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Sara Trovão dos Santos

UNDERSTANDING AND WORKING WITH SHAME MEMORIES: THE EFFECTS OF A BRIEF MINDFULNESS INTERVENTION

Dissertação no âmbito do Mestrado Integrado em Psicologia, Especialização em Psicologia Clínica e da Saúde, Subespecialização em Intervenções Cognitivo-Comportamentais nas Perturbações Psicológicas e Saúde, orientada pelas Professora Doutora Maria do Céu Salvador e Professora Doutora Marcela Matos e apresentada à Faculdade de Psicologia e Ciências da Educação.

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FACULDADE DE PSICOLOGIA E DE CIÊNCIAS DA EDUCAÇÃO
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“In the name of love,
What more in the name of love”
U2

Understanding and Working with Shame Memories: The Effects of a Brief Mindfulness Intervention

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Abstract

Shame has been conceptualized as a self-conscious negative emotion with evolutionary purposes, functioning as a defensive submissive strategy to feel safe and accepted by the social group. Previous studies have provided evidence that some shame experiences have trauma-like characteristics and become central to one's self-identity and life narrative. Shame and self-criticism have been positively associated with psychopathology, and negatively correlated with mindfulness. As such, mindfulness-based interventions emerged as a possible strategy to alleviate the impact of shame memories, as well as to reduce their influence on psychological adjustment and well-being. This investigation main purpose was to evaluate the effect of mindfulness on shame memories and shame, in a Portuguese non-clinical sample. Sixty-eight participants were randomly assigned into two intervention conditions – mindfulness meditation and neutral control. There were three assessment moments. Participants were asked to practice their audio exercise as frequently as possible over the four weeks of the intervention. Results indicated that the mindfulness intervention significantly decreased the negative impact of shame memories over time. Likewise, in comparison to the control group, participants of the experimental group showed greater decreases in psychopathological features and higher improvements in mindfulness competencies, from pre-to-post intervention. Concerning well-being, the majority of outcomes were not significant, although they have followed the expected trend. In conclusion, these findings globally supported the theory underlying this study, indicating the pertinency of using mindfulness to work with shame memories, to increase mindfulness competencies and to improve psychological adjustment and well-being. Other results, limitations, and suggestions to future studies were discussed.

***Keywords*:** shame, traumatic shame memories, psychopathology, well-being, mindfulness.

Resumo

A vergonha tem sido concetualizada como uma emoção autoconsciente negativa com propósitos evolucionários, que funciona como uma estratégia de submissão defensiva para proporcionar a perceção de segurança e aceitação pelo grupo social. Estudos anteriores comprovaram que algumas experiências de vergonha podem ter características traumáticas e podem tornar-se centrais para a identidade e narrativa de vida individuais. A vergonha e o autocriticismo têm sido positivamente associados com a psicopatologia e negativamente correlacionados com o mindfulness. Assim, as intervenções baseadas no mindfulness emergiram como uma possível estratégia para aliviar o impacto das memórias de vergonha, bem como para reduzir a sua influência no ajustamento psicológico e bem-estar. O principal objetivo desta investigação foi avaliar o efeito do mindfulness nas memórias de vergonha e na vergonha, numa amostra não-clínica portuguesa. Os sessenta e oito participantes foram distribuídos aleatoriamente por duas intervenções – meditação de mindfulness e controlo neutro. Houve três momentos de avaliação. Foi pedido aos participantes que praticassem o exercício de áudio o maior número de vezes possível, ao longo das quatro semanas de intervenção. Os resultados indicaram que a intervenção de mindfulness diminuiu significativamente o impacto negativo das memórias de vergonha ao longo do tempo. Do mesmo modo, em comparação com o grupo de controlo, os participantes do grupo experimental evidenciaram diminuições superiores nas medidas de psicopatologia e incrementos maiores nas competências de mindfulness, do início para o fim da intervenção. Em relação ao bem-estar, a maioria dos resultados não foram significativos, embora tenham seguido a tendência esperada. Para concluir, de modo global, os resultados deste estudo corroboraram a teoria subjacente, apontando para a pertinência de utilizar o mindfulness para trabalhar com memórias de vergonha, para aumentar as competências de mindfulness e para melhorar o ajustamento psicológico e bem-estar. Foram discutidos outros resultados, limitações e sugestões para estudos futuros.

***Palavras-chave*:** vergonha, memórias de vergonha traumáticas, psicopatologia, bem-estar, mindfulness.

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Introduction

Shame, Traumatic Shame Memories and Psychopathology

Shame is a self-conscious emotion that arises from our early interactions with significant others and is defined as an intense negative emotion characterised by a perception of global devaluation of the self, functioning as a warning signal for the possibility of being excluded or rejected by the social group (Gilbert, 1998, 2000; Matos et al., 2012; Tangney & Dearing, 2002). According to the evolutionary biopsychosocial model of shame (Gilbert, 1998, 2002, 2007a), evolution shaped us to give importance to the social domain, which includes being motivated to be socially attractive. Therefore, shame emerges as a defensive submissive strategy to feel safe (Matos, Pinto-Gouveia, & Gilbert, 2013), influencing our behaviour in social contexts and interfering with feelings about the self, the sense of self-identity and with feelings about social acceptability and desirability (Gilbert, 1998; Tangney & Dearing, 2002).

Gilbert (2000, 2002, 2003) argued that there are two types of shame: internal and external, that may or may not coexist. External shame relates to how we think we exist in the mind of others, i.e., shame evaluations and feelings are focused on the social and external environmental aspects that we believe could result in rejection or attack by others (Gilbert, 2002, 2003). Internal shame refers to "cognitions and affects that the person has about his/her own attributes, personality characteristics or behaviours" (Gilbert, 2000, pp. 175-176), being related "to negative self-evaluations and self-directed affects" (Gilbert, 2000, p. 176); in internal shame we are both judge and judged (Matos, Pinto-Gouveia, & Gilbert, 2013). In turn, self-criticism is related to an internal shaming process, may also have its origin in early shaming experiences (Castilho et al., 2011; Gilbert, 2005, 2007c) and is considered a transdiagnostic process often associated with psychopathology as a risk factor (Gilbert et al., 2005, 2006; Littleton & Henderson, 2009).

Early shame experiences have an intense emotional texture and can have trauma-like characteristics, eliciting intrusions, hyperarousal, and avoidance symptoms (Matos, Pinto-Gouveia, & Gilbert, 2013; Pinto-Gouveia & Matos, 2011). When traumatic memories are triggered, humans tend to engage in defensive submissive strategies, like shame, in order to feel safe (Matos, Pinto-Gouveia, & Gilbert, 2013). In addition, shame

experiences can have autobiographical memory properties and become central to one's self-identity and life narrative (Matos, Pinto-Gouveia, & Gilbert, 2013; Pinto-Gouveia & Matos, 2011). Noteworthy that phenomenology features of these experiences play a crucial role in how such events become central to one's sense of self and life story (Matos & Pinto-Gouveia, 2012). The centrality of event theory (Berntsen & Rubin, 2006, 2007) states that memories of negative experiences can become central to one's identity, life story, everyday inferences, and future expectations. As such, the higher the centrality of the shame memory, the higher the impact in the individual's identity and life.

Shame and self-criticism are positively associated with psychopathology, namely depression (Gilbert, 2000; Matos, Pinto-Gouveia, & Duarte, 2013; Pinto-Gouveia et al., 2013; Warren et al., 2016), anxiety (Irons & Gilbert, 2005; Shahar, 2015; Tangney et al., 1992), social anxiety disorder (Cox et al., 2004; Gilbert, 2000; Hedman et al., 2013; Matos et al., 2012), post-traumatic stress disorder (Littleton & Henderson, 2009; Matos et al., 2012), eating disorders (Dunkley & Grilo, 2007; Grabhorn et al., 2006), paranoia (Matos, Pinto-Gouveia, & Gilbert, 2013; Mills et al., 2007; Pinto-Gouveia et al., 2013), and personality disorders – specially borderline personality disorder (Gratz et al., 2010; Pinto-Gouveia & Matos, 2011; Shahar, 2015). Likewise, the more central and traumatic shame experiences are to one's identity and life story, the more they influence emotional and cognitive processing, and the higher the shame and self-criticism, the more severe the psychopathology symptoms are (Matos, Pinto-Gouveia, & Gilbert, 2013; Pinto-Gouveia et al., 2013). Several studies have investigated the particular relationship of shame and shame memories with depression and anxiety (e.g., Matos, Pinto-Gouveia, & Costa, 2013; Matos, Pinto-Gouveia, & Gilbert, 2013).

Depressed individuals tend to have negative beliefs about themselves, with dysfunctional attitudes that persist and can be activated by negative mood (Beck, 2008; Scher et al., 2005). Shame memories can influence individuals to see themselves as inferior to others and their tendency to engage in submissive behaviours, contributing to depressive symptoms (Allan & Gilbert, 1995, 1997; Pinto-Gouveia & Matos, 2011). Rumination is related to cognitive reactivity and, through suppression and dissociation, influences emotion regulation processes, mediating the impact of traumatic shame memories with others in depressive symptoms (Huijbers et al., 2012; Matos, Pinto-Gouveia, & Costa, 2013). Nevertheless, the impact on depression is direct if shame

memories have occurred with attachment figures (Matos, Pinto-Gouveia, & Costa, 2013). Anxiety is a very common emotional reaction to a cognitive evaluation of danger (Beck et al., 2005). Problems arise when the cognitive evaluation of danger is skewed, leading to a misinterpretation of the real danger and of the resources needed to deal with them, which result in the emergence of anxiety due to the anticipation of future threat and to the engagement in associated defensive behaviours like shame (American Psychiatric Association, 2014; Beck et al., 2005). Taking a specific anxiety disorder, Social Anxiety Disorder (SAD) has a lifetime prevalence of around 12%, being one of the most prevalent conditions among anxiety disorders (Kessler et al., 2005; National Institute for Health and Care Excellence, 2013; Ruscio, 2008). SAD is characterised by a fear or anxiety about social situations in which individuals are exposed to the possible scrutiny of others (APA, 2014). Shame and social anxiety overlap in some aspects, namely the fact they are both viewed as submissive strategies when the self is vulnerable to the rejection or criticism of others, their focus on the meta-cognitions (how self appears to others), and their self-conscious awareness (Gilbert, 2000; Tracy & Robins, 2004). Furthermore, SAD is especially linked to internal shame, since the major focus is concerned with inadequacies of the self (Matos, Pinto-Gouveia, & Gilbert, 2013). Individuals with SAD have higher levels of shame-proneness (Hedman et al., 2013) and tend to develop shame traumatic memories related to how others see them (Matos et al., 2012).

Well-being, life satisfaction and positive affect

Well-being is a state in which individuals understand their own competences, can cope with stresses of life, can work productively and are capable of contribute to their own community (World Health Organization, 2004), having the resources needed to meet a challenge (Dodge et al., 2012). Two types of well-being are generally distinguished: subjective and psychological. Subjective well-being consists in a cognitive evaluation of life that privileges positive experiences and emotions as well as the avoidance from pain; in other words, it is the result of three correlated components: life satisfaction, experience of positive affect and absence of negative affect (Diener & Suh, 1997; Myers & Diener, 1995). Psychological well-being refers to having a meaningful and fulfilling life and includes six dimensions: self-acceptance, environmental mastery, positive relations with others, purpose in life, personal growth, and autonomy (Kardas et al., 2019; Ryff & Keyes, 1995).

Life satisfaction is globally defined as the evaluation individuals make of their own life and it was conceptualised as the cognitive aspect of subjective well-being (Diener et al., 2003). High levels of life satisfaction have been linked to the perception that major domains of life are going well, and that life is enjoyable, which increases well-being (Budiarto, 2019; Diener et al., 2009). Life satisfaction contributes to an optimal mental functioning, improves work performance, interpersonal relationships and physical/mental health (Diener & Seligman, 2002; Duan & Ho, 2018; Lyubomirsky et al., 2006; Smyth et al., 2017).

Positive affect refers to pleasant moods and emotions, including joy, enthusiasm, confidence, and love, and being characterised by high energy, full concentration and engagement (Acevedo-Mesa et al., 2019; Tirpak et al., 2019). Positive affect is a crucial predictor of life satisfaction (Eid & Larsen, 2008; Kuppens et al., 2008) and an important component of subjective well-being (Diener, 2000). Studies have demonstrated that positive affect is associated with health-related benefits that can increase resilience, problem-solving skills, goal attainment, life satisfaction and well-being (LeBlanc et al., 2019; Tirpak et al., 2019).

