessica J., & Laitem, Magali. (2013). Affective Reactivity Mediates an Inverse Relation Between Mindfulness and Anxiety. *Mindfulness, 5*(5), 520-528. doi:10.1007/s12671-013-0206-x

Ostojić, L., Legg, E. W., Dits, A., Williams, N., Brecht, K. F., Mendl, M., & Clayton, N. S. (2016). Experimenter expectancy bias does not explain Eurasian jays' (Garrulus glandarius) performance in a desire-state attribution task. *J Comp Psychol, 130*(4), 407-410. doi:10.1037/com0000043

Palmiter, David J. Practicing cognitive behavioral therapy with children and adolescents a guide for students and early career professionals. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://massey.eblib.com.au/patron/FullRecord.aspx?p=4561868

Pashler, H., Coburn, N., & Harris, C. R. (2012). Priming of social distance? Failure to replicate effects on social and food judgments. *PLoS One, 7*(8), e42510. doi:10.1371/journal.pone.0042510

Perach, R., Allen, C. K., Kapantai, I., Madrid-Valero, J. J., Miles, E., Charlton, R. A., & Gregory, A. M. (2019). The psychological wellbeing outcomes of nonpharmacological interventions for older persons with insomnia symptoms: A systematic review and meta-analysis. *Sleep Med Rev, 43*, 1-13. doi:10.1016/j.smrv.2018.09.003

Perry, A. E., Martyn-St James, M., Burns, L., Hewitt, C., Glanville, J. M., Aboaja, A., . . . Wright, K. (2019). Interventions for female drug-using offenders. *Cochrane Database Syst Rev, 12*, CD010910. doi:10.1002/14651858.CD010910.pub3

Pérula-de Torres, L. A., Atalaya, J. C. V., García-Campayo, J., Roldán-Villalobos, A., Magallón-Botaya, R., Bartolomé-Moreno, C., . . . study, collaborative group of the MINDUUDD. (2019). Controlled clinical trial comparing the effectiveness of a mindfulness and self-compassion 4-session programme versus an 8-session programme to reduce work stress and burnout in family and community medicine physicians and nurses: MINDUUDD study protocol. *BMC Fam Pract, 20*(1), 24. doi:10.1186/s12875-019-0913-z

Podgurski, L., Greco, C., Croom, A., Arnold, R., & Claxton, R. (2019). A Brief Mindfulness-Based Self-Care Curriculum for an Interprofessional Group of Palliative Care Providers. *J Palliat Med*. doi:10.1089/jpm.2018.0550

Pots, W. T., Fledderus, M., Meulenbeek, P. A., ten Klooster, P. M., Schreurs, K. M., & Bohlmeijer, E. T. (2016). Acceptance and commitment therapy as a web-based intervention for depressive symptoms: randomised controlled trial. *Br J Psychiatry, 208*(1), 69-77. doi:10.1192/bjp.bp.114.146068

Prothero, L., Barley, E., Galloway, J., Georgopoulou, S., & Sturt, J. (2018). The evidence base for psychological interventions for rheumatoid arthritis: A systematic review of reviews. *Int J Nurs Stud, 82*, 20-29. doi:10.1016/j.ijnurstu.2018.03.008

Pyke, R. E., & Clayton, A. H. (2018). Effect Size in Efficacy Trials of Women With Decreased Sexual Desire. *Sex Med Rev, 6*(3), 358-366. doi:10.1016/j.sxmr.2018.01.003

R Amico, K., McMahan, V., Goicochea, P., Vargas, L., Marcus, J. L., Grant, R. M., & Liu, A. (2012). Supporting study product use and accuracy in self-report in the iPrEx study: next step counseling and neutral assessment. *AIDS Behav, 16*(5), 1243-1259. doi:10.1007/s10461-012-0182-5

Rau, Holly K., & Williams, Paula G. (2016). Dispositional mindfulness: A critical review of construct validation research. *Personality and Individual Differences, 93*, 32-43. doi:10.1016/j.paid.2015.09.035

Reddy, J. S. K., & Roy, S. (2019). The Role of One's Motive in Meditation Practices and Prosociality. *Front Hum Neurosci, 13*, 48. doi:10.3389/fnhum.2019.00048

Reyes-Ortega, M. A., Miranda, E. M., Fresán, A., Vargas, A. N., Barragán, S. C., Robles García, R., & Arango, I. (2019). Clinical efficacy of a combined acceptance and commitment therapy, dialectical behavioural therapy, and functional analytic psychotherapy intervention in patients with borderline personality disorder. *Psychol Psychother*. doi:10.1111/papt.12240

Roon, K. I., Olesen, J., Diener, H. C., Ellis, P., Hettiarachchi, J., Poole, P. H., . . . Ferrari, M. D. (2000). No acute antimigraine efficacy of CP-122,288, a highly potent

inhibitor of neurogenic inflammation: results of two randomized, double-blind, placebo-controlled clinical trials. *Ann Neurol, 47*(2), 238-241.

Rowland, Z., Wenzel, M., & Kubiak, T. (2018). A mind full of happiness: How mindfulness shapes affect dynamics in daily life. *Emotion*. doi:10.1037/emo0000562

Rune, Waaler, Halgeir, Halvari, Knut, Skjesol, & Egil, Bagoien Tor. (2013). Autonomy support and intrinsic goal progress expectancy and its links to longitudinal study effort and subjective wellbeing: The differential mediating effect of intrinsic and identified regulations and the moderator effects of effort and intrinsic goals. *Scandinavian Journal of Educational Research, 57*(3), 325-341.

Rusch, H. L., Rosario, M., Levison, L. M., Olivera, A., Livingston, W. S., Wu, T., & Gill, J. M. (2019). The effect of mindfulness meditation on sleep quality: a systematic review and meta-analysis of randomized controlled trials. *Ann N Y Acad Sci, 1445*(1), 5-16. doi:10.1111/nyas.13996

Ryff, C. D. (1989). In the eye of the beholder: views of psychological well-being among middle-aged and older adults. *Psychol Aging, 4*(2), 195-201.

Salgado, S., & Kingo, O. S. (2020). Data related to measures of physiological arousal during everyday life experiences and their relation to self-reports of subjective

experience of both the event and its memory. *Data Brief, 28*, 104823. doi:10.1016/j.dib.2019.104823

Sandin, J., Georgieva, J., Silberring, J., & Terenius, L. (1999). In vivo metabolism of nociceptin/orphanin FQ in rat hippocampus. *Neuroreport, 10*(1), 71-76.

Santorelli, S. F. (2007). Mindfulness and medicine. Interview by Bonnie J. Horrigan. *Explore (NY), 3*(2), 136-144. doi:10.1016/j.explore.2006.12.009

Scheepers, R. A., Emke, H., Epstein, R. M., & Lombarts, K. M. J.MH. (2019). The impact of mindfulness-based interventions on doctors' well-being and performance: A systematic review. *Med Educ*. doi:10.1111/medu.14020

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychol, 4*(3), 219-247.