Mindfulness

Mindfulness meditation had its origins over 2500 years ago in the Buddhist traditions, but over the past few years it has raised the interest of the scientific community and the general public (Roca et al., 2019). Mindfulness has been defined as "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to things as they are" (Williams et al., 2007, p. 47). It exists as a state or as a dispositional trait and has been conceptualised as a multidimensional construct (Lal & Jayan, 2019). Being mindful allows individuals to observe and describe (attention monitoring) but not to judge and react to the present experience; in other words, it is expected that mindfulness promotes awareness, acceptance, openness, curiosity, (self) compassion, empathy and self-regulation (Baer et al., 2006; Germer et al., 2005; Kabat-Zinn, 1990; Melbourne Academic Mindfulness Interest Group, 2006).

The ability to be mindful can be reached through formal and informal practice. Informal practice includes brief periods of mini-meditation's throughout the day, everyday mindfulness (staying in the present moment and being aware to the full),

mindful eating, and others. Formal practice refers to mindfulness meditation, mindfulness of movement (yoga and mindful walking) and structured programmes (e.g. Mindfulness-Based Stress Reduction/MBSR, Mindfulness-Based Cognitive Therapy/MBCT) (MAMIG, 2006). The relationship between mindfulness practice and its outcomes is dubious, however, it is well stablished that the extent of practice has a positive and significant impact on mindfulness-based interventions (MBI) outcomes (Carmody & Baer, 2008; Parsons et al., 2017; Rosenzweig et al., 2010; Soler et al., 2014).

Research has shown that mindfulness interventions (brief and not brief), in both clinical and non-clinical samples, improved mental and physical health, psychological functioning, subjective and psychological well-being, life satisfaction, positive affect, self-control, emotional regulation, cognitive capacities (attention, memory, executive control), hope, social skills and healthy behaviours (e.g., Bonamo et al. 2015; Canby et al., 2015; Chiesa et al., 2011; Creswell, 2017; Howarth et al., 2019; Lai et al. 2015; McLaughlin et al., 2019; Munoz et al., 2018; Polizzi et al., 2019; Roca et al., 2019). On the other hand, mindfulness has negative correlations with negative affect, destructive emotional responses, depression and self-criticism (e.g., Atkinson & Wade, 2012; Brown & Ryan, 2003; Ramel et al., 2004).

MBI have been successfully used in managing anxiety, depression, social anxiety disorder, stress, obsessive-compulsive disorder, post-traumatic stress disorder, eating disorders, personality disorders, paranoia, familiar issues, substance addictions, insomnia, chronic pain, cancer, fibromyalgia, erectile dysfunction and multiple sclerosis (e.g., Azam et al., 2015; Creswell, 2017; Gonzalez-Voller et al., 2019; Hick & Bien, 2008; Karremans & Papies, 2017; McClintock & Anderson, 2015; Shore et al., 2018).

It is known that there is a negative association between mindfulness and shame (Woods & Proeve, 2014). It is proposed that, since mindfulness promotes an attitude of nonjudging and nonreacting towards experiences, it could contribute to lessen the threatening and upsetting side of negative emotions, the rumination and the overidentification with shame-related thoughts, contrary to what happens in experiences of shame (Bishop et al., 2004; Matos & Pinto-Gouveia, 2010; Proeve et al., 2018; Woods & Proeve, 2014).

Some studies have been conducted to analyse the effects of MBI in various conditions. To mention a few of these studies, MBI has resulted in decreases in shame-proneness but not in external shame in anxiety and depression conditions (Proeve et. al, 2018), and in decreases in shame in borderline personality disorder (Keng & Tan, 2017) and in infertile patients (Galhardo et al., 2013).

The present study

The current study is integrated in a transcultural research project that aims to assess the relative effects of two intervention practices (mindfulness meditation and compassion focused imagery) on reducing the self-reported traumatic qualities and centrality of shame experiences and their impact on psychological adjustment and well-being in a non-clinical sample, across different countries. Bearing in mind the relationship between the aforementioned constructs, it is clear that shame memories are common and often contribute to the development and maintenance of clinical disorders. For this reason, it is important to develop clinical interventions well suited to this subject. Mindfulness is suggested to be effective to deal with shame, however, there is a need to evaluate the pure effect of it on shame memories and shame as well as finding evidence to use mindfulness as a clinical technique. This particular investigation encompasses two major studies, each of them with specific aims, for reasons related to the comprehensibility and organization of this dissertation.

Study 1. *Inter and Intra-Group Effects of a Mindfulness Meditation Intervention Across Time*

This study aimed to assess the effects of a 4-week mindfulness meditation online intervention on participants' subjective experience of shame memories, in a Portuguese non-clinical sample. Additional aims were to assess the impact of the intervention in other variables, such as external shame, self-criticism, social anxiety, anxiety, depression, life satisfaction, positive affect, and mindfulness itself. The results will contribute to better understand how to work with shame memories in a non-clinical population as well as expand scientific knowledge about mindfulness efficacy in general.

H1: Participants in the mindfulness group will report significant decreases in the self-reported traumatic qualities and centrality of the recalled shame experience in comparison to the control group over time.

H2: Individuals of mindfulness group will have significant improvements in life satisfaction and positive affect in comparison to the control group over time.

H3: Participants in the mindfulness condition will report significant less external shame, self-criticism, social anxiety, anxiety, and depression in comparison to the control group over time.

H4: Participants in the mindfulness condition will significantly increase their mindfulness competencies in comparison to the control group over time.

H5: Participants in the mindfulness group will report significant decreases in the self-reported traumatic qualities and centrality of the recalled shame experience from pre-to-post intervention.

H6: Individuals of mindfulness group will have significant improvements in life satisfaction and positive affect from pre-to-post intervention.

H7: Participants in the mindfulness condition will report significant less external shame, self-criticism, social anxiety, anxiety, and depression from pre-to-post intervention.

H8: Participants in the mindfulness condition will significantly increase their mindfulness competencies from pre-to-post intervention.

Study 2. *The Impact of Self-criticism and Depression on Participants' Response to a Mindfulness Meditation Intervention*

Considering the possible impact of self-criticism and depression in how participants may respond to a mindfulness intervention, this study aimed to analyse the effects of the intervention in the experimental group when controlling for baseline values in self-criticism and depression.

H9: Individual differences in self-criticism at baseline will significantly influence how participants respond to the mindfulness intervention.

H10: Individual differences in depression at baseline will significantly influence participants' response to the mindfulness intervention.

Method

Sample

Considering the purpose of this study, we carried out an experimental online study, with participants' age ranging from 18 to 65 years old and with Portuguese nationality (inclusion criteria). Concerning the number of participants, 163 initiated survey at time 1, but only 79 completed it; of these 79, only 68 participants completed the surveys at times 1, 2 and 3.

The sample consisted of 68 participants, of which 46 (67.6%) were female, with a mean age of 22.89 (*SD* = 4.87), and 22 (32.4%) were male, with a mean age of 27.27 (*SD* = 9.58). Of the total sample, 43 (63.24%) participants were college students. Regarding to the marital status of the sample, the majority was single (92.6%) and a minority was married (7.4%). The great majority of the sample had Caucasian ethnicity (95.6%) – the remaining participants had Afro-Descendant (1.5%), Latin-American (1.5%), and Gypsy (1.5%) ethnicities. The average of previous meditation experience was diverse (33.8% had none, 38.2% had minimal, 23.5% had some and only 4.4% had substantial previous experience). No differences were found between genders in age ($t_{(66)} = 2.02$, $p = .053$), ethnicity ($\chi^2_{(3)} = 4.735$, $p = .192$) and occupation ($\chi^2_{(9)} = 13.473$, $p = .142$); however, these differences were found in marital status ($\chi^2_{(1)} = 5.60$, $p = .018$) – suggesting that more females ($M = 1.09$, $SD = .59$) were single, in comparison to males ($M = 1.73$, $SD = 1.58$) –, and in previous meditation experience ($\chi^2_{(3)} = 15.33$, $p = .002$) – which indicates that males ($M = .18$, SD = 1.10) had less experience than females ($M = 2.07$, SD = .74). Phi coefficient for marital status revealed to be small ($\varphi = .29$) and Cramer's V for previous meditation experience revealed to be medium ($\varphi_c = .27$).

Procedure

The current study is integrated in a broader transcultural research project, that includes Portugal (University of Coimbra, research coordination by Dr. Matos) Australia (University of Queensland, research coordination by Dr. Steindl) and United States (University of Iowa State, research coordination by Dr. Gentile). The purpose of the project is to analyse and compare the effectiveness of two different meditation interventions (compassion-focused imagery and mindfulness) on reducing the self-

reported traumatic qualities and centrality of shame experiences in a non-clinical sample across different countries.

This investigation was previously approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra (CEDI, 28th November 2019). The sample was collected through online advertising in social networks. The recruitment occurred between January and May of 2020. After being informed of the procedures and ethical considerations of the study, interested participants provided their informed consent. Participants were then randomly assigned to two conditions: mindfulness meditation (M) and neutral control (C), to allow comparison outcome measures between conditions, in order to avoid the placebo effect or other collateral effects. This randomisation allocation was conducted automatically by the online platform of the study – 39 participants were assigned to the mindfulness meditation condition (experimental group) and the remaining 29 participants were assigned to the neutral control condition (control group).

Participation in this study was fully online, took 4 weeks and had 3 assessment moments: time 1 (T1) corresponded to the beginning of the participation, time 2 (T2) happened after 2 weeks, and time 3 (T3) was the end of the participation. After reading an explanation of the study and what they would be asked to do, participants provided their online informed consent. After that, they completed the first assessment moment survey (T1), that included a sociodemographic data questionnaire, a set of self-report scales, a shame-memory priming, individual questions regarding the shame memory activated, a meditation exercise and questions about the audio. At the end of time 1, participants had access to a brief explanation of the subsequent study procedures and instructions, and received an email thanking them for their participation, providing access to the daily audio exercise, and reminding them of the second set of questionnaires to complete. Two weeks after they completed the first assessment moment, participants received an email (with the corresponding website link) asking them to complete the second assessment moment survey (T2), which consisted in a measure of the daily practice of the audio exercise, a shame memory priming, individual questions about the shame memory recalled and a set of self-report scales (different from time 1 since TPAS and SWLS were excluded). When participants concluded time 2 survey, they received an email thanking them for their participation, giving them access to the resources page and reminding them of their final participation. Four weeks

after time 1, the third assessment moment took place (T3). Participants received another email reminding them to complete the final survey (this email provided the correspondent website link), which included the measure of the daily practice of the audio exercise, the shame memory priming, individual questions regarding the shame memory, and the same set of self-report scales as time 1. At time 3, a full debrief about the study was provided, and participants were given access to the other two audio exercises.

During the 4 weeks of the study, the participants were asked to listen to the correspondent audio exercise once a day. In the participation period, participants received creative and stimulating e-mails in order to promote daily practice.

Measures and Materials

In order to obtain data about age, gender, ethnicity, nationality, marital status, previous meditation experience and occupation, participants filled out a **sociodemographic questionnaire** assessing these variables.

Participants had access to one of two **audio exercises** for a daily practice, of about 13 minutes length. The "**Mindfulness Meditation**" was an adaptation from materials developed for Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 2013), and consisted in the practice of mindfulness of breath and of thoughts. The neutral audio exercise was an excerpt of "**The Voyage of the Beagle**", by Charles Darwin, chosen because of the similar length of the task referring to the other exercise. Both scripts were written by Dr. Steindl and Dr. Matos. For the current study, the scripts were translated to Portuguese and were then recorded by Dr. Matos.

At times 2 and 3, participants were asked to complete a set of questions to **measure their daily practice** of the audio exercise (Matos et al., 2017). This measure assessed practice frequency, the perception of helpfulness of the practice, and the perception of embodiment of the exercises in daily life.

Shame Memory Priming

A **Shame Memory Priming** derived from the Shame Experiences Interview (Matos, 2012; Matos & Pinto-Gouveia, 2006) was conducted, in which participants were given an online brief explanation about the concept of shame, including information about experiencing shame and memories of shame throughout life.

Participants were then asked to recall a situation or an experience from their childhood or adolescence of moderate intensity in which they felt shame. At time 1, after this explanation, participants were asked to answer to **questions about the experience recalled**, in order to clarify the experience and to obtain data about the experience chosen. Still at time 1 of the study, after the participants listened to the audio exercise, they were asked to answer to **questions about the audio and regarding the shame memory**. At times 2 and 3, after recalling the shame memory, participants completed **questions about it**.