Schiepek, G., Stöger-Schmidinger, B., Kronberger, H., Aichhorn, W., Kratzer, L., Heinz, P., . . . Schöller, H. (2019). The Therapy Process Questionnaire - Factor analysis and psychometric properties of a multidimensional self-rating scale for high-frequency monitoring of psychotherapeutic processes. *Clin Psychol Psychother*. doi:10.1002/cpp.2384

Schmidt, A., Walter, M., Gerber, H., Schmid, O., Smieskova, R., Bendfeldt, K., . . . Borgwardt, S. (2013). Inferior frontal cortex modulation with an acute dose of

heroin during cognitive control. *Neuropsychopharmacology, 38*(11), 2231-2239. doi:10.1038/npp.2013.123

Schmidt, S., Grossman, P., Schwarzer, B., Jena, S., Naumann, J., & Walach, H. (2011). Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. *Pain, 152*(2), 361-369. doi:10.1016/j.pain.2010.10.043

Schoenberg, P., & Vago, D. R. (2019). Mapping meditative states and stages with electrophysiology: concepts, classifications, and methods. *Curr Opin Psychol, 28*, 211-217. doi:10.1016/j.copsyc.2019.01.007

Sedlmeier, P., Eberth, J., Schwarz, M., Zimmermann, D., Haarig, F., Jaeger, S., & Kunze, S. (2012). The psychological effects of meditation: a meta-analysis. *Psychol Bull, 138*(6), 1139-1171. doi:10.1037/a0028168

Segal, Z., Dimidjian, S., Vanderkruik, R., & Levy, J. (2019). A maturing mindfulness-based cognitive therapy reflects on two critical issues. *Curr Opin Psychol, 28*, 218-222. doi:10.1016/j.copsyc.2019.01.015

Segal, Z. V., Bieling, P., Young, T., MacQueen, G., Cooke, R., Martin, L., . . . Levitan, R. D. (2010). Antidepressant monotherapy vs sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in

recurrent depression. *Arch Gen Psychiatry, 67*(12), 1256-1264. doi:10.1001/archgenpsychiatry.2010.168

Segal, Z. V., & Walsh, K. M. (2016). Mindfulness-based cognitive therapy for residual depressive symptoms and relapse prophylaxis. *Curr Opin Psychiatry, 29*(1), 7-12. doi:10.1097/YCO.0000000000000216

Segal, Zindel V., Williams, J. Mark G., & Teasdale, John D. (2002). *Mindfulness-based cognitive therapy for depression : a new approach to preventing relapse*. New York: Guilford Press.

Segal, Zindel V., Williams, J. Mark G., & Teasdale, John D. (2013). *Mindfulness-based cognitive therapy for depression* (2nd ed.). New York: Guilford Press.

Seli, P., Carriere, J. S., & Smilek, D. (2015). Not all mind wandering is created equal: dissociating deliberate from spontaneous mind wandering. *Psychol Res, 79*(5), 750-758. doi:10.1007/s00426-014-0617-x

Shapiro, S. L., Brown, K. W., Thoresen, C., & Plante, T. G. (2011). The moderation of Mindfulness-based stress reduction effects by trait mindfulness: results from a randomized controlled trial. *J Clin Psychol, 67*(3), 267-277. doi:10.1002/jclp.20761

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *J Clin Psychol, 62*(3), 373-386. doi:10.1002/jclp.20237

Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *J Behav Med, 21*(6), 581-599.

Shawyer, F., Meadows, G. N., Judd, F., Martin, P. R., Segal, Z., & Piterman, L. (2012). The DARE study of relapse prevention in depression: design for a phase 1/2 translational randomised controlled trial involving mindfulness-based cognitive therapy and supported self monitoring. *BMC Psychiatry, 12*, 3. doi:10.1186/1471-244X-12-3

Shelov, D. V., Suchday, S., & Friedberg, J. P. (2009). A pilot study measuring the impact of yoga on the trait of mindfulness. *Behav Cogn Psychother, 37*(5), 595-598. doi:10.1017/S1352465809990361

Shorter, Edward. (2011). A Brief History of Placebos and Clinical Trials in Psychology and Psychiatry. *Can J Psychiatry, 56*(4), 193-197.

Siebelink, N. M., Asherson, P., Antonova, E., Bögels, S. M., Speckens, A. E., Buitelaar, J. K., & Greven, C. U. (2019). Genetic and environmental aetiologies of associations between dispositional mindfulness and ADHD traits: a population-based twin study. *Eur Child Adolesc Psychiatry*. doi:10.1007/s00787-019-01279-8

Siegel, D. J. (2019). The mind in psychotherapy: An interpersonal neurobiology framework for understanding and cultivating mental health. *Psychol Psychother, 92*(2), 224-237. doi:10.1111/papt.12228

Smith, J. E., Richardson, J., Hoffman, C., & Pilkington, K. (2005). Mindfulness-Based Stress Reduction as supportive therapy in cancer care: systematic review. *J Adv Nurs, 52*(3), 315-327. doi:10.1111/j.1365-2648.2005.03592.x

Smith, Joseph H. , Kempton, Heather M. , Williams, Matt N. , & van Ommen, Clifford . (2020). Mindfulness as Practice: A Network Analysis of FMI data. https://doi.org/10.31234/osf.io/4rymb.

Smith, S. B., & Williams, T. H. (2014). Ministering to struggling students. *J Christ Nurs, 31*(1), 60.

Snippe, E., Dziak, J. J., Lanza, S. T., Nyklíček, I., & Wichers, M. (2017). The shape of change in perceived stress, negative affect, and stress sensitivity during mindfulness-based stress reduction. *Mindfulness (N Y), 8*(3), 728-736. doi:10.1007/s12671-016-0650-5

Sood, R., Kuhle, C. L., Kapoor, E., Thielen, J. M., Frohmader, K. S., Mara, K. C., & Faubion, S. S. (2019). Association of mindfulness and stress with menopausal symptoms in midlife women. *Climacteric*, 1-6. doi:10.1080/13697137.2018.1551344

Spears, Claire A., Li, Liang, Wu, Cai, Vinci, Christine, Heppner, Whitney L., Hoover, Diana S., . . . Wetter, David W. (2019). Mechanisms linking mindfulness and early smoking abstinence: An ecological momentary assessment study. *Psychology of Addictive Behaviors, 33*(3), 197-207.

Speca, M., Carlson, L. E., Goodey, E., & Angen, M. (2000). A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosom Med, 62*(5), 613-622.

Sperduti, M., Makowski, D., Blondé, P., & Piolino, P. (2017). Meditation and successful aging: can meditative practices counteract age-related cognitive decline? *Geriatr Psychol Neuropsychiatr Vieil, 15*(2), 205-213. doi:10.1684/pnv.2017.0672

Stein, L. A., Katz, B., Colby, S. M., Barnett, N. P., Golembeske, C., Lebeau-Craven, R., & Monti, P. M. (2007). Validity and Reliability of the Alcohol Expectancy Questionnaire-Adolescent, Brief. *J Child Adolesc Subst Abuse, 16*(2), 115-127. doi:10.1300/J029v16n02_06

Suyi, Y., Meredith, P., & Khan, A. (2017). Effectiveness of Mindfulness Intervention in Reducing Stress and Burnout for Mental Health Professionals in Singapore. *Explore (NY), 13*(5), 319-326. doi:10.1016/j.explore.2017.06.001

Takishima-Lacasa, J. Y., Higa-McMillan, C. K., Ebesutani, C., Smith, R. L., & Chorpita, B. F. (2014). Self-consciousness and social anxiety in youth: the Revised Self-Consciousness Scales for Children. *Psychol Assess, 26*(4), 1292-1306. doi:10.1037/a0037386

Tamagawa, R., Giese-Davis, J., Speca, M., Doll, R., Stephen, J., & Carlson, L. E. (2013). Trait mindfulness, repression, suppression, and self-reported mood and stress symptoms among women with breast cancer. *J Clin Psychol, 69*(3), 264-277. doi:10.1002/jclp.21939

Tambyah, Siok Kuan, Tan, Soo Jiuan, & Kau, Ah Keng. (2010). The wellbeing of Singaporeans values, lifestyles, satisfaction and quality of life. Retrieved from http://ezproxy.massey.ac.nz/login?url=http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&AN=340537

Taylor, D. J., Zimmerman, M. R., Gardner, C. E., Williams, J. M., Grieser, E. A., Tatum, J. I., . . . Ruggero, C. (2014). A pilot randomized controlled trial of the effects of cognitive-behavioral therapy for insomnia on sleep and daytime functioning in college students. *Behav Ther, 45*(3), 376-389. doi:10.1016/j.beth.2013.12.010

Taylor, S. F., Ho, S. S., Abagis, T., Angstadt, M., Maixner, D. F., Welsh, R. C., & Hernandez-Garcia, L. (2018). Changes in brain connectivity during a sham-controlled, transcranial magnetic stimulation trial for depression. *J Affect Disord, 232*, 143-151. doi:10.1016/j.jad.2018.02.019

Teasdale, J. D., Moore, R. G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z. V. (2002). Metacognitive awareness and prevention of relapse in depression: empirical evidence. *J Consult Clin Psychol, 70*(2), 275-287.

Thera, Ña navira, Bodhesako, Samonerea, & Williams, Forrest. (1987). *Clearing the path : writings of Ña@0323navira Thera (1960-1965)*. Colombo: Path Press.