Self-report Questionnaires

After participants were given an explanation about the concept of shame and were asked to recall a shame experience from childhood or adolescence, they were instructed to answer the IES-R and CES based on the self-reported traumatic impact and centrality of the remembered shame experience. Only after these two scales were completed, did they have access to the audio exercise. Except these two, all other self-report questionnaires were answered before the shame memory priming.

The **Impact of Event Scale-Revised** (IES-R, Weiss & Marmar, 1997; Portuguese version: Matos et al., 2011) intends to assess current subjective distress for any specific life event, evaluating three specific characteristics related to trauma: intrusion, avoidance and hyperarousal. It is a 22 items self-report scale, rated in a 5-point Likert scale (0 = "Not at all" to 4 = "Extremely"). The original version (Weiss & Marmar, 1997) revealed a three-factor structure, Cronbach's Alphas between .79 and .92 and a good temporal stability. The Portuguese version (Matos et al., 2011) found a single-factor structure with a Cronbach's Alpha of .96, good test-retest reliability and adequate convergent and divergent validities. In the present study the internal consistency of the IES-R was excellent (α = .94 at time 1, α = .94 at time 2, and α = .95 at time 3).

The **Centrality of Event Scale** (CES, Berntsen & Rubin, 2006; Portuguese version: Matos et al., 2010) evaluates the extent to which a memory of a stressful event forms a reference point for personal identity and for the attribution of meaning to other experiences in a person's life. This scale is composed of 20 items, each one rated from 1 ("Totally disagree") to 5 ("Totally agree"), in a 5-point Likert scale. It had an excellent internal consistency in the original study (α = .94) as well as in the Portuguese version

(α = .96). This version of the CES also showed a good temporal consistency, an adequate convergent validity, and a satisfactory discriminant validity. In the current investigation, the CES revealed an excellent internal consistency, with Cronbach's Alpha of .96 at time 1, .97 at time 2, and .97 at time 3.

The **Five Factor Mindfulness Questionnaire** (FFMQ**,** Baer et al., 2006; Portuguese version: Gregório & Pinto-Gouveia, 2011) consists of 39 self-response items answered in a 5-point Likert scale (1 = "Never or very rarely true" to 5 = "Very frequent or always true"), to assess the tendency of an individual to be mindful in daily life. The questionnaire has five different facets that constitute mindfulness as a dispositional quality: "nonjudging", "look", "act with awareness", "describe" and "nonreacting". In its original version (Baer et al., 2006), subscales had an adequate to excellent internal consistency (α ranged from .75 to .91). In the Portuguese version (Gregório & Pinto-Gouveia, 2011), Cronbach's Alphas ranged from .66 to .89. In both versions, convergent and divergent validities were adequate and all facets, except "look", contributed to the prediction of psychopathology (Baer et al., 2006; Gregório & Pinto-Gouveia, 2011). In the present study, FFMQ showed Cronbach's Alphas ranging from .68 to .93 at time 1 (α = .83 regarding to FFMQ total of time 1), from .69 to .93 at time 2 (α = .87 regarding to FFMQ total of time 2), and from .79 to .94 at time 3 (α = .89 regarding to FFMQ total of time 3). The lowest Cronbach's Alphas obtained at times 1, 2 and 3 were all at "nonreacting" facet.

The **Other As Shamer Scale – 2** (OAS2, Matos et al., 2015) is an 8 items self-report questionnaire that was developed to measure the perception of negative judgements about the self in the mind of others, this is, the feeling of external shame. This instrument is answered using a 5-point Likert scale that ranges from 0 ("Never") to 4 ("Almost Always"), in terms of the frequency of shame feelings. In this scale, a higher score corresponds to higher external shame. The Cronbach's Alpha (α = .82) of the OAS2 indicated a high internal consistency. This scale had good concurrent and divergent validities. In this study, the Cronbach's Alpha for OAS-2 was .92 at time 1, .90 at time 2, and .94 at time 3.

The **Forms of Self-Criticizing and Self-Reassuring Scale** (FSCRS, Gilbert et al., 2004; Portuguese version: Castilho & Pinto-Gouveia, 2011) evaluates how people are self-critical and self-reassuring in situations of failure and error. This scale has 21 items answered in a 5-point Likert scale (0 = "I'm nothing like that" to 4 = "I'm

extremely like that"), distributed by 3 factors: the "Inadequate Self" has 10 items and refers to feelings of inadequacy of the self following failure; the "Hated Self" has 3 items and refers to destructive responses directed to the self, characterised by a desire to hurt, persecute or attack the self; and the "Reassuring Self" has 8 items and refers to a positive, warm, comforting and compassionate attitude towards the self when things go wrong. The combination of "Inadequate Self" and "Hated Self" factors provides a measure of self-criticism. In terms of psychometric characteristics, the original version (Gilbert et al., 2004) obtained a Cronbach's Alpha ranging from .86 to .90. In the Portuguese version (Castilho & Pinto-Gouveia, 2011), the internal consistency values obtained ranged from .62 to .89. The Portuguese version, in similarity with the original version, presented a good temporal stability and adequate convergent and discriminative validities. In the present study, we only considered the self-criticism factor, which presented a Cronbach's Alpha of .87 at time 1, .87 at time 2, and .91 at time 3.

The **Depression, Anxiety and Stress Scale** (DASS-21, Lovibond & Lovibond, 1995; Portuguese version: Pais-Ribeiro et al., 2004) consists in 21 items equally distributed for the 3 dimensions evaluated: depression, anxiety and stress. The answers are referred to the previous week and are scored in a 4-point Likert scale (0 = "Didn't apply at me at all" to 3 = "Applied to me most of times"). Lovibond and Lovibond (1995) selected 21 of 42 items in a way that scale scores of the short version could be converted to full scale scores multiplying by two; they obtained a Cronbach's Alpha ranging from .84 to .91, with good convergent and discriminant validities. In the Portuguese version (Pais-Ribeiro et al., 2004), the Cronbach's Alphas ranged from .74 to .85, the convergent validity was good, but the discriminant validity was lower than it was in the original version. In the current study, only the measures "Anxiety" and "Depression" were used. Regarding the "Anxiety" dimension, the internal consistencies obtained were high (α = .84 at time 1, α =.82 at time 2, and α =.86 at time 3). The "Depression" dimension obtained Cronbach's Alpha of .88 at time 1, .84 at time 2, and .88 at time 3.

The **Social Interaction Anxiety Scale** (SIAS, Mattick & Clarke, 1998; Portuguese version: Pinto-Gouveia & Salvador, 2001) is comprised of 19 items based in a 5-point Likert scale ranging from 0 ("Nothing characteristic of me") to 4 ("Extremely characteristic of me") and evaluates the social anxiety felt in the interaction with others. The higher the score, the higher the anxiety in situations of social interaction. The

original version (Mattick & Clarke, 1998) had a Cronbach's Alpha of .90 for a community sample and .93 for a clinical sample. Test-retest reliability was high, and the discriminant validity was good. In the Portuguese version (Pinto-Gouveia & Salvador, 2001), the psychometric characteristics were also good: Cronbach's Alpha of .90, test-retest reliability of .77 and good convergent validity. In the current investigation, the SIAS obtained a Cronbach's Alpha of .93 at time 1, .94 at time 2, and .94 at time 3.

The **Types of Positive Affect Scale** (TPAS, Gilbert et al., 2008; Portuguese version: Pinto-Gouveia et al., 2008) is a self-report instrument that measures the degree to which people experience different types of positive emotions. Respondents are asked to rate words that describe 18 different positive emotions, from 0 ("Not characteristic of me") to 4 ("Very characteristic of me"). Factor analysis of the original study (Gilbert et al., 2008) showed three factors/subscales with acceptable to high internal consistencies (α ranging from .73 to .83). The retest reliability for the "activated" and "safe/content positive affects" was good, but for the "relaxed positive affect" was medium. The convergent validity was satisfactory. In the present study this scale was only filled in surveys of moments 1 and 3 and presented high to excellent internal consistencies, with Cronbach's Alphas ranging from .82 to .90 at time 1, and from .91 to .92 at time 3.

The **Satisfaction With Life Scale** (SWLS, Diener et al., 1985; Portuguese version: Simões, 1992) aims to assess global life satisfaction, included in the various components of subjective well-being, resulting in a multi-item scale to measure this construct as a cognitive-judgmental process. The instrument includes 7 items answered in a 5-point Likert scale ("Disagree a lot" to "Agree a lot"). In the original study (Diener et al., 1985), the internal consistency was high (α = .87), as well as the temporal stability. The Portuguese version (Simões, 1992), reduced the number of options of response from 7 to 5 and obtained a Cronbach's Alpha of .77. In both versions, the convergent and predictive validities were adequate. In the present study, SWLS was only completed in surveys of times 1 and 3 and the internal consistency of this scale was high (α = .84 at time 1 and α = .88 at time 3).

Data analysis

Data was collected via 3 online surveys (times 1, 2 and 3) using the Qualtrics platform. Data was inputted into SPSS program (Statistical Package for the Social Sciences version 22) for statistical analysis.

To assess the adherence to normality in each group, we used the skewness and kurtosis examination of each measure in each time, where the values between -3 and 3 were considered to demonstrate a reasonably normal distribution (Kline, 2005). Outlier's analysis was performed by Cook's Distance (maximum values ≥ 1 were considered to be extreme values). We calculated internal consistency indices for each instrument and respective factors. Cronbach's alpha values < .60 were considered inadmissible, .60 – .69 weak, .70 – .79 acceptable, .80 – .89 high and .90 – 1 excellent (Pestana & Gageiro, 2008).

To analyse demographic variables and variables under study (such as shame memory recalled or practice measures), descriptive statistics were conducted. Independent samples t-test for continuous variables and chi-square for categorical variables were used to assess gender and condition sociodemographic differences in the sample at baseline. The Cohen's criteria (1988) was used to interpret effect size parameter of Phi Coefficient (φ = .10 – small, φ = .30 – medium, φ = .50 – large). To interpret the effect size parameter of Cramer's V, Pallant's criteria (2011) was applied (φ_c = .06 – small, φ_c = .17 – medium, φ_c = .29 – large). Pearson correlations were performed to assess the associations between sociodemographic variables with significant differences by gender with dependent variables. Concerning the magnitude of these correlations, we considered a correlation coefficient less than .20 to show a very low association, .21 to .39 low, .40 to .69 moderate, .70 to .89 high and .90 to 1 excellent (Pestana & Gageiro, 2008). Multivariate ANOVAs were conducted to analyse gender differences in variables under study and to compare control and experimental baselines at these same variables. Taking Marôco's (2010) criteria as reference, we considered η^2p < .05 to demonstrate a small effect, .05 < η^2p < .25 a medium effect, .25 < η^2p < .50 a large effect and η^2p > .50 a very large effect. To compare the two groups in their answers to the questions about the audio, at time 1, independent samples t-tests were used. Independent and paired samples t-test were also performed to assess practice quality measures differences between conditions and between times 2 and 3, respectively. Cohen's criteria (1988) was considered to interpret these effect sizes, in which *d* values between .20 and .50 were considered small, between .50 and .80 medium and over .80 large.

To analyse the differences over the 4 weeks and the interaction effects between the conditions (control or experimental) over time (T1, T2 and T3), mixed between-

within ANOVAs were conducted, in which the Between-Subjects Factor was defined by the condition and the Within-Subjects Variables included all the measures in study by time, separately. Subsequently, with split file by condition, Repeated Measures ANOVAs were performed in order to analyse the when (T1 – T2 – T3) changes occurred for each measure, separately, by condition. Finally, with the purpose of assessing how individual differences in self-criticism and/or depression at baseline might impact participants' response to the mindfulness intervention, Repeated Measures ANOVAs were conducted with each one of these two variables as covariates, separately. To analyse the ANOVAs outcomes, we considered the variance's homogeneity of errors (Levene's Test), the covariance matrices (Box's Test) and the variance's homogeneity between differences obtained across conditions (Mauchly's Test of Sphericity was used – when the null hypothesis was rejected the Lower-Bond estimate was used, which correspond to the lowest value that epsilon can take; Field, 2018). Partial eta squares (η^2p) were calculated to analyse the effect sizes for the main and interaction effects. We considered Marôco (2010) recommendations referred before to assess the effects sizes.