Tiwary, Mahesh, & International Conference on Buddhism and National Cultures. (1984). *Bodhi-Ra´smi : first International Conference on Buddhism and National Cultures, New Delhi, October 10-15, 1984*. New Delhi: Indian Council for Philosophical Research.

Todd, C., Cooksey, R., Davies, H., McRobbie, C., & Brophy, S. (2019). Mixed-methods evaluation comparing the impact of two different mindfulness approaches on stress, anxiety and depression in school teachers. *BMJ Open, 9*(7), e025686. doi:10.1136/bmjopen-2018-025686

Tsiaras, V., Simos, P. G., Rezaie, R., Sheth, B. R., Garyfallidis, E., Castillo, E. M., & Papanicolaou, A. C. (2011). Extracting biomarkers of autism from MEG resting-state functional connectivity networks. *Comput Biol Med, 41*(12), 1166-1177. doi:10.1016/j.compbiomed.2011.04.004

Van Dam, N. T., van Vugt, M. K., Vago, D. R., Schmalzl, L., Saron, C. D., Olendzki, A., . . . Meyer, D. E. (2018). Mind the Hype: A Critical Evaluation and Prescriptive

Agenda for Research on Mindfulness and Meditation. *Perspect Psychol Sci, 13*(1), 36-61. doi:10.1177/1745691617709589

van Die, M. D., Williams, S. G., Emery, J., Bone, K. M., Taylor, J. M., Lusk, E., & Pirotta, M. V. (2017). A Placebo-Controlled Double-Blinded Randomized Pilot Study of Combination Phytotherapy in Biochemically Recurrent Prostate Cancer. *Prostate, 77*(7), 765-775. doi:10.1002/pros.23317

Versluis, P. J., & Lamers, R. J. (1993). Lobar pneumonia: an ultrasound diagnosis. *Pediatr Radiol, 23*(7), 561-562.

Voiß, P., Höxtermann, M. D., Dobos, G., & Cramer, H. (2019). The use of mind-body medicine among US individuals with sleep problems: analysis of the 2017 National Health Interview Survey data. *Sleep Med*. doi:10.1016/j.sleep.2019.01.008

Volanen, S. M., Lassander, M., Hankonen, N., Santalahti, P., Hintsanen, M., Simonsen, N., . . . Suominen, S. (2020). Healthy learning mind - Effectiveness of a mindfulness program on mental health compared to a relaxation program and teaching as usual in schools: A cluster-randomised controlled trial. *J Affect Disord, 260*, 660-669. doi:10.1016/j.jad.2019.08.087

Vujanovic, A. A., Zvolensky, M. J., Bernstein, A., Feldner, M. T., & McLeish, A. C. (2007). A test of the interactive effects of anxiety sensitivity and mindfulness in the

prediction of anxious arousal, agoraphobic cognitions, and body vigilance. *Behav Res Ther, 45*(6), 1393-1400. doi:10.1016/j.brat.2006.06.002

Walpoth, M., Hoertnagl, C., Mangweth-Matzek, B., Kemmler, G., Hinterhölzl, J., Conca, A., & Hausmann, A. (2008). Repetitive transcranial magnetic stimulation in bulimia nervosa: preliminary results of a single-centre, randomised, double-blind, sham-controlled trial in female outpatients. *Psychother Psychosom, 77*(1), 57-60. doi:10.1159/000110061

Walsh, K. M., Saab, B. J., & Farb, N. A. (2019). Effects of a Mindfulness Meditation App on Subjective Well-Being: Active Randomized Controlled Trial and Experience Sampling Study. *JMIR Ment Health, 6*(1), e10844. doi:10.2196/10844

Watson, D., Clark, L. A., & Carey, G. (1988). Positive and negative affectivity and their relation to anxiety and depressive disorders. *J Abnorm Psychol, 97*(3), 346-353.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol, 54*(6), 1063-1070.

Weiss, Halko, Johanson, Gregory J., & Monda, Lorena (Eds.). *Hakomi mindfulness-centered somatic psychotherapy : a comprehensive guide to theory and practice* (First edition. ed.).

Wells, Adrian, & Fisher, Peter L. (Eds.). *Treating depression : MCT, CBT and third wave therapies*.

Wen, L., Sweeney, T. E., Welton, L., Trockel, M., & Katznelson, L. (2017). Encouraging Mindfulness in Medical House Staff via Smartphone App: A Pilot Study. *Acad Psychiatry, 41*(5), 646-650. doi:10.1007/s40596-017-0768-3

Williams, A. C., Eccleston, C., & Morley, S. (2012). Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane Database Syst Rev, 11*, CD007407. doi:10.1002/14651858.CD007407.pub3

Williams, A. S., Williams, C. D., Cronk, N. J., Kruse, R. L., Ringdahl, E. N., & Koopman, R. J. (2015). Understanding the exercise habits of residents and attending physicians: a mixed methodology study. *Fam Med, 47*(2), 118-123.

Williams, C. J., & Cropley, M. (2014). The relationship between perfectionism and engagement in preventive health behaviours: the mediating role of self-concealment. *J Health Psychol, 19*(10), 1211-1221. doi:10.1177/1359105313488971

Williams, J. Mark G., & Kabat-Zinn, Jon (Eds.). (2013). *Mindfulness : diverse perspectives on its meanings, origins and applications*. London: Routledge.

Williams, P. G., Rau, H. K., Suchy, Y., Thorgusen, S. R., & Smith, T. W. (2017). On the validity of self-report assessment of cognitive abilities: Attentional control scale associations with cognitive performance, emotional adjustment, and personality. *Psychol Assess, 29*(5), 519-530. doi:10.1037/pas0000361

Wolanin, K., Magalska, A., Kusio-Kobialka, M., Podszywalow-Bartnicka, P., Vejda, S., McKenna, S. L., . . . Piwocka, K. (2010). Expression of oncogenic kinase Bcr-Abl impairs mitotic checkpoint and promotes aberrant divisions and resistance to microtubule-targeting agents. *Mol Cancer Ther, 9*(5), 1328-1338. doi:10.1158/1535-7163.MCT-09-0936

Wright, K., Dodd, A., Warren, F. C., Medina-Lara, A., Taylor, R., Jones, S., . . . Lynch, T. (2018). The clinical and cost effectiveness of adapted dialectical behaviour therapy (DBT) for bipolar mood instability in primary care (ThrIVe-B programme): a feasibility study. *Trials, 19*(1), 560. doi:10.1186/s13063-018-2926-7

Wu, R., Liu, L. L., Zhu, H., Su, W. J., Cao, Z. Y., Zhong, S. Y., . . . Jiang, C. L. (2019). Brief Mindfulness Meditation Improves Emotion Processing. *Front Neurosci, 13*, 1074. doi:10.3389/fnins.2019.01074

Yiend, Jenny, & Mathews, Andrew M. (Eds.). (2004). *Cognition, emotion and psychopathology : theoretical, empirical and clinical directions*. Cambridge, UK New York: Cambridge University Press.

Zeidan, F., Johnson, S. K., Diamond, B. J., David, Z., & Goolkasian, P. (2010). Mindfulness meditation improves cognition: evidence of brief mental training. *Conscious Cogn, 19*(2), 597-605. doi:10.1016/j.concog.2010.03.014

Zeidan, F., Johnson, S. K., Gordon, N. S., & Goolkasian, P. (2010). Effects of brief and sham mindfulness meditation on mood and cardiovascular variables. *J Altern Complement Med, 16*(8), 867-873. doi:10.1089/acm.2009.0321

Zeidan, F., Salomons, T., Farris, S. R., Emerson, N. M., Adler-Neal, A., Jung, Y., & Coghill, R. C. (2018). Neural mechanisms supporting the relationship between dispositional mindfulness and pain. *Pain, 159*(12), 2477-2485. doi:10.1097/j.pain.0000000000001344

Zeidan, Fadel, Emerson, Nichole M., Farris, Suzan R., Ray, Jenna N., Jung, Youngkyoo, McHaffie, John G., & Coghill, Robert C. (2015). Mindfulness Meditation-Based Pain Relief Employs Different

Neural Mechanisms Than Placebo and Sham Mindfulness

Meditation-Induced Analgesia. *The Journal of Neuroscience, 35*(46), 15307-15325.

Zgierska, A., Wallace, M. L., Burzinski, C. A., Cox, J., & Backonja, M. (2014). Pharmacological and toxicological profile of opioid-treated, chronic low back pain patients entering a mindfulness intervention randomized controlled trial. *J Opioid Manag, 10*(5), 323-335. doi:10.5055/jom.2014.0222

Zhu, T., Xue, J., Montuclard, A., Jiang, Y., Weng, W., & Chen, S. (2019). Can Mindfulness-Based Training Improve Positive Emotion and Cognitive Ability in Chinese Non-clinical Population? A Pilot Study. *Front Psychol, 10*, 1549. doi:10.3389/fpsyg.2019.01549

Zimmaro, L. A., Carson, J. W., Olsen, M. K., Sanders, L. L., Keefe, F. J., & Porter, L. S. (2019). Greater mindfulness associated with lower pain, fatigue, and psychological distress in women with metastatic breast cancer. *Psychooncology*. doi:10.1002/pon.5223

Zou, H., Cao, X., Geng, J., & Chair, S. Y. (2020). Effects of mindfulness-based interventions on health-related outcomes for patients with heart failure: a systematic review. *Eur J Cardiovasc Nurs, 19*(1), 44-54. doi:10.1177/1474515119881947

APPENDICES

APPENDIX A: Information Sheets and Consent Forms

Information Sheet, Passive Control Group

Jigsaws and Well-being

Researcher Introduction

I am a researcher and PhD student in psychology in department of Humanities and Social Sciences at Massey University and am looking for participants to take part in the research on jigsaws and well-being.

Description of the project

In the last decade a surge of interest has been directed towards the exploration of activities which have direct effect on mind and well-being to help to treat a variety of physical and psychological conditions. Jigsaws could be one of them. As you start putting the pieces together, you will see that there is a lot of concentrating over this humble game. Therefore, the main aim of the project is to understand the relationship between playing jigsaws and well-being in different people. You might ask what the fuss is all about? Well, try it out yourself with one session that lets you play free jigsaw puzzles.

Who can take part?

I am looking for people who are interested in taking part in this research. There is no obligation or limitation and everyone can participate, just you need to be above 18 years old.

Project Procedures

Prior to taking part in this study you will need to complete the questionnaires which I will send to you by email. The study requires you to attend **one session** approximately **1.5 hours** long at the school of psychology at Massey University Albany to play jigsaws. At the session you will be asked to complete the same questionnaires for **a** second time.

What will you receive?

Some tea, coffee and biscuits will be provided as a refreshment and will received while filling in the questionnaires. You might also end up with a gift to thank you for your time, as you will be entered into a draw to win a 1000-piece puzzle and a well-being book. Furthermore, you will also receive a written report containing the main findings of the study once data analysis and interpretation is completed.

Data Management

All data collected will be used solely for research purposes and will be prepared for publication in a professional journal. All personal information will be kept confidential by assigning number codes to each participant. No names will be visible on any papers on which you provide information. If you are a student of one of the research teams please note that your academic grades will not be affected whether you decide to complete the study or withdraw at a later time. All data/information will be handled in confidence and will be stored in a secure location for five years on the Massey University Albany campus. After this time it will be disposed of by an appropriate staff member from the school of psychology.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- Decline to answer any particular question;
- Withdraw from the study at any time;
- Ask any questions about the study at any time during participation;
- Provide information on the understanding that your name will not be used unless you give permission to the researcher

Project Contacts

If you have any further questions or concerns about the project, either now or in the future, please contact on

PhD student: Mona Ghanbari, jigsawwellbeing@gmail.com
Primary supervisor: Dr Heather Buttle, H.Buttle@massey.ac.nz

Human ethic committee Approval Statement

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Information Sheet, Active Control Group

Mindful Jigsaws and Well-being

Researcher Introduction

I am a researcher and PhD student in psychology in department of Humanities and Social Sciences at Massey University and am looking for participants to take part in the research on mindfulness and well-being.

Description of the project

In the last decade a surge of interest has been directed towards the exploration of activities which have direct effect on mind and well-being to help to treat a variety of physical and psychological conditions. Jigsaws could be one of them. As you start putting the pieces together, you will see that there is a lot of concentrating over this humble game. Therefore, the main aim of the project is to understand the relationship between playing jigsaws and well-being in different people. You might ask what the fuss is all about? Participants will complete jigsaws as an exercise that can requires mindful concentration. Well, try it out your concentration and mindfulness skills on one session that lets you play free jigsaw puzzles.

Who can take part?

I am looking for people who are interested in taking part in this research. There is no obligation or limitation and everyone can participate, just you need to be above 18 years old.

Project Procedures

Prior to taking part in this study you will need to complete the questionnaires which I will send to you by email. The study requires you to attend **one session** approximately **1.5 hours** long at the school of psychology at Massey University Albany to do jigsaws. At the session you will be asked to complete the same questionnaires for a second time.

What will you receive?

Some tea, coffee and biscuits will be provided as a refreshment and will be received while filling in the questionnaires. You might also end up with a gift to thank you for your time, as you will be entered in to a draw to win a 1000-piece puzzle and an interesting psychological book. Furthermore, you will also receive a written report containing the main findings of the study once data analysis and interpretation is completed.

Data Management

All data collected will be used solely for research purposes and will be prepared for publication in a professional journal. All personal information will be kept confidential by assigning number codes to each participant. No names will be visible on any papers on which you provide information. If you are a student of one of the research teams please note that your academic grades will not be affected whether you decide to complete the study or withdraw at a later time. All data/information will be handled in confidence and will be stored in a secure location for five years on the Massey University Albany campus. After this time it will be disposed of by an appropriate staff member from the school of psychology.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- Decline to answer any particular question;
- Withdraw from the study at any time;
- Ask any questions about the study at any time during participation;
- Provide information on the understanding that your name will not be used unless you give permission to the researcher

Project Contacts

If you have any further questions or concerns about the project, either now or in the future, please contact on

PhD student: Mona Ghanbari, jigsawwellbeing@gmail.com
Primary supervisor: Dr Heather Buttle, H.Buttle@massey.ac.nz

Human ethic committee Approval Statement

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Information Sheet, Experimental Group

Mindful Jigsaws and Well-being

Researcher Introduction

I am a researcher and PhD student in psychology in department of Humanities and Social Sciences at Massey University and am looking for participants to take part in the research on mindfulness and well-being.

Description of the project

In the last decade a surge of interest has been directed towards the exploration of mindfulness as a means to treat a variety of physical and psychological conditions (Chiesa & Serretti, 2010; Lundwig & Kabat-Zinn, 2008). Assessing the frequency of one's own present-centered awareness may require complicated recall as well as metacognitive awareness of awareness. The goal of my PhD research is to know what different mindfulness rating scales actually measure, and to explore problems of measurement. Participants will complete jigsaws as an exercise that can requires mindful concentration. Well, try it out your concentration and mindfulness skills on one session that lets you play free mindful jigsaw puzzles.

Who can take part?

I am looking for people who are interested in taking part in this research. There is no obligation or limitation and everyone can participate, just you need to be above 18 years old.

Project Procedures

Prior to taking part in this study you will need to complete the questionnaires which I will send to you by email. The study requires you to attend **one session** approximately **2 hours** long at the school of psychology at Massey University Albany to get mindfulness instruction and play jigsaws. At the session you will be asked to complete the same questionnaires for **a** second time.

What will you receive?

Some tea, coffee and biscuits will be provided as a refreshment and will received while filling in the questionnaires. You might also end up with a gift to thank you for your time, as you will be entered in to a draw to win a 1000-piece puzzle and a well-being book. Furthermore, you will also receive a written report containing the main findings of the study once data analysis and interpretation is completed.