Results

Preliminary Data Analysis

Considering that data was imported from Qualtrics, we did not have random missing values. However, due to an unexpected programming error, some individuals did not answer all the questionnaires at time 1; for that reason, the number of subjects will be different across variables. Item 16 of FFMQ was answered by no one at time 1 due to an informatic error; therefore, we decided to introduce the mean value of each subject at "Describe" factor to fill this item.

The obtained values of skewness ($.033 < |Sk| < 1.751$ for experimental condition and $.004 < |Sk| < 1.610$ for control condition) and kurtosis ($.042 < |Ku| < 2.958$ for experimental condition and $.025 < |Ku| < 2.635$ for control condition) revealed no severe violations to the normal distribution of variables. Additionally, the Cook's distance values obtained showed that outliers were no reason for concern ($.07 <$ Maximum $< .22$). In the homogeneity analysis, almost all measures fulfilled the assumptions; however some did not: concerning Box's Test, this assumption was corroborated for all measures at a significance level of .001; regarding Levene's Test, the null hypothesis was rejected (when $p < .05$) for self-reported traumatic qualities of shame memory at time 3 (IES-R_T3), anxiety at time 3 ($DASS_{Anxiety}$_T3) and nonjudging at time 2 ($FFMQ_{Nonjudge}$_T2).

When sociodemographic differences between conditions at baseline were assessed, significant differences were only found in marital status ($\chi^2_{(1)} = 4.01$, $p = .045$), with a small effect size ($\varphi = .24$) – all participants of the control group were single, in contrast with the experimental group, in which 5 were married. Considering that marital status and previous meditation experience were significantly different between genders, Pearson correlations were performed between these variables and dependent variables. The majority of measures under study did not show a significant correlation with these variables. Concerning marital status, only one significant low correlation between marital status and nonreacting at time 1 ($FFMQ_{Nonreact}$_T1; $r = -.26$, $p = .037$) was obtained. Previous meditation experience had significant low associations at time 1 with external shame (OAS_T1; $r = -.29$, $p = .017$) and with relaxed positive affect ($TPAS_{Relaxed}$_T1; $r = -.37$, $p = .003$). Also, a significant moderate correlation

emerged between previous meditation experience and depression at time 1 ($DASS_{Depression}$_T1; $r = .43$, $p < .001$). Considering the small size of our sample, it was not possible to control the potential effects of these differences. No significant gender differences were found on the variables under study. Also, no differences were found at the baseline comparisons between the two conditions (control and experimental), which shows that both groups were equivalent at baseline.

Descriptive Statistics

Considering the relevance of shame memories recalled characteristics and the need of research in this field, although it was not an established aim of the current study, some descriptive outcomes related to these phenomenology features were explored. We analysed the types of experiences (figure 1), who the shamer was (figure 2), the contexts in which the experiences took place (figure 3), the continuity of the experiences (figure 4) and the mean age of its occurrence ($M = 13.49$, $SD = 3.98$). The emotions associated to the experiences recalled were mostly classified as intense (considering a Likert Scale ranging from 0 = "not intense" to 4 = "very intense", the mean was 2.75, $SD = .97$) and negative (considering a 5-point Likert Scale in which 0 = "very negative" and 4 = "very positive", the mean was 1.06, $SD = .90$). Figure 5 shows the frequency of the emotions experienced. The vividness of the memories was also analysed and participants obtained a mean of 4.26 ($SD = 1.80$), which could indicate that memories were neither very diffuse nor vivid (considering a Likert Scale ranging from 1 = "very vague/diffuse" to 7 = "very vivid/clear"). Finally, in a Likert Scale ranging from 0 ("none") to 10 ("totally") the degree of internal shame felt was relatively high ($M = 7.09$, $SD = 2.67$), as well as the degree of external shame ($M = 7.26$, $SD = 2.25$).

Figure 1.

Pie chart of types of shame memories recalled.

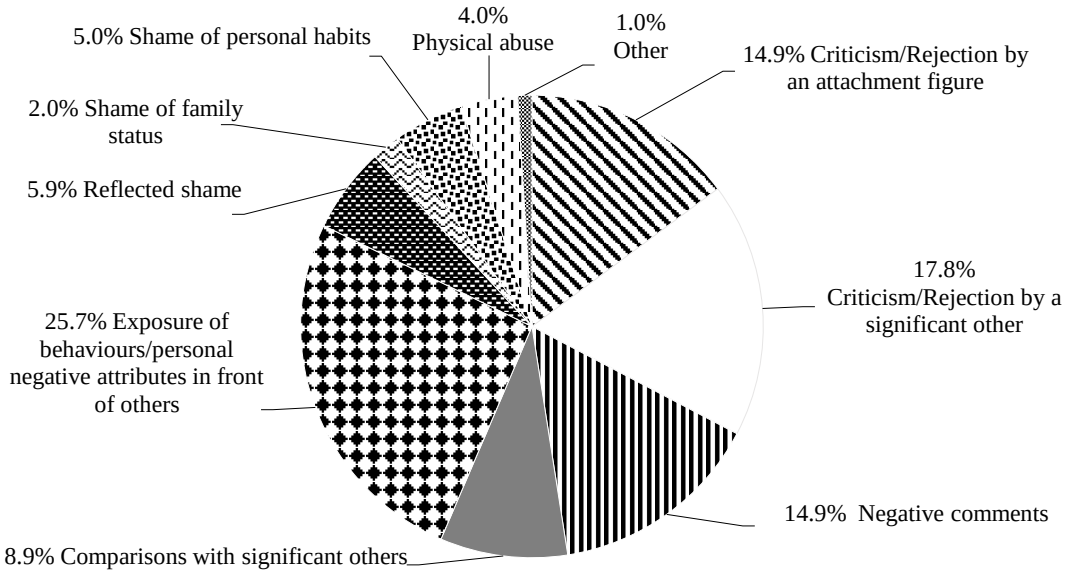


Figure 2.

Pie chart of who the shamer was in the shame memories recalled.

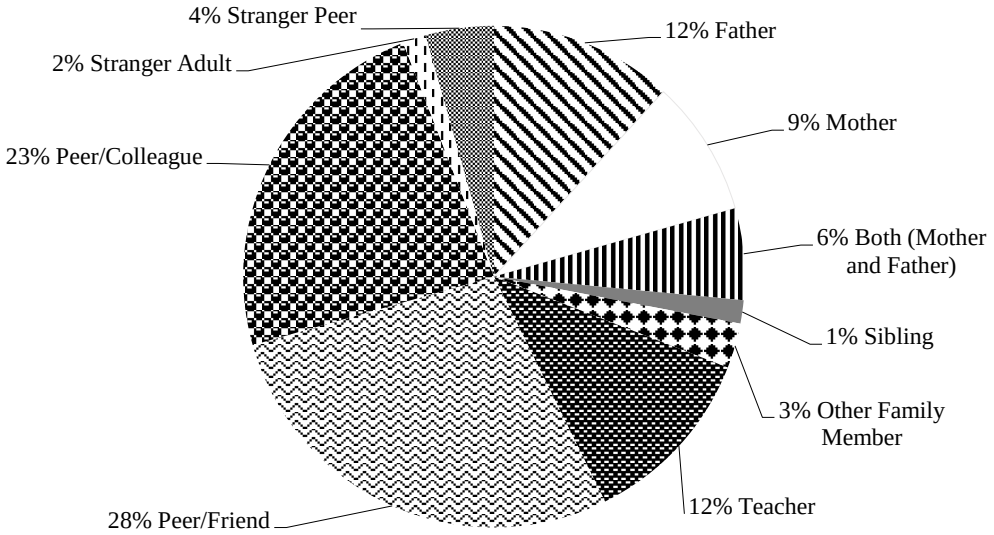


Figure 3.

Pie chart of contexts in which the shame memories recalled took place.

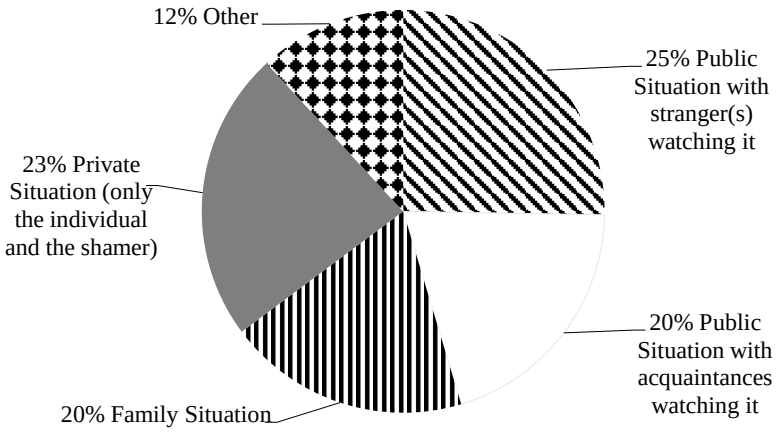


Figure 4.

Pie chart of the continuity of the experiences recalled.

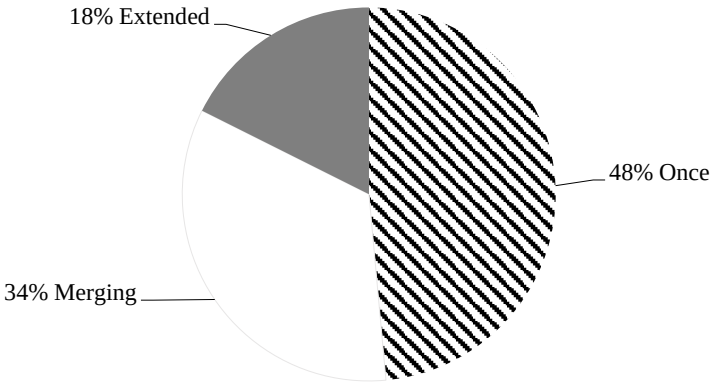
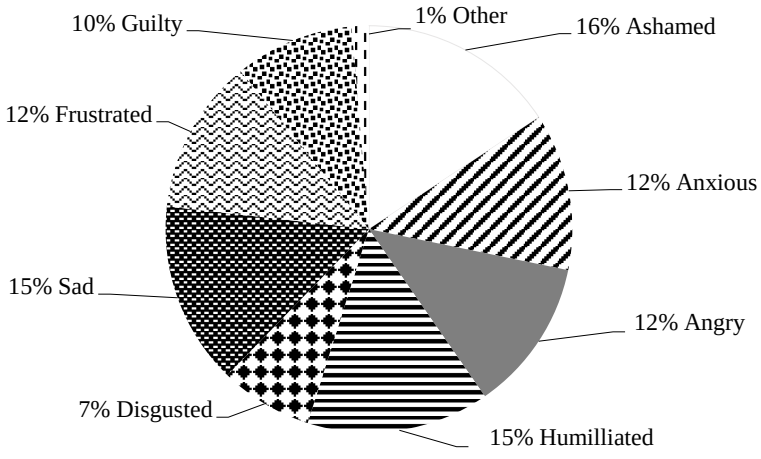


Figure 5.

Pie chart of types of emotions associated with the experiences recalled.



Although it was not our study target, we considered important to explore the individuals' perceptions of the audio, as well as the practice qualities reported by participants, since it could influence the obtained outcomes and also be a relevant topic to discuss them.

Considering the questions about the audio answered by participants in the first assessment moment (in a scale ranging from 1 to 10), namely, the amount heard, the degree of engagement, soothing, boredom and irritation felt, the means in the experimental group were 8.26 (*SD* = 1.85), 6.77 (*SD* = 1.94), 6.97 (*SD* = 1.78), 4.44 (*SD* = 2.28), and 2.00 (*SD* = 1.62), respectively. According to the same order, the control group means were 5.41 (*SD* = 2.16), 4.83 (*SD* = 1.98), 5.90 (*SD* = 2.13), 5.21 (*SD* = 2.06), 2.14 (*SD* = 1.92).