Data Management

All data collected will be used solely for research purposes and will be prepared for publication in a professional journal. All personal information will be kept confidential by assigning number codes to each participant. No names will be visible on any papers on which you provide information. If you are a student of one of the research teams please note that your academic grades will not be affected whether you decide to complete the study or withdraw at a later time. All data/information will be handled in confidence and will be stored in a secure location for five years on the Massey University Albany campus. After this time, it will be disposed of by an appropriate staff member from the school of psychology.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- Decline to answer any particular question;
- Withdraw from the study at any time;
- Ask any questions about the study at any time during participation;
- Provide information on the understanding that your name will not be used unless you give permission to the researcher

Project Contacts

If you have any further questions or concerns about the project, either now or in the future, please contact on

PhD student: Mona Ghanbari, jigsawwellbeing@gmail.com
Primary supervisor: Dr Heather Buttle, H.Buttle@massey.ac.nz

Human ethic committee Approval Statement

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Consent Form, Passive Control Group

Jigsaws and Well-being

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name - printed .....

Consent Form, Active Control and Experimental Groups

Mindful Jigsaws and Well-being

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name - printed .....

APPENDIX B. Jigsaw Puzzles

APPENDIX C. Demographic Questionnaire

Please answer to these questions:

1) What is your age?
A. 18-29 B. 30-46
C. 47-55 D. Age 55 or older

2) Gender
A. Female B. Male

3) Your ethnic
A. NZ
B. Maori/Pacific
C. Asian
D. European
E. Middle Eastern
F. Others

4) Are you a student?
A. Yes B. No

5) If Yes, what is your major:
A. Psychology B. Other

6) Are you a native English speaker?
A. Yes B. No

7) If NO, how long have you been speaking English? (years)

8) Spiritual Affiliation: Do you consider yourself to be a spiritual person?
A. Yes B. No C. Decline to answer

9) Have you ever had meditation experience? (even based on your religion)
A. Yes B. No

10) Have you ever heard of 'mindfulness'?
A. Yes B. No

11) Have you ever practiced 'mindfulness'?
A. Yes B. No

12) If Yes, have you found it useful?
A. Yes B. No

APPENDIX D. FFMQ

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes **your own opinion** of what is **generally true for you**.

never (1) very rarely (2) sometimes (3) often (4) very often (5)

_____ 1. When I'm walking, I deliberately notice the sensations of my body moving.

_____ 2. I'm good at finding words to describe my feelings.

_____ 3. I criticize myself for having irrational or inappropriate emotions.

_____ 4. I perceive my feelings and emotions without having to react to them.

_____ 5. When I do things, my mind wanders off and I'm easily distracted.

_____ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.

_____ 7. I can easily put my beliefs, opinions, and expectations into words.

_____ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.

_____ 9. I watch my feelings without getting lost in them.

_____ 10. I tell myself I shouldn't be feeling the way I'm feeling.

_____ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.

_____ 12. It's hard for me to find the words to describe what I'm thinking.

_____ 13. I am easily distracted.

_____ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.

_____ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.

_____ 16. I have trouble thinking of the right words to express how I feel about things

_____ 17. I make judgments about whether my thoughts are good or bad.

_____ 18. I find it difficult to stay focused on what's happening in the present.

_____ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.

_____ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.

_____ 21. In difficult situations, I can pause without immediately reacting.

_____ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.

_____ 23. It seems I am "running on automatic" without much awareness of what I'm doing.

_____24. When I have distressing thoughts or images, I feel calm soon after.

_____ 25. I tell myself that I shouldn't be thinking the way I'm thinking.

_____ 26. I notice the smells and aromas of things.

_____ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.

_____ 28. I rush through activities without being really attentive to them.

_____ 29. When I have distressing thoughts or images I am able just to notice them without reacting.

_____ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.

_____ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.

_____ 32. My natural tendency is to put my experiences into words.

_____ 33. When I have distressing thoughts or images, I just notice them and let them go.

_____ 34. I do jobs or tasks automatically without being aware of what I'm doing.

_____ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.

_____ 36. I pay attention to how my emotions affect my thoughts and behavior.

_____ 37. I can usually describe how I feel at the moment in considerable detail.

_____ 38. I find myself doing things without paying attention.

_____ 39. I disapprove of myself when I have irrational ideas.

APPENDIX E. AMPS

Instructions: Everyone gets confronted with negative or stressful events in daily life, and each person is experiencing these events in different ways. Please indicate how often you have done these following ways for the period of the last week (past 7 days).

I used mindfulness practice to…

Never (0) Rarely (1) Sometimes (2) Often (3) Almost (4) Always (5)

1. Observe my thoughts in a detached manner	0 1 2 3 4
2. Relax my body when I am tense	0 1 2 3 4
3. See that my thoughts are not necessarily true	0 1 2 3 4
4. Enjoy the little things in life more fully	0 1 2 3 4
5. Calm my emotions when I am upset	0 1 2 3 4
6. Stop reacting to my negative impulses	0 1 2 3 4
7. See the positive side of difficult circumstances	0 1 2 3 4
8. Reduce tension when I am stressed	0 1 2 3 4
9. Realize that I can grow stronger from difficult circumstances	0 1 2 3 4
10. Stop my unhelpful reactions to situations	0 1 2 3 4
11. Be aware of and appreciate pleasant events	0 1 2 3 4
12. Let go of unpleasant thoughts and feelings	0 1 2 3 4
13. Realize that my thoughts are not facts	0 1 2 3 4
14. Notice pleasant things in the face of difficult circumstances	0 1 2 3 4
15. See alternate views of a situation	0 1 2 3 4

APPENDIX F. PANAS

	Indicate the extent you will feel this way **over the future**	**Very slightly or not at all**	**A little**	**Moderately**	**Quite a bit**	**Extremely**
1	Interested	1	2	3	4	5
2	Distressed	1	2	3	4	5
3	Excited	1	2	3	4	5
4	Upset	1	2	3	4	5
5	Strong	1	2	3	4	5
6	Guilty	1	2	3	4	5
7	Scared	1	2	3	4	5
8	Hostile	1	2	3	4	5
9	Enthusiastic	1	2	3	4	5
10	Proud	1	2	3	4	5
11	Irritable	1	2	3	4	5
12	Alert	1	2	3	4	5
13	Ashamed	1	2	3	4	5
14	Inspired	1	2	3	4	5
15	Nervous	1	2	3	4	5
16	Determined	1	2	3	4	5
17	Attentive	1	2	3	4	5
18	Jittery	1	2	3	4	5
19	Active	1	2	3	4	5
20	Afraid	1	2	3	4	5

APPENDIX G. PSS

For each question please choose from the following alternatives:

0 – never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

_____ l. In the last month, how often have you been upset because of something that happened unexpectedly?

_____ 2. In the last month, how often have you felt that you were unable to control the

important things in your life?

_____ 3. In the last month, how often have you felt nervous and stressed?

_____ 4. In the last month, how often have you felt confident about your ability to handle your personal problems?

_____ 5. In the last month, how often have you felt that things were going your way?

_____ 6. In the last month, how often have you found that you could not cope with

all the things that you had to do?

_____ 7. In the last month, how often have you been able to control irritations in

your life?

_____ 8. In the last month, how often have you felt that you were on top of things?

_____ 9. In the last month, how often have you been angered because of things that

happened that were outside of your control?

_____ 10. In the last month, how often have you felt difficulties were piling up so high that

you could not overcome them?

APPENDIX H. SCS-R

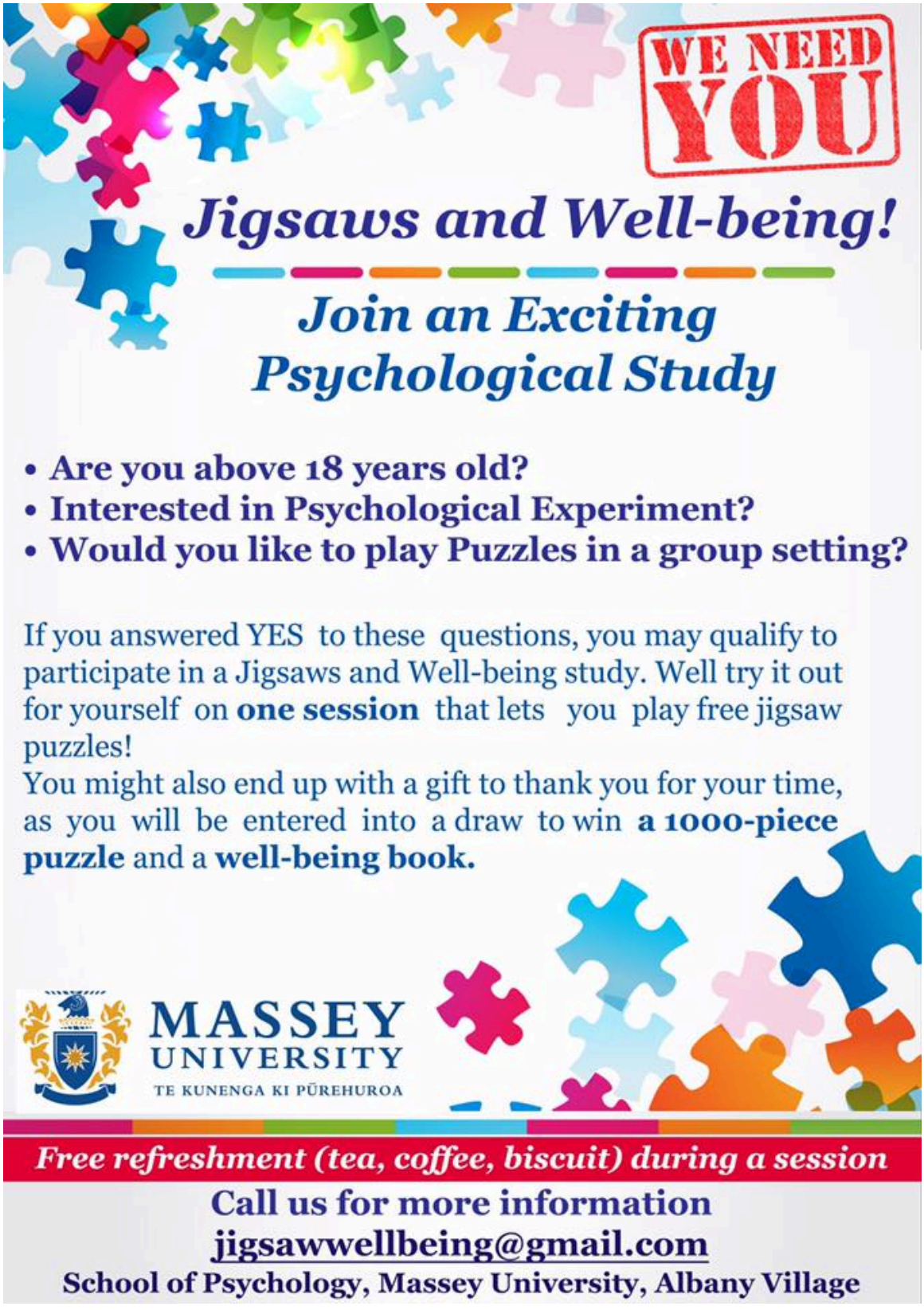
Please answer the following questions about yourself by writing the number in front of each question, based on the following scale:

3 = a lot like me
2 = somewhat like me
1 = a little like me
0 = not like me at all

Please be honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers.

1. I am always trying to figure myself out
2. I think about myself a lot
3. I often daydream about myself
4. I never take a hard look at myself
5. I generally pay attention to my inner feelings
6. I am constantly thinking about my reasons for doing things
7. Before I leave my house, I check how I look
8. I am quick to notice changes in my mood
9. I know the way my mind works when I work through a problem

APPENDIX I. Recruitment Poster/ Flyer



APPENDIX J. Email Version of the Recruitment

Dear colleagues,

I am a PhD candidate based on Auckland campus. I am looking for participants to take part in my research on jigsaws and well-being.

The main aim of the project is to understand the relationship between playing jigsaws and well-being in different people. It is hoped that the exploration of activities which have a direct effect on mind and well-being can help to treat a variety of physical and psychological conditions.

The study consists of completing an on-line survey and then attending one session at the Albany Campus of Massey University, Auckland to do jigsaw puzzles for free and complete a questionnaire. Refreshments (tea, coffee, biscuits) will be provided along with entry into a 1000-piece puzzle and a well-being book for all participants who attend.

Please contact me to arrange a suitable time on

jigsawwellbeing@gmail.com

Thanks

Mona Ghanbari

APPENDIX K. Invitation to Jigsaw Session

Hello,

Thanks for being interested in participating in our Psychological Research, 'Jigsaw and Well-being'.

This is to confirm we have received your email.

The progress of this research is going to be this order:

1. Please choose one of the best matches with your availability for playing jigsaw in group setting (doodle link, need to click on participate and choose your suit date and time)
2. After receiving your chosen date and time, we will send you a link to the online survey and would appreciate if you complete some questionnaires before participating in jigsaw session. (It will take approximately 20 minutes of your time)
3. After filling in online survey, you will receive an invitation for an interesting jigsaw session in the school of psychology, Massey University, Albany village.

Thanks in advance for your time and collaboration with this psychological research.

Look forward to hearing from you.

Kind Regards

Mona Ghanbari

PhD Candidate in Psychology

Massey University, Albany Campus

APPENDIX L. Acknowledgment Email

Hi (Name),

We acknowledge receipt of your questionnaires for our Jigsaw and Well-being research project and sincerely appreciate your time and interest.

Now we are pleased to invite you for a jigsaw session at your chosen (date, time) in the school of psychology, Massey University (the address with google map is attached). This session will run for approximately 1.5 hours. It is going to be an informal session with 4 other participants. Let's have fun and play jigsaws! As you are aware, at the end of this session, you will be asked to fill in our questionnaires again, and we will provide some refreshments at this time.

We look forward to having you here.

Many thanks

Mona Ghanbari

PhD Candidate in Psychology

Massey University, Albany Campus

APPENDIX M. A Summary of Jigsaw's History

Hi everyone,

thanks for accepting our invitation and participating in the research of jigsaw and well-being. At first I would like to talk about the history of jigsaws. The origins of jigsaw puzzles go back to the 1760s when European map makers pasted maps onto wood and cut them into small pieces. The "dissected map" has been a successful educational toy ever since. Many students still learn geography by playing with puzzle maps of the world. The eighteenth-century inventors of jigsaw puzzles would be amazed to see the transformations of the last 230 years. The jigsaw puzzles have moved from lessons to entertainment, showing diverse subjects like animals, nursery rhymes, and modern tales of super heroes. But the biggest surprise for the early puzzle makers would be how adults have embraced puzzling over the last century. (short benefits of jigsaw: Human mind has two separate hemispheres or lobes called right and left-brain with each one dealing in different functions. Right brain deals with emotions and performs tasks holistically while the left-brain functions in linear fashion. When you are able to use both the sides of the brain, you will find that your mind power is harnessed to its best and gets better. Jigsaw puzzle helps you exercise both the parts of your brain).

Well, now we are here to play jigsaws together. There is no winner or loser, so be relaxed and just enjoy it. Let's start!

APPENDIX N

Table A

The Means and Standard Deviations of Applied Mindfulness Scale in Experienced and Non-Experienced Participants for the Passive Control, Active control and Experimental Groups in Study 1

AMPS	N	Minimum	Maximum	Mean	Std. Deviation
AMPS1 - P.CTRL $_{exp}$	9	20	43	33.89	8.007
AMPS2 - P.CTRL $_{exp}$	9	19	45	35.00	8.456
AMPS1 - P.CTRL $_{non\text{-}exp}$	11	22	38	31.09	4.700
AMPS2 - P.CTRL $_{non\text{-}exp}$	11	20	40	31.09	5.088
AMPS1 - A.CTRL $_{exp}$	10	16	48	30.20	9.496
AMPS2 - A.CTRL $_{exp}$	10	20	52	35.00	10.022
AMPS1 - A.CTRL $_{non\text{-}exp}$	10	30	39	32.90	2.998
AMPS2 - A.CTRL $_{non\text{-}exp}$	10	30	43	35.60	3.950
AMPS1 - EXP $_{exp}$	9	29	48	37.33	5.679
AMPS2 - EXP $_{exp}$	9	34	49	42.11	5.011
AMPS1 - EXP $_{non\text{-}exp}$	11	18	48	34.91	8.837
AMPS2 - EXP $_{non\text{-}exp}$	11	29	50	42.55	6.346

Note. AMPS 1= AMPS scores in pretest, AMPS 2= AMPS scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non\text{-}exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non\text{-}exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non\text{-}exp}$= Non-experienced participants in the experimental group.