In terms of practice quality measures, if we consider 5 as the maximum possible value to obtain, the participants in the experimental group obtained a mean of 2.67 (*SD* = 1.01) at time 2 and 2.33 (*SD* = .98) at time 3 for practice frequency; a mean of 3.72 (*SD* = .89) at time 2 and 3.62 (*SD* = 1.07) at time 3 for the perception of helpfulness of the practice; and a mean of 3.14 (*SD* = .70) at time 2 and 3.15 (*SD* = 1.03) at time 3 for the perception of embodiment of the practice in daily life. Referring to control group, also considering 5 as the maximum possible value to obtain, the participants of this group had a mean of 2.48 (*SD* = 1.18) at time 2 and 2.17 (*SD* = 1.07) at time 3 for practice frequency; 3.31 (*SD* = .81) at time 2 and 3.45 (*SD* = .83) at time 3 for the perception of helpfulness of the practice; and 2.53 (*SD* = .73) at time 2 and 2.55 (*SD* = .82) at time 3 for the perception of embodiment of practice in daily life.

Practice Qualities Comparisons

Between-Groups Comparisons

Regarding the questions answered about the audio at time 1, significant and large differences between groups emerged for the amount heard ($t_{(66)} = 5.84$, $p < .001$, $d = 1.44$) and level of engagement ($t_{(66)} = 4.04$, $p < .001$, $d = .99$), and a significant medium difference emerged for the level of soothing ($t_{(66)} = 2.27$, $p = .027$, $d = .56$), all of them with the experimental group having higher means.

Comparing experimental and control groups in relation to the practice quality measures, statistically significant differences emerged for embodiment at time 2 ($t_{(66)} =$

3.48, p = .001) and at time 3 ($t_{(66)}$ = 2.59, p = .012), both in favour of the experimental group. The magnitude of the effect was large at time 2 (d = .85) and medium at time 3 (d = .64).

Within-Groups Comparisons

Comparing the practice quality in each group over time (between times 2 and 3), significant differences only emerged for frequency in the experimental group ($t_{(38)}$ = 2.58, p = .014), with a large size effect (d = .84), indicating that practice frequency was higher in the first two weeks when comparing to the final two weeks.

Study 1. Inter and Intra-Group Effects of a Mindfulness Meditation Intervention Across Time

To analyse the main (Time) and interaction (Time x Group) effects, mixed between-within ANOVAs were conducted for each measure. Table 1 summarizes the data about mean's evolution, main effects, and interaction effects in variables across time, for experimental and control groups. Table 2 presents the obtained outcomes of Repeated Measures ANOVA, specifying the moment when changes occurred in each condition. Some graphics were added to complement and illustrate this section (figures 6, 7 and 8).

Concerning significant main effects of time (table 1), these were found for self-reported traumatic qualities of shame memory (IES-R), centrality of shame memory (CES), external shame (OAS-2), self-criticism ($FSCRS_{Self\text{-}criticism}$), social anxiety (SIAS), anxiety ($DASS_{Anxiety}$), safe/content positive affect ($TPAS_{Safe}$), and mindfulness ($FFMQ_{Total}$) – namely, ability to observe ($FFMQ_{Look}$) and nonreacting ($FFMQ_{Nonreact}$). No significant direct effects were found for any other variable.

As reported in table 1, significant interaction effects (time x group) were found for self-reported traumatic qualities of shame memory (IES-R), self-criticism ($FSCRS_{Self\text{-}criticism}$), anxiety ($DASS_{Anxiety}$), depression ($DASS_{Depression}$) and mindfulness ($FFMQ_{Total}$) – namely, ability to observe ($FFMQ_{Look}$) and ability to act with awareness ($FFMQ_{ActAware}$). These significant effects suggest that the outcomes of the intervention were greater when participants were in the mindfulness condition. No significant interaction effects were found for any other variable.

Table 2 summarizes the data regarding the moment when changes occurred for each condition.

The control group showed significant differences for self-reported traumatic qualities of shame memory (IES-R), from time 1 to time 2 and from time 1 to time 3, and for anxiety ($DASS_{Anxiety}$), from time 1 to time 2, both with decreases of mean. Along the three assessment moments, the means of centrality of shame memory (CES) and social anxiety (SIAS) have decreased, and the means of depression ($DASS_{Depression}$), life satisfaction (SWLS), safe/content positive affect ($TPAS_{Safe}$), relaxed positive affect ($TPAS_{Relaxed}$), nonreacting ($FFMQ_{Nonreact}$), and mindfulness ($FFMQ_{Total}$) have improved, although these differences were not significant. The activated positive affect ($TPAS_{Activated}$) did not vary over time. The remaining measures did not have a continuous improvement or decrease over the four weeks in the control group.

The experimental group showed more significant differences in the outcome variables across time than the control group (table 2). Significant time effects with significant decreases of means occurred both from time 1 to time 2, from time 1 to time 3 and from time 2 to time 3 for self-reported traumatic qualities of shame memory (IES-R); from time 1 to time 2 and from time 1 to time 3 for centrality of shame memory (CES); and from time 1 to time 3 and from time 2 to time 3 for external shame (OAS-2), self-criticism ($FSCRS_{Self\text{-}criticism}$), social anxiety (SIAS), anxiety ($DASS_{Anxiety}$), and depression ($DASS_{Depression}$). Significant time effects with improvement of means occurred from time 1 to time 3 for safe/content positive affect ($TPAS_{Safe}$); from time 1 to time 2, time 1 to time 3 and time 2 to time 3 for mindfulness ($FFMQ_{Total}$); and from time 1 to time 3 and from time 2 to time 3 for nonjudging ($FFMQ_{Nonjudge}$), ability to act with awareness ($FFMQ_{ActAware}$), and ability to observe ($FFMQ_{Look}$). Nonreacting ($FFMQ_{Nonreact}$) also had a significant time effect from time 1 to time 3 and from time 2 to time 3, but with mean decreasing from time 1 to time 2 and increasing from time 2 to time 3. Although they were not significant, the means of life satisfaction (SWLS) and relaxed positive affect ($TPAS_{Relaxed}$) improved from time 1 to time 3; the mean of ability to describe ($FFMQ_{Describe}$) improved over the 3 times; and the mean of activated positive affect ($TPAS_{Activated}$) decreased from time 1 to time 3.

Table 1. *Means, Standard Deviations (SDs), Main (Time) and Interaction (Time x Group) Effects of the Intervention in the Experimental (Mindfulness Meditation – M) and in the Control (Neutral Control – C) Groups Across Time.*

		M Group		C Group		Time			Time x Group		
Measures	**Time**	**Mean**	**SD**	**Mean**	**SD**	***F***	***p***	η^2**p**	***F***	***p***	η^2**p**
IES-R	1	36.95	18.30	33.00	17.48						
(n_m = 39;	2	22.90	16.35	23.21	18.38	45.88	**<.001**	.410	4.11	**.047**	.059
n_c = 29)	3	12.67	13.37	19.93	19.12						
CES	1	46.00	19.77	40.07	17.56						
(n_m = 39;	2	41.49	19.13	39.14	18.23	6.43	**.002**	.089	1.07	.348	.016
n_c = 29)	3	40.10	18.03	36.86	17.40						
OAS-2	1	8.74	6.14	9.72	7.09						
(n_m = 38;	2	8.24	5.84	8.45	6.23	4.57	**.036**	.066	2.96	.090	.044
n_c = 29)	3	6.47	5.74	9.03	6.91						
$FSCRS_{Self\text{-}criticism}$	1	20.72	8.56	20.44	9.24						
(n_m = 36;	2	19.50	8.09	19.12	8.56	5.34	**.024**	.083	6.60	**.013**	.101
n_c = 25)	3	15.69	8.38	20.32	9.05						
SIAS	1	29.78	14.16	30.74	14.20						
(n_m = 37;	2	28.78	14.96	30.52	14.40	6.57	**.002**	.096	.21	.809	.003
n_c = 27)	3	26.35	16.05	28.37	12.75						
$DASS_{Anxiety}$	1	4.68	4.49	4.33	4.03						
(n_m = 37;	2	4.43	4.34	3.44	3.74	5.48	**.005**	.081	5.78	**.004**	.085
n_c = 27)	3	2.51	3.14	4.00	4.37						
$DASS_{Depression}$	1	5.62	4.27	4.11	3.99						
(n_m = 37;	2	5.59	4.16	4.56	3.84	2.74	.069	.042	6.91	**.001**	.100
n_c = 27)	3	3.38	3.42	4.85	4.58						
$FFMQ_{Nonjudge}$	1	26.61	6.70	25.59	6.28						
(n_m = 38;	2	27.55	5.86	26.22	7.53	3.27	.076	.049	1.50	.225	.023
n_c = 27)	3	29.08	6.55	26.15	7.20						
$FFMQ_{Look}$	1	20.11	5.22	22.37	5.49						
(n_m = 38;	2	21.32	6.11	22.22	5.98	6.81	**.011**	.097	4.85	**.031**	.071
n_c = 27)	3	23.03	6.58	22.59	6.20						
$FFMQ_{ActAware}$	1	25.08	7.79	24.41	6.03						
(n_m = 38;	2	25.87	7.39	23.52	6.74	1.42	.245	.022	3.21	**.043**	.049
n_c = 27)	3	27.08	7.51	23.85	5.98						
$FFMQ_{Describe}$	1	25.08	7.46	25.90	6.10						
(n_m = 38;	2	25.82	7.36	25.89	6.82	2.82	.098	.043	.39	.533	.006
n_c = 27)	3	26.21	8.05	27.00	6.56						
$FFMQ_{Nonreact}$	1	19.79	3.66	19.04	4.24						
(n_m = 38;	2	19.37	3.75	19.48	4.18	5.65	**.020**	.082	3.01	.088	.046
n_c = 27)	3	21.55	4.31	19.67	4.20						
$FFMQ_{Total}$	1	116.66	14.28	117.31	16.86						
(n_m = 38;	2	119.92	15.74	117.33	16.84	11.33	**.001**	.152	5.00	**.029**	.073
n_c = 27)	3	126.95	18.18	119.26	15.34						
SWLS	1	18.11	4.35	19.79	3.12						
(n_m = 37;	3	18.57	4.13	19.96	3.84	1.12	.294	.017	.22	.643	.003
n_c = 28)											
$TPAS_{Relaxed}$	1	14.00	4.26	14.52	5.58						
(n_m = 35;	3	14.60	5.04	15.04	3.78	1.07	.306	.018	.01	.941	.000
n_c = 25)											
$TPAS_{Safe}$	1	9.86	2.72	10.08	3.38						
(n_m = 35;	3	10.66	3.03	10.68	2.80	4.97	**.030**	.079	.10	.751	.002
n_c = 25)											
$TPAS_{Activated}$	1	21.29	4.91	21.28	5.94						
(n_m = 35;	3	20.34	6.48	21.28	5.21	.59	.444	.010	.59	.444	.010
n_c = 25)											

Note. Not all participants completed all questionnaires at time 1, reason why the number of subjects is described for each measure, specifying the number in the experimental group (n_m) and in the control group (n_c). Significant effects are in bold *(*$p < .05$*)*. Measures: self-reported traumatic qualities of shame memory (IES-R), centrality of shame memory (CES), external shame (OAS-2), self-criticism ($FSCRS_{Self\text{-}criticism}$), social anxiety (SIAS), anxiety ($DASS_{Anxiety}$), depression ($DASS_{Depression}$), mindfulness ($FFMQ_{Total}$) – nonjudging (*$FFMQ_{Nonjudge}$*), ability to observe ($FFMQ_{Look}$), ability to act with awareness ($FFMQ_{ActAware}$), ability to describe (*$FFMQ_{Describe}$*) and nonreacting ($FFMQ_{Nonreact}$) –, life satisfaction (SWLS), positive affect – relaxed positive affect ($TPAS_{Relaxed}$), safe/content positive affect ($TPAS_{Safe}$) and activated positive affect (*$TPAS_{Activated}$*).

Table 2. *Mean Differences and Standard Errors (SE) for the Experimental (Mindfulness Meditation – M) and the Control (Neutral Control – C) Groups Across Time.*

Measures	Time		M Group			C Group		
			Mean Difference	**SE**	***p***	**Mean Difference**	**SE**	***p***
IES-R (n_m = 39; n_c = 29)	1	2	14.05	2.65	**<.001**	9.79	2.95	**.002**
	1	3	24.28	3.14	**<.001**	13.07	3.01	**<.001**
	2	3	10.23	2.14	**<.001**	3.28	2.52	.204
CES (n_m = 39; n_c = 29)	1	2	4.51	1.81	**.017**	.93	1.96	.639
	1	3	5.90	1.97	**.005**	3.21	1.71	.071
	2	3	1.39	1.59	.388	2.28	1.43	.124
OAS-2 (n_m = 38; n_c = 29)	1	2	.50	.50	.327	1.28	.80	.123
	1	3	2.26	.63	**.001**	.69	1.01	.500
	2	3	1.76	.48	**.001**	-.59	.79	.464
$FSCRS_{Self\text{-}criticism}$ (n_m = 36; n_c = 25)	1	2	1.22	.94	.201	1.32	1.34	.334
	1	3	5.03	1.08	**<.001**	.12	1.47	.936
	2	3	3.81	.97	**<.001**	-1.20	.76	.127
SIAS (n_m = 37; n_c = 27)	1	2	1.00	1.08	.363	.22	1.26	.861
	1	3	3.43	1.20	**.007**	2.37	1.30	.080
	2	3	2.43	.87	**.008**	2.15	1.46	.153
$DASS_{Anxiety}$ (n_m = 37; n_c = 27)	1	2	.24	.53	.646	.89	.31	**.008**
	1	3	2.16	.58	**.001**	.33	.57	.562
	2	3	1.92	.48	**<.001**	-.56	.59	.351
$DASS_{Depression}$ (n_m = 37; n_c = 27)	1	2	.03	.61	.965	-.44	.68	.517
	1	3	2.24	.52	**<.001**	-.74	.68	.288
	2	3	2.22	.61	**.001**	-.30	.49	.547
$FFMQ_{Nonjudge}$ (n_m = 38; n_c = 27)	1	2	-.95	.77	.224	-.63	1.15	.590
	1	3	-2.47	.81	**.004**	-.56	1.10	.617
	2	3	-1.53	.53	**.006**	.07	.63	.907
$FFMQ_{Look}$ (n_m = 38; n_c = 27)	1	2	-1.211	.65	.069	.15	.67	.827
	1	3	-2.92	.68	**<.001**	-.22	.58	.705
	2	3	-1.71	.47	**.001**	-.37	.46	.425
$FFMQ_{ActAware}$ (n_m = 38; n_c = 27)	1	2	-.79	.61	.207	.89	.92	.341
	1	3	-2.00	.73	**.009**	.56	.78	.482
	2	3	-1.21	.58	**.042**	-.33	.73	.651
$FFMQ_{Describe}$ (n_m = 38; n_c = 27)	1	2	-.73	.61	.236	.02	.80	.984
	1	3	-1.13	.72	.126	-1.10	.78	.174
	2	3	-.40	.46	.394	-1.11	.65	.097
$FFMQ_{Nonreact}$ (n_m = 38; n_c = 27)	1	2	.42	.50	.401	-.44	.61	.471
	1	3	-1.76	.66	**.011**	-.63	.62	.318
	2	3	-2.18	.55	**<.001**	-.19	.33	.579
$FFMQ_{Total}$ (n_m = 38; n_c = 27)	1	2	-3.26	1.37	**.023**	-.02	2.60	.994
	1	3	-10.29	1.86	**<.001**	-1.95	2.52	.447
	2	3	-7.03	1.39	**<.001**	-1.93	1.55	.224
SWLS (n_m = 37; n_c = 28)	1	3	-.46	.34	.184	-.18	.53	.739
$TPAS_{Relaxed}$ (n_m = 35; n_c = 25)	1	3	-.60	.74	.422	-.52	.76	.500
$TPAS_{Safe}$ (n_m = 35; n_c = 25)	1	3	-.80	.37	**.037**	-.60	.54	.274
$TPAS_{Activated}$ (n_m = 35; n_c = 25)	1	3	.94	.81	.250	.00	.91	1.000

Note. Not all participants completed all questionnaires at time 1, reason why the number of subjects is described for each measure, specifying the number in the experimental group (n_m) and in the control group (n_c). Significant effects are in bold *(*$p < .05$*)*. Measures: self-reported traumatic qualities of shame memory (IES-R), centrality of shame memory (CES), external shame (OAS-2), self-criticism ($FSCRS_{Self\text{-}criticism}$), social anxiety (SIAS), anxiety ($DASS_{Anxiety}$), depression ($DASS_{Depression}$), mindfulness ($FFMQ_{Total}$) – nonjudging (*$FFMQ_{Nonjudge}$*), ability to observe ($FFMQ_{Look}$), ability to act with awareness ($FFMQ_{ActAware}$), ability to describe (*$FFMQ_{Describe}$*) and nonreacting ($FFMQ_{Nonreact}$) –, life satisfaction (SWLS), positive affect – relaxed positive affect ($TPAS_{Relaxed}$), safe/content positive affect ($TPAS_{Safe}$) and activated positive affect (*$TPAS_{Activated}$*).

Figure 6. *Interaction Effect (time x group) of the Intervention in the reported External Shame (OAS-2).*

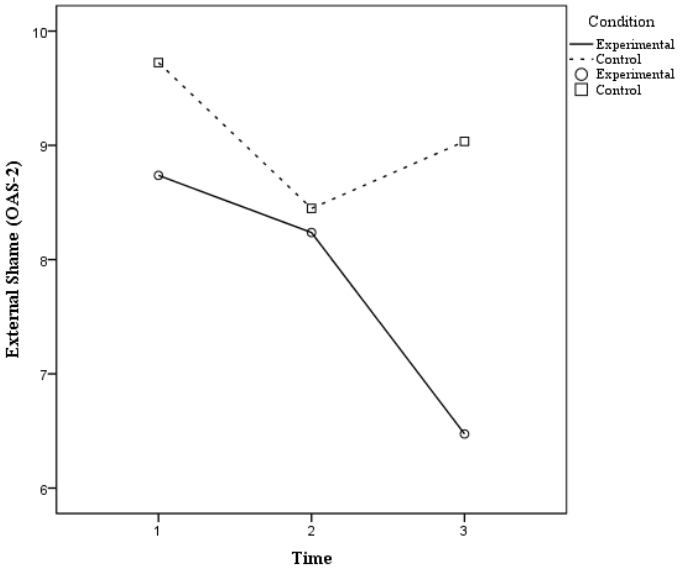


Figure 7. *Interaction Effect (time x group) of the Intervention in the reported Anxiety ($DASS_{Anxiety}$).*

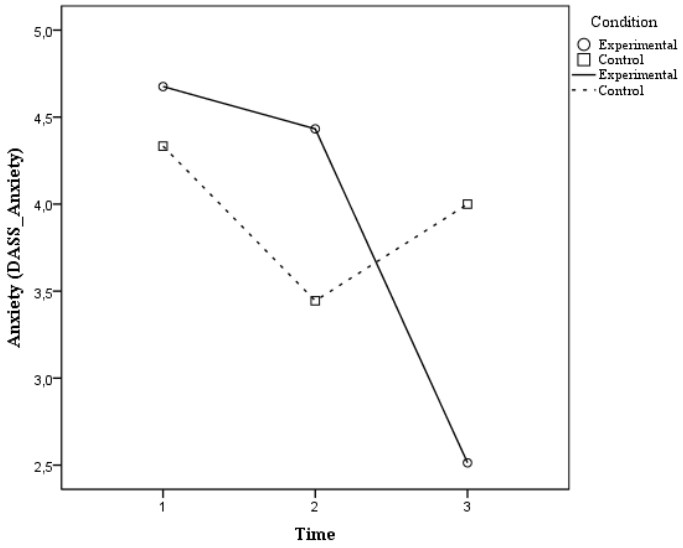
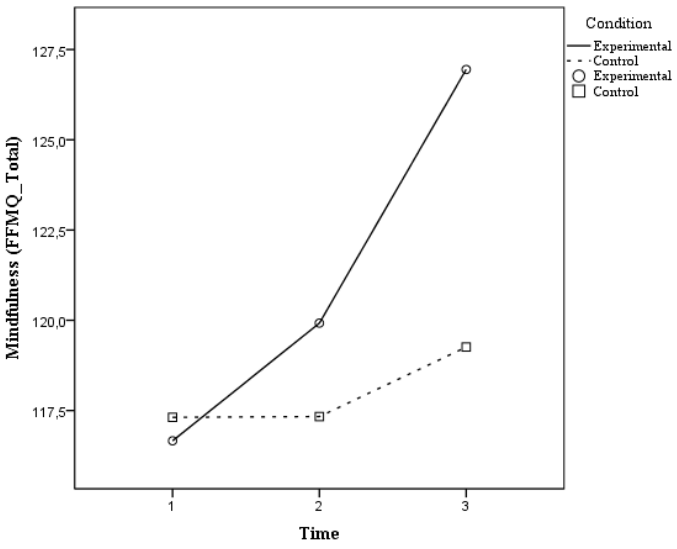


Figure 8. *Interaction Effect (time x group) of the Intervention in the reported Mindfulness ($FFMQ_{Total}$).*



Study 2. The Impact of Self-criticism and Depression on Participants' Response to a Mindfulness Meditation Intervention

To verify if individual differences at baseline in self-criticism and/or in depression, separately, would influence individual's response to the experimental intervention, we compared the outcomes obtained while controlling or not controlling for these variables. Tables 3 and 4 present data of the experimental group regarding means, standard deviations, time main effects when controlling for self-criticism and depression, respectively, and also the interaction effects produced with each covariate over time, separately.

Neither self-criticism nor depression individual differences at baseline have produced statistically significant effects in participant's response to the mindfulness intervention over time (Time x $FSCRS_{Self\text{-}criticism}$_T1 and Time x $DASS_{Depression}$_T1, respectively).

Table 3. *Means, Standard Deviations (SDs), Main (Time) and Interaction (Time x $FSCRS_{Self-criticism}$_T1) Effects of the Intervention in the Experimental Group (Mindfulness Meditation – M) Across Time with Self-criticism ($FSCRS_{Self-criticism}$_T1) as Covariate.*

		M Group		Time			Time x FSCRSSelf-criticism_T1		
Measures	**Time**	**Mean**	**SD**	***F***	***p***	**η^2p**	***F***	***p***	**η^2p**
IES-R (n_m = 36)	1	37.75	18.44	5.94	**.020**	.149	.40	.533	.012
	2	22.56	19.97						
	3	12.28	13.50						
CES (n_m = 36)	1	45.86	20.48	.18	.834	.005	1.88	.160	.052
	2	41.67	19.91						
	3	40.22	18.46						
OAS-2 (n_m = 35)	1	9.00	6.19	.16	.851	.005	1.77	.178	.051
	2	8.54	5.78						
	3	6.66	5.83						
SIAS (n_m = 34)	1	30.91	13.74	.69	.507	.021	.02	.981	.001
	2	29.74	14.61						
	3	27.32	15.86						
$DASS_{Anxiety}$ (n_m = 36)	1	4.75	4.53	1.55	.219	.044	.39	.680	.011
	2	4.56	4.34						
	3	2.58	3.16						
$DASS_{Depression}$ (n_m = 36)	1	5.67	4.32	.29	.753	.008	1.39	.257	.039
	2	5.67	4.20						
	3	3.47	3.42						
$FFMQ_{Nonjudge}$ (n_m = 35)	1	26.40	6.16	.21	.647	.006	.19	.668	.006
	2	27.23	5.46						
	3	28.69	6.13						
$FFMQ_{Look}$ (n_m = 35)	1	20.06	5.26	2.83	.102	.079	.48	.495	.014
	2	21.03	6.16						
	3	22.91	6.78						
$FFMQ_{ActAware}$ (n_m = 35)	1	25.46	7.67	.54	.587	.016	.80	.456	.024
	2	26.34	7.34						
	3	27.31	7.67						
$FFMQ_{Describe}$ (n_m = 35)	1	24.65	7.62	1.82	.186	.052	1.38	.248	.040
	2	25.37	7.47						
	3	25.54	7.91						
$FFMQ_{Nonreact}$ (n_m = 35)	1	19.71	3.76	4.54	**.041**	.121	2.46	.127	.060
	2	19.37	3.73						
	3	21.40	4.40						
$FFMQ_{Total}$ (n_m = 35)	1	116.28	14.81	3.75	.061	.102	.59	.449	.017
	2	119.34	16.10						
	3	125.86	18.36						
SWLS (n_m = 36)	1	18.08	4.40	.12	.727	.004	.06	.812	.002
	3	18.61	4.18						
$TPAS_{Relaxed}$ (n_m = 34)	1	14.12	4.27	.05	.824	.002	.21	.648	.007
	3	14.53	5.10						
$TPAS_{Safe}$ (n_m = 34)	1	9.79	2.74	.20	.655	.006	.08	.777	.003
	3	10.53	2.98						
$TPAS_{Activated}$ (n_m = 34)	1	21.15	4.91	.11	.748	.003	.02	.878	.001
	3	20.09	6.39						

Note. Not all participants completed all questionnaires at time 1, reason why the number of subjects in the experimental group (n_m) is described for each measure. Significant effects are in bold *(*$p < .05$*)*. Measures: self-reported traumatic qualities of shame memory (IES-R), centrality of shame memory (CES), external shame (OAS-2), social anxiety (SIAS), anxiety ($DASS_{Anxiety}$), depression ($DASS_{Depression}$), mindfulness ($FFMQ_{Total}$) – nonjudging (*$FFMQ_{Nonjudge}$*), ability to observe ($FFMQ_{Look}$), ability to act with awareness ($FFMQ_{ActAware}$), ability to describe (*$FFMQ_{Describe}$*) and nonreacting ($FFMQ_{Nonreact}$) –, life satisfaction (SWLS), positive affect – relaxed positive affect ($TPAS_{Relaxed}$), safe/content positive affect ($TPAS_{Safe}$) and activated positive affect (*$TPAS_{Activated}$*).