APPENDIX O

Table B

The Means and Standard Deviations of Five Facet of Mindfulness Questionnaire in Experienced and Non-Experienced Participants for the Passive Control, Active control and Experimental Groups in Study 1

FFMQ	N	Minimum	Maximum	Mean	Std. Deviation
FFMQ1 - P.CTRL $_{exp}$	9	87	136	117.67	14.248
FFMQ2 - P.CTRL $_{exp}$	9	90	140	117.89	14.461
FFMQ1 - P.CTRL $_{non\text{-}exp}$	11	91	133	114.55	13.501
FFMQ2 - P.CTRL $_{non\text{-}exp}$	11	90	132	115.55	12.887
FFMQ1 - A.CTRL $_{exp}$	10	96	132	114.10	9.327
FFMQ2 - A.CTRL $_{exp}$	10	100	140	118.40	10.554
FFMQ1 - A.CTRL $_{non\text{-}exp}$	10	114	134	120.30	5.945
FFMQ2 - A.CTRL $_{non\text{-}exp}$	10	120	137	125.40	4.971
FFMQ1 - EXP $_{exp}$	9	102	123	114.67	8.155
FFMQ2 - EXP $_{exp}$	9	114	165	136.11	17.751
FFMQ1 - EXP $_{non\text{-}exp}$	11	95	136	119.00	13.587
FFMQ2 - EXP $_{non\text{-}exp}$	11	118	162	139.00	14.819

Note. FFMQ 1= FFMQ scores in pretest, FFMQ 2= FFMQ scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non\text{-}exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non\text{-}exp}$=Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non\text{-}exp}$= Non-experienced participants in the experimental group.

APPENDIX P

Table C

The Means and Standard Deviations of Self Consciousness Scale-Revised in Experienced and Non-Experienced Participants for the Passive Control, Active control and Experimental Groups in Study 1

SCS-R	N	Minimum	Maximum	Mean	Std. Deviation
SCS-R1 - P.CTRL $_{exp}$	9	6	20	15.44	4.503
SCS-R2 - P.CTRL $_{exp}$	9	7	21	15.78	4.764
SCS-R1 - P.CTRL $_{non\text{-}exp}$	11	12	20	15.27	2.724
SCS-R2 - P.CTRL $_{non\text{-}exp}$	11	12	24	15.27	3.524
SCS-R1 - A.CTRL $_{exp}$	10	6	22	13.80	4.367
SCS-R2 - A.CTRL $_{exp}$	10	10	26	18.20	4.315
SCS-R1 - A.CTRL $_{non\text{-}exp}$	10	5	18	13.20	3.645
SCS-R2 - A.CTRL $_{non\text{-}exp}$	10	11	21	16.70	2.983
SCS-R1 - EXP $_{exp}$	9	10	23	13.78	4.658
SCS-R2 - EXP $_{exp}$	9	14	25	19.78	3.768
SCS-R1 - EXP $_{non\text{-}exp}$	11	7	24	13.91	4.253
SCS-R2 - EXP $_{non\text{-}exp}$	11	14	28	20.27	4.077

Note. SCS-R 1= SCS-R scores in pretest, SCS-R 2= SCS-R scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non\text{-}exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non\text{-}exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non\text{-}exp}$= Non-experienced participants in the experimental group.

APPENDIX Q

Table D

The Means and Standard Deviations of Positive Affect questionnaire in Experienced and Non-Experienced Participants for the Passive Control, Active control and Experimental Groups in Study 1

PA	N	Minimum	Maximum	Mean	Std. Deviation
PA1 - P.CTRL $_{exp}$	9	23	39	31.56	5.388
PA2 - P.CTRL $_{exp}$	9	26	40	33.22	5.044
PA1 - P.CTRL $_{non\text{-}exp}$	11	23	44	35.91	6.472
PA2 - P.CTRL $_{non\text{-}exp}$	11	24	47	37.55	6.773
PA1 - A.CTRL $_{exp}$	10	22	44	32.20	6.426
PA2 - A.CTRL $_{exp}$	10	25	47	34.30	7.040
PA1 - A.CTRL $_{non\text{-}exp}$	10	26	42	34.30	5.945
PA2 - A.CTRL $_{non\text{-}exp}$	10	29	49	40.10	6.506
PA1 - EXP $_{exp}$	9	28	44	33.22	5.426
PA2 - EXP $_{exp}$	9	32	49	40.56	6.023
PA1 - EXP $_{non\text{-}exp}$	11	26	46	35.91	7.368
PA2 - EXP $_{non\text{-}exp}$	11	33	49	40.73	6.198

Note. PA 1= PA scores in pretest, PA 2= PA scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non\text{-}exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non\text{-}exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non\text{-}exp}$= Non-experienced participants in the experimental group.

APPENDIX R

Table E

The Means and Standard Deviations of Negative Affect questionnaire in Experienced and Non-Experienced Participants for the Passive Control, Active control and Experimental Groups in Study 1

NA	N	Minimum	Maximum	Mean	Std. Deviation
NA1 - P.CTRL $_{exp}$	9	22	32	26.44	3.395
NA2 - P.CTRL $_{exp}$	9	20	33	24.22	4.265
NA1 - P.CTRL $_{non-exp}$	11	22	37	30.64	5.836
NA2 - P.CTRL $_{non-exp}$	11	20	36	28.27	5.951
NA1 - A.CTRL $_{exp}$	10	25	33	29.90	2.726
NA2 - A.CTRL $_{exp}$	10	22	31	26.90	3.695
NA1 - A.CTRL $_{non-exp}$	10	23	38	30.10	4.818
NA2 - A.CTRL $_{non-exp}$	10	19	33	24.00	4.472
NA1 - EXP $_{exp}$	9	21	33	28.22	4.604
NA2 - EXP $_{exp}$	9	16	30	22.78	5.495
NA1 - EXP $_{non-exp}$	11	23	35	29.18	4.167
NA2 - EXP $_{non-exp}$	11	16	29	23.45	4.634

Note. NA 1= NA scores in pretest, NA 2= NA scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.

APPENDIX S

Table F

The Means and Standard Deviations of Perceived Stress Scale in Experienced and Non-Experienced Participants for the Passive Control, Active control and Experimental Groups in Study 1

PSS	N	Minimum	Maximum	Mean	Std. Deviation
PSS1 - P.CTRL $_{exp}$	9	49	70	59.89	7.356
PSS2 - P.CTRL $_{exp}$	9	15	25	21.56	2.963
PSS1 - P.CTRL $_{non\text{-}exp}$	11	42	71	59.18	10.610
PSS2 - P.CTRL $_{non\text{-}exp}$	11	15	25	20.64	3.443
PSS1 - A.CTRL $_{exp}$	10	48	68	58.20	5.453
PSS2 - A.CTRL $_{exp}$	10	12	22	16.60	2.989
PSS1 - A.CTRL $_{non\text{-}exp}$	10	55	70	62.60	5.147
PSS2 - A.CTRL $_{non\text{-}exp}$	10	13	23	18.80	3.120
PSS1 - EXP $_{exp}$	9	50	69	62.56	5.659
PSS2 - EXP $_{exp}$	9	11	22	15.78	3.962
PSS1 - EXP $_{non\text{-}exp}$	11	47	77	61.45	7.660
PSS2 - EXP $_{non\text{-}exp}$	11	12	30	16.91	5.088

Note. PSS 1= PSS scores in pretest, PSS 2= PSS scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non\text{-}exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non\text{-}exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non\text{-}exp}$= Non-experienced participants in the experimental group.