Table 4. *Means, Standard Deviations (SDs), Main (Time) and Interaction (Time x $DASS_{Depression}\_T1$) Effects of the Intervention in the Experimental Group (Mindfulness Meditation – M) Across Time with Depression ($DASS_{Depression}\_T1$) as Covariate.*

		M Group		Time			Time x DASSDepression_T1		
Measures	**Time**	**Mean**	**SD**	***F***	***p***	**η^2p**	***F***	***p***	**η^2p**
IES-R (n_m = 37)	1	37.19	18.50	11.65	**<.001**	.250	.48	.620	.014
	2	22.59	16.74						
	3	12.03	13.40						
CES (n_m = 37)	1	45.95	20.20	.13	.877	.004	2.64	.078	.070
	2	41.51	19.66						
	3	39.73	18.45						
OAS-2 (n_m = 36)	1	8.75	6.28	1.01	.369	.029	.96	.390	.027
	2	8.31	5.87						
	3	6.50	5.82						
$FSCRS_{Self\text{-}criticism}$ (n_m = 36)	1	20.72	8.56	7.80	**.001**	.187	.60	.550	.017
	2	19.50	8.09						
	3	15.69	8.38						
SIAS (n_m = 35)	1	30.37	13.91	6.05	**.004**	.155	1.73	.186	.050
	2	29.00	15.04						
	3	26.74	15.99						
$DASS_{Anxiety}$ (n_m = 37)	1	4.68	4.49	.97	.384	.027	1.62	.205	.044
	2	4.43	4.34						
	3	2.51	3.14						
$FFMQ_{Nonjudge}$ (n_m = 36)	1	26.61	6.20	3.12	.086	.084	.64	.430	.018
	2	27.58	5.79						
	3	29.00	6.33						
$FFMQ_{Look}$ (n_m = 36)	1	20.17	5.22	1.80	.189	.050	1.23	.275	.035
	2	21.17	6.13						
	3	23.06	6.74						
$FFMQ_{ActAware}$ (n_m = 36)	1	25.03	7.99	2.14	.126	.059	.08	.921	.002
	2	25.97	7.57						
	3	27.06	7.72						
$FFMQ_{Describe}$ (n_m = 36)	1	24.83	7.58	1.79	.189	.050	.55	.462	.016
	2	25.61	7.50						
	3	25.94	8.16						
$FFMQ_{Nonreact}$ (n_m = 36)	1	19.75	3.71	2.79	.104	.076	.07	.789	.002
	2	19.53	3.79						
	3	21.53	4.40						
$FFMQ_{Total}$ (n_m = 36)	1	116.38	14.61	7.89	**.008**	.188	.41	.529	.012
	2	119.86	16.17						
	3	126.58	18.62						
SWLS (n_m = 36)	1	18.08	4.40	.21	.647	.006	.33	.570	.010
	3	18.61	4.18						
$TPAS_{Relaxed}$ (n_m = 34)	1	14.12	4.27	.45	.505	.014	1.65	.208	.049
	3	14.53	5.10						
$TPAS_{Safe}$ (n_m = 34)	1	9.79	2.74	.53	.473	.016	.34	.564	.011
	3	10.53	2.98						
$TPAS_{Activated}$ (n_m = 34)	1	21.15	4.91	.55	.464	.017	.02	.968	.000
	3	20.09	6.39						

Note. Not all participants completed all questionnaires at time 1, reason why the number of subjects in the experimental group (n_m) is described for each measure. Significant effects are in bold *(*$p < .05$). Measures: self-reported traumatic qualities of shame memory (IES-R), centrality of shame memory (CES), external shame (OAS-2), self-criticism ($FSCRS_{Self\text{-}criticism}$), social anxiety (SIAS), anxiety ($DASS_{Anxiety}$), mindfulness ($FFMQ_{Total}$) – nonjudging (*$FFMQ_{Nonjudge}$*), ability to observe ($FFMQ_{Look}$), ability to act with awareness ($FFMQ_{ActAware}$), ability to describe (*$FFMQ_{Describe}$*) and nonreacting ($FFMQ_{Nonreact}$) –, life satisfaction (SWLS), positive affect – relaxed positive affect ($TPAS_{Relaxed}$), safe/content positive affect ($TPAS_{Safe}$) and activated positive affect (*$TPAS_{Activated}$*).

Discussion

It is well established that shame memories are common and have a relationship with psychopathology and well-being (Cunha et al., 2012; Matos, Pinto-Gouveia, & Gilbert, 2013). Mindfulness is a pertinent attempt to deal with shame memories since it has been found to be negatively associated to shame (Woods & Proeve, 2014), positively related with well-being (Good et al., 2016; Hyland et al., 2015) and to be an efficacious approach in many clinical disorders (e.g., Azam et al., 2015; Creswell, 2017; Gonzalez-Voller et al., 2019; Hick & Bien, 2008; Karremans & Papies, 2017; McClintock & Anderson, 2015; Shore et al., 2018). The major aim of this study was to assess the effect of mindfulness on shame, shame memories and psychological adjustment and well-being, in a Portuguese non-clinical sample.

Shame Memories Recalled Characteristics

With regard to shame memories recalled, the most common type of remembered experiences was the exposure of behaviours and/or personal negative attributes in front of others. This goes along with Matos and Pinto-Gouveia (2012) findings, that emphasises the public nature of shame and suggests that both external and internal shame were present – since in this type of experiences, individuals tend to focus on how they exist in the minds of others and on self-devaluating thoughts (Gilbert, 1998; Smith et al., 2002; Tangney et al., 1996). In fact, a great percentage of the participants identified peers (friends and colleagues) as the shamers of their experiences. The literature revealed that peer shaming could have a significant impact on how self sees him/herself as a social agent, showing the potential influence of such experiences on social behaviours (Gibb et al., 2004; Gilbert, 1998, 2007b; Gilbert & Irons, 2009). The contexts in which the experiences took place were diverse, varying in relation to the presence of others and from public to private situations. Also, the majority of the experiences occurred only once. According to Feiring and Taska (2005), continuous experiences may have a greater severity than the experiences that only occurred once. Matos and Pinto-Gouveia (2012) found that shame memories with others occurred both in a continuous/merging way and as single events. The same authors said that shame experiences with attachment figures as shamers, usually occurred only once. However, in the current study, the reported experiences with attachment figures occurred with all continuities (single, merging and continuous event(s)). Regarding to emotions felt, they

were mostly characterized as intense and negative, which was expectable since shame was previously proven to be strictly associated with negative and intense emotions (e.g., Matos et al., 2012). The specific emotions associated with the experiences recalled were diverse, which is in line with previous studies that indicated that these experiences are emotionally rich and diverse (e.g., Gilbert, 1998, 2002, 2007b). The vividness of memories was only medium, suggesting that participants' memories were not highly accessible. This indicates that the recalled experiences may have not been structuring on how the individuals conceive themselves and on how they interpret their life stories (e.g., Baerger & McAdams, 1999; Pillemer, 2003). Finally, the external and internal shame reported were similar and were relatively high, demonstrating that although shame memories were not very vivid, they were perceived as something associated with shame feelings about how the self thinks others see them, and to the cognitions and affects that the individual has about the self, respectively (Gilbert, 2000, 2002).

Practice Qualities Comparisons

When participants heard the audio exercise for the first time, the two groups significantly differed in the amount heard, the level of engagement and the degree of soothing perceived, in favour of the experimental group. Significant differences were not found for boredom and irritation felt, although these were superior in the control group in comparison to the experimental group. When participants continually heard the audio exercise, the experimental group revealed significant differences from the control group in relation to the perceived level of embodiment of the practice in daily life. Since just one group had an intervention with active content, the outcomes obtained support the theory that the mindfulness meditation intervention should have a superior impact in comparison to the Charles Darwin nature description. With regard to the perception of helpfulness of the practice, the outcomes were very similar in both groups. It is hypothesised that participants of the control condition may have found their audio exercise to be helpful because some of them never or rarely had meditate before. Therefore, this could have been the closest experience to actual meditation that some of the participants have had, possibly being effective in creating a moment of pause to them, and perhaps a moment of connectivity with themselves that may had led to a moment of calmness. In this study, this hypothesis cannot be confirmed; nevertheless, Playle (2017) revealed that exercises like the one of our control group could provoke a distractor effect, and Ussher and col. (2014) pointed to a possible relaxation effect of

this type of exercises. Referring to practice frequency, it did not vary significantly between conditions. The same happened in resemblance to a previous mindfulness study with a similar control condition (Ussher et al., 2009). The difference may not have been significant because participants were not previously informed about the existence of different conditions. For this reason, we hypothesised that participants did not practice more or less because of the exercise itself, but because of their sense of commitment to the practice. In fact, the experimental group revealed to practice the audio exercise more frequently in the first two weeks, comparing to the last two. We considered that this could have happened because participants could have been more motivated at the beginning of the intervention, with a higher sense of commitment to the practice, and/or under the novelty effect of what they were doing (Ussher et al., 2014). This may have influenced the results, assuming that more practice is supposed to be associated with greater improvements (e.g., Parsons et al., 2017; Soler et al., 2014).

Study 1. Inter and Intra-Group Effects of a Mindfulness Meditation Intervention Across Time

Regarding group comparisons over time, the first hypothesis was partially confirmed (H1). Only self-reported traumatic qualities of the recalled shame memory had a significant interaction effect, with the experimental group showing a more significant decrease than the control group. The centrality of the shame memory variable did not show a significant interaction effect. Similar to self-reported traumatic qualities, this measure also revealed mean decreases in both groups, however, in this case, there was no significant difference between groups. Despite no significant baseline difference was found between conditions for this variable, it is possible that the interaction effect had not emerged as the initial mean value of this variable in each group was quite different, with the experimental group having a higher initial value than the control group. It might be that the baseline values of centrality of the shame memory measure have prevented the interaction effect to emerge. Although decreases were greater in the mindfulness condition for both measures, it is appropriate to try to explain why decreases might have also occurred in the control group. Some studies with a similar design showed that listening to an audio exercise like the one of our control condition, could passively have an impact through distraction, being effective as an attention control strategy that limits working memory capacity (Playle, 2017; Weekly et al., 2018). Considering this explanation, although it does not invalidate the distinctive

characteristics and effects of the mindfulness condition, the audio exercise of the control condition, may have contributed to the decreases of shame memory features of the participants through distraction.

Hypothesis 2 was rejected since no interaction effects were identified for life satisfaction and positive affect. Life satisfaction, safe/content and relaxed positive affects had improvements in both groups, which suggests that the type of intervention did not play a significant role for these measures' outcomes. The activated positive affect decreased in the experimental group and maintained its level in the control group. As proposed before, the control audio exercise may have functioned as a distractive task (Playle, 2017). In line with previous research (Ussher et al., 2014), this distraction may have produced a sense of relaxation that could have resulted in the increase of life satisfaction, safe/content positive affect and relaxed positive affect in the control group. Additionally, some studies (Howells et al., 2016; Seligman, 2002) showed that well-being outcomes (which includes life satisfaction and positive affect) may take longer to come up clearly. Hence, it is possible that if the intervention had taken longer or a follow-up assessment was conducted, the interaction effects would have emerged for these variables. Interestingly, concerning activated positive affect, the two groups had different trajectories (decreasing in the experimental group and maintaining in the control group). Gilbert (2014) has suggested that mindfulness could connect participants to their soothing-contentment affect system (associated with positive emotions), through the activation of the "being mode", instead of the "doing mode". It may be that, although a possible relaxation effect was produced by the control audio exercise, it was not enough to connect participants to their soothing-contentment affect system. Therefore, it did not result in the deactivation of the drive system (associated with high intensity emotions and to the "doing mode"), which would lead activated positive affect to decrease in the control group (Depue & Morrone-Strupinsky, 2005).

The hypothesis concerned with inter-groups effects over time in external shame, self-criticism and psychopathology (H3) was partially corroborated, since significant interaction effects emerged for self-criticism, anxiety and depression but not for external shame and social anxiety. Referring to significant effects, they were expected and added to the existing literature reinforcing the negative relationship between mindfulness and self-criticism (e.g., Hölzel et al. 2011) and showing the efficacy of MBI in anxiety and depression (e.g., Brown & Ryan, 2003). Regarding external shame, the mean of this

measure in the experimental group decreased across the 4 weeks, while, in the control group, it decreased from time 1 to time 2 but increased from time 2 to time 3. This is to say that, although the effect was not significant, the trend direction of external shame was different depending on the type of intervention. Perhaps a significant interaction effect could have arisen with a bigger sample or with a longer intervention. Concerning social anxiety, the means decreased over time for both conditions. SAD is often characterised as a condition in which people have high levels of self-conscious awareness as well as an elevated focus on metacognitions about how others see them (Gilbert, 2000; Tracy & Robins, 2004). If the control audio exercise had indeed produced a distractor effect (Playle, 2017), it may have resulted in participants' reductions of self-conscious awareness and focus on metacognitions. Moreover, it is known that mindfulness increases awareness, which, in an initial stage, can have a disruptive effect since the attention could be directed in a judgemental way (Baer et al., 2006; Eisenberg et al., 2011). In line with this, and considering that the significant differences in the experimental group occurred in the last two weeks of the intervention, it could be that, with a longer intervention, a greater effect had occurred in the mindfulness condition, allowing a significant interaction effect for social anxiety to emerge.

With concern to hypothesis 4, this was partially corroborated since significant interaction effects only emerged for mindfulness (in general), ability to observe and ability to act with awareness. However, nonjudging, ability to describe and nonreacting facets also had mean increases from pre-to-post intervention in the mindfulness condition. In the control group, differences were considerably smaller, and the trajectory was not of continuous improvement for nonjudging, ability to observe, act with awareness and describe factors, emphasising the power of mindfulness intervention. The significant interaction effects obtained were expected considering previous research (e.g., Aikens et al., 2014). Referring to nonjudging factor, it was considered that the interaction effect might have occurred since this measure had different trajectories in each condition – the experimental group increased over the three assessment moments whereas the control group increased from time 1 to time 2 and decreased from time 2 to time 3. It is possible that it was not statistically significant because of the small size of our sample or because the intervention duration was not long enough to allow differences to be more significant. Concerning the describe factor, it is important to

consider that the control audio exercise consisted of listening to an excerpt of a Charles Darwin's nature description, which also had an imagery component that could explain why some improvements occurred in this facet for this condition, contributing to less differences between groups. When it comes to nonreacting, this was the subscale with the lowest internal consistency in the present study, as well as in the original (Baer et al., 2006) and in the Portuguese (Gregório & Pinto-Gouveia, 2011) versions of FFMQ. This indicates that this factor is less reliable, which could have influenced the outcomes. Also, a significant interaction effect might not have occurred since the experimental group decreased between time 1 and time 2 and the control group improved over the 3 assessment moments. The decrease in the beginning of the intervention in the experimental group may have emerged because the participants' attention to the present moment was already higher, but not the ability to refrain impulsive reactions (nonreacting) (Baer et al., 2006). In the control group, if a relaxation effect provoked by the audio exercise had occurred in the same way as Ussher and col. (2014) suggested, the increases in this factor could have been due to this relaxation effect. Thereby, if the intervention had been longer, this interaction effect may have risen.

Regarding pre-to-post intervention differences in the experimental group, as it was expected, there were significant decreases in the self-reported traumatic qualities and centrality of the experience recalled over time, which corroborates hypothesis 5. This adds to the existent literature about the relationship between mindfulness and shame (Woods & Prove, 2014) and gives strength to the potential use of mindfulness in intervening on shame issues (Bishop et al., 2004; Matos & Pinto-Gouveia, 2010; Proeve et al., 2018; Woods & Proeve, 2014). In both variables, although decreases occurred over the four weeks of the intervention, they were higher between times 1 and 2. This could be explained by a trigger effect of the shame memory priming, which may have led the shame memory to be activated and to be more present in participants thoughts in the days after. In line with this, the shame memory priming may have produced an initial "shock" effect, contributing to a better response to the intervention in the first two weeks. Also suitable to this situation is a suggestion brought up by Ussher and col. (2014), which stated that initial effectiveness of the intervention may have been due to its novelty. Another explanation has to do with practice quality: the frequency of practice in the experimental group decreased from time 2 to time 3 and the other measures (helpfulness and embodiment) barely changed, indicating that commitment

could be higher in the first two weeks of the intervention. It could explain why greater changes in IES-R and CES occurred between time 1 and time 2. These outcomes answer negatively to the question raised by Woods and Proeve (2014) about whether meditation could or could not initially intensify shame and then decrease it.

Hypothesis 6 was partially confirmed since individuals in the mindfulness group only had significant improvements from pre to post intervention in safe/content positive affect. The means in this condition also increased for life satisfaction and relaxed positive affect, although not significantly. It is possible that these improvements did not have a sufficient period of time to transpire. In other words, and according to the literature (Howells et al., 2016; Seligman, 2002), the impact may have occurred but not yet been significant at the time of the assessment. To address this situation, conducting follow-up assessments could be productive. Nevertheless, the activated positive affect decreased over time. Gilbert (2014) has suggested mindfulness as a way of connecting soothing-contentment affect system, through activating the "being mode", instead of the "doing mode". The soothing-contentment affect system is associated with positive emotions and is triggered when the person is not under threat nor in a "doing mode", this one characterised by high intensity activated/drive positive emotions (Depue & Morrone-Strupinsky, 2005). The activated positive affect is associated with high levels of energy, spirit and enthusiasm, which contributes to engaging in approach-oriented and innovative behaviours (Wang et al., 2019). In line with this, it was considerably expected that the mindfulness meditation did not have a positive impact in the activated positive affect, instead causing its decrease.

Hypothesis 7 was corroborated. The experimental group showed significant decreases from time 1 to time 3 and from time 2 to time 3 in external shame, self-criticism, social anxiety, anxiety, and depression. Regarding external shame, the significant effect obtained supports Galhardo and col. (2013) findings (significant decreases in external shame after a MBI) and opposes to Proeve and col. (2018) results (significant decreases in shame-proneness but not in external shame after a MBI). The significant effect of the mindfulness intervention in reducing self-criticism validates the negative correlation between these two constructs (e.g., Ramel et al., 2004). When it comes to psychopathology, these findings go along with previous research that pointed mindfulness as an efficacious approach to social anxiety, anxiety, and depression (e.g., Baer et al., 2006; Goldin et al., 2009; Kocovski et al., 2013; Zhang et al., 2019). All of

these variables decreased more from time 2 to time 3 in comparison to their decrease from time 1 to time 2, which gives emphasis to the importance of practice extent in the impact of an MBI (e.g., Carmody & Baer, 2008; Parsons et al., 2017; Rosenzweig et al., 2010; Soler et al., 2014).

Regarding hypothesis 8, it was partially corroborated since participants in the mindfulness condition had significant increases in all mindfulness facets except in describe factor. Concerning the moment of changing, mindfulness increased significantly across the 4 weeks, having the biggest improvement between times 2 and 3. For all factors except for describe, the significant time changes were found from time 1 to 3 and from time 2 to 3. These mindfulness outcomes reveal the importance of practice extent to gradually cultivate each mindfulness competency, which add to previous literature (e.g., Carmody & Baer, 2008; Parsons et al., 2017; Rosenzweig et al., 2010; Soler et al., 2014). Regarding the describe factor, the nonexistence of significant time effects in the experimental group was especially unexpected since this subscale of FFMQ is usually particularly salient for females (Gilbert & Waltz, 2010) and the majority of the participants of the current study had this gender.

Study 2. The Impact of Self-criticism and Depression on Participants' Response to a Mindfulness Meditation Intervention

Both hypothesis 9 and 10 were rejected, as no significant effects emerged between covariates and time, which led to the conclusion that individual differences in self-criticism and/or depression at baseline did not influence participants' response to the mindfulness intervention. This was contrary to our expectations since both constructs have a strict relationship with mindfulness (e.g., Atkinson & Wade, 2012; Brown & Ryan, 2003; Ramel et al., 2004). It might be that these differences did not have a significant impact on the response to the mindfulness intervention because our sample was from the general adult population. This could indicate that levels of self-criticism and depression may not have been as high as they would have been in a clinical sample. Considering previous studies, in which self-criticism was found to be significant lower in a non-clinical sample when comparing to a clinical one (e.g., Castilho et al., 2015) and in which levels of depression were lower when dispositional mindfulness was higher (e.g., Xu et al., 2018), it could have been that these covariates

have had a less prominent impact in this study outcomes in relation to what was expected.

Strengths, Limitations and Future Research

The current study valuably contributed to the literature on the utility of mindfulness in general and particularly in working with shame memories. It also adds to previous research about the efficacy of online mindfulness-based interventions, an innovative and less studied topic. A strength of this investigation was the design implemented, which made it possible to compare the effects of the experimental intervention with a control group and enabled the analyses of the effects of the mindfulness condition across the 4 weeks of the intervention. The analyses of the covariates were pertinent too, considering the relationship of depression and self-criticism with mindfulness. Also, in light of the outcomes, the selected audio exercises seemed to be adequate, namely in the mindfulness group, in which the significant effects of the mindfulness competencies were evident. Finally, the internal consistency indexes were generally good, which adds validity to the obtained outcomes.

Unfortunately, the study holds some limitations. Firstly, even though it does not seem very significant, it is important to mention that there were three measures that did not fulfilled the Levene's Test assumption. Secondly, there was an item that no participant had the opportunity to answer at time 1, reason why it was filled by its factor mean ($FFMQ_{Describe}$). Another limitation is that our sample was smaller than intended. Considering other longitudinal studies (e.g., Galhardo et al., 2013), it was concluded that this is a usual constraint of these types of studies. We find it hard to recruit participants, not only for the required commitment over 4 weeks, but also because of the interventions' theme – some subjects reported reservations in working shame memories. This goes along with previous research which established that shame experiences are too painful to disclose (Matos & Pinto-Gouveia, 2012). Additionally, there were non-answered questionnaires by some participants at time 1, which led to a different number of subjects in different statistical analysis. For our sample size, there was also the impossibility of controlling the baseline differences of sociodemographic characteristics that emerged between genders and conditions. Furthermore, since our sample was from general adult population, it may have been that some participants simply did not have any shame memory with traumatic qualities and/or that was central to their identity and

life to recall and work around. For the aforementioned reasons, it is possible that the size of our sample, as well as the fact that it belongs to the general adult population, have prevented more significant time and interaction effects to emerge. Another limitation is that a great percentage of our sample were college students and females, which may not be representative of the general adult population. Regarding practice, we consider that the control of it was scarce and subjective, not providing sufficient rigorous information. To conclude, it is crucial to note that the majority of participations have occurred during the Covid-19 pandemic isolation. This fact may have influenced the well-being and psychopathology of participants and, consequently, affected the outcomes, namely, it may have dimmed the changing trends.

Future research is needed to address the limitations of the present study, as well as to expand the knowledge about the topics under study. We propose a similar study to be conducted, but with a larger sample, to make it possible to have a more homogeneous sample with more reliable outcomes. It would also be interesting to analyse each gender trajectory, as a way of exploring gender differences. If a similar study was conducted, there are some suggestions for its improvement. Taking into account the non-significance of some of the effects and the possible explanations proposed, it is suggested to: assess the practice quality in a more objective way, measure relaxation and distraction effects (to our best knowledge, these measures do not yet exist), implement follow-up assessment moments to capture not immediate changes, add a true control group (e.g., wait-list control) to the mindfulness and active control conditions, offer a reward to the participants (as an effort to expand their commitment to the practice), increase the duration of the intervention (e.g., 6 weeks) and try to include other mindfulness exercises (as an attempt to increase the effects of it). Additionally, considering the potential use of mindfulness in clinical settings, it would be relevant to conduct a similar study with a clinical sample to enable