APPENDIX T

Table G

The Means and Standard Deviations of Applied Mindfulness Scale in Experienced and Non-Experienced Participants for the Passive control, Active control and Experimental Groups in Study 2

AMPS	N	Minimum	Maximum	Mean	Std. Deviation
AMPS1 - P.CTRL $_{exp}$	4	35	44	39.50	3.697
AMPS2 - P.CTRL $_{exp}$	4	36	43	39.50	2.887
AMPS1 - P.CTRL $_{non-exp}$	16	23	46	36.19	6.358
AMPS2 - P.CTRL $_{non-exp}$	16	23	45	36.19	6.544
AMPS1 - A.CTRL $_{exp}$	2	38	43	40.50	3.536
AMPS2 - A.CTRL $_{exp}$	2	38	42	40.00	2.828
AMPS1 - A.CTRL $_{non-exp}$	18	23	45	34.28	6.229
AMPS2 - A.CTRL $_{non-exp}$	18	20	40	31.33	5.931
AMPS1 - EXP $_{exp}$	5	36	43	39.20	2.588
AMPS2 - EXP $_{exp}$	5	37	45	42.20	3.271
AMPS1 - EXP $_{non-exp}$	15	21	49	34.33	8.550
AMPS2 - EXP $_{non-exp}$	15	27	51	38.93	8.084

Note. AMPS 1= AMPS scores in pretest, AMPS 2= AMPS scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.

APPENDIX U

Table H

The Means and Standard Deviations of Five Facet of Mindfulness Questionnaire in Experienced and Non-Experienced Participants for the Passive control, Active control and Experimental Groups in Study 2

FFMQ	N	Minimum	Maximum	Mean	Std. Deviation
FFMQ1 - P.CTRL $_{exp}$	4	125	136	130.50	4.933
FFMQ2 - P.CTRL $_{exp}$	4	126	140	132.25	5.909
FFMQ1 - P.CTRL $_{non-exp}$	16	90	128	114.50	10.708
FFMQ2 - P.CTRL $_{non-exp}$	16	91	132	115.06	10.939
FFMQ1 - A.CTRL $_{exp}$	2	140	142	141.00	1.414
FFMQ2 - A.CTRL $_{exp}$	2	140	140	140.00	0.000
FFMQ1 - A.CTRL $_{non-exp}$	18	100	139	124.17	10.159
FFMQ2 - A.CTRL $_{non-exp}$	18	96	135	120.28	10.208
FFMQ1 - EXP $_{exp}$	5	134	142	137.60	3.286
FFMQ2 - EXP $_{exp}$	5	137	142	140.20	2.168
FFMQ1 - EXP $_{non-exp}$	15	107	133	121.07	6.442
FFMQ2 - EXP $_{non-exp}$	15	112	141	127.60	7.651

Note. FFMQ 1= FFMQ scores in pretest, FFMQ 2= FFMQ scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.

APPENDIX V

Table I

The Means and Standard Deviations of Self Consciousness Scale-Revised in Experienced and Non-Experienced Participants for the Passive control, Active control and Experimental Groups in Study 2

SCS-R	N	Minimum	Maximum	Mean	Std. Deviation
SCS-R1 -P.CTRL $_{exp}$	4	13	21	16.75	3.304
SCS-R2 -P.CTRL $_{exp}$	4	14	21	16.75	3.096
SCS-R1 -P.CTRL $_{non-exp}$	16	9	22	16.56	4.560
SCS-R2 -P.CTRL $_{non-exp}$	16	11	23	17.50	3.864
SCS-R1 -A.CTRL $_{exp}$	2	13	22	17.50	6.364
SCS-R2 -A.CTRL $_{exp}$	2	13	22	17.50	6.364
SCS-R1 -A.CTRL $_{non-exp}$	18	10	24	15.89	3.546
SCS-R2 -A.CTRL $_{non-exp}$	18	11	25	16.44	3.552
SCS-R1 - EXP $_{exp}$	5	11	17	13.80	2.588
SCS-R2 - EXP $_{exp}$	5	13	24	18.00	3.937
SCS-R1 - EXP $_{non-exp}$	15	7	21	16.27	3.674
SCS-R2 - EXP $_{non-exp}$	15	11	22	18.40	3.397

Note. SCS-R 1= SCS-R scores in pretest, SCS-R 2= SCS-R scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.

APPENDIX W

Table J

The Means and Standard Deviations of Positive Affect questionnaire in Experienced and Non-Experienced Participants for the Passive control, Active control and Experimental Groups in Study 2

PA	N	Minimum	Maximum	Mean	Std. Deviation
PA1 - P.CTRL $_{exp}$	4	32	39	36.75	3.304
PA2 - P.CTRL $_{exp}$	4	31	40	37.00	4.082
PA1 - P.CTRL $_{non-exp}$	16	29	43	35.94	4.155
PA2 - P.CTRL $_{non-exp}$	16	33	44	37.75	3.768
PA1 - A.CTRL $_{exp}$	2	31	36	33.50	3.536
PA2 - A.CTRL $_{exp}$	2	29	34	31.50	3.536
PA1 - A.CTRL $_{non-exp}$	18	26	41	35.06	4.123
PA2 - A.CTRL $_{non-exp}$	18	22	40	32.11	4.351
PA1 - EXP $_{exp}$	5	31	38	34.20	2.775
PA2 - EXP $_{exp}$	5	36	41	38.20	1.924
PA1 - EXP $_{non-exp}$	15	20	43	33.33	6.114
PA2 - EXP $_{non-exp}$	15	30	44	36.47	5.153

Note. PA 1= PA scores in pretest, PA 2= PA scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.

APPENDIX X

Table K

The Means and Standard Deviations of Negative Affect questionnaire in Experienced and Non-Experienced Participants for the Passive control, Active control and Experimental Groups in Study 2

NA	N	Minimum	Maximum	Mean	Std. Deviation
NA1 - P.CTRL $_{exp}$	4	27	41	34.50	5.802
NA2 - P.CTRL $_{exp}$	4	27	41	33.50	5.745
NA1 - P.CTRL $_{non-exp}$	16	22	37	29.31	4.701
NA2 - P.CTRL $_{non-exp}$	16	20	36	27.69	5.016
NA1 - A.CTRL $_{exp}$	2	34	36	35.00	1.414
NA2 - A.CTRL $_{exp}$	2	34	36	35.00	1.414
NA1 - A.CTRL $_{non-exp}$	18	27	40	33.78	3.782
NA2 - A.CTRL $_{non-exp}$	18	27	40	36.33	3.985
NA1 - EXP $_{exp}$	5	24	35	30.60	5.225
NA2 - EXP $_{exp}$	5	24	33	28.80	3.701
NA1 - EXP $_{non-exp}$	15	19	40	30.67	5.715
NA2 - EXP $_{non-exp}$	15	14	39	27.93	6.147

Note. NA 1= NA scores in pretest, NA 2= NA scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.

APPENDIX Y

Table L

The Means and Standard Deviations of Perceived Stress Scale in Experienced and Non-Experienced Participants for the Passive control, Active control and Experimental Groups in Study 2

PSS	N	Minimum	Maximum	Mean	Std. Deviation
PSS1 - P.CTRL $_{exp}$	4	16	25	20.50	4.203
PSS2 - P.CTRL $_{exp}$	4	15	25	19.50	4.435
PSS1 - P.CTRL $_{non-exp}$	16	13	27	21.00	3.596
PSS2 - P.CTRL $_{non-exp}$	16	15	27	21.06	3.172
PSS1 - A.CTRL $_{exp}$	2	63	70	66.50	4.950
PSS2 - A.CTRL $_{exp}$	2	19	23	21.00	2.828
PSS1 - A.CTRL $_{non-exp}$	18	16	75	25.89	17.088
PSS2 - A.CTRL $_{non-exp}$	18	18	26	22.17	2.256
PSS1 - EXP $_{exp}$	5	20	24	21.80	1.483
PSS2 - EXP $_{exp}$	5	15	21	18.20	2.168
PSS1 - EXP $_{non-exp}$	15	15	25	20.60	2.613
PSS2 - EXP $_{non-exp}$	15	12	22	18.20	2.678

Note. PSS 1= PSS scores in pretest, PSS 2= PSS scores in posttest, P.CTRL $_{exp}$= Experienced participants in the passive control group, P.CTRL $_{non-exp}$= Non-experienced participants in the passive control group, A.CTRL $_{exp}$= Experienced participants in the active control group, A.CTRL $_{non-exp}$= Non-experienced participants in the active control group, EXP $_{exp}$= Experienced participants in the experimental group, EXP $_{non-exp}$= Non-experienced participants in the experimental group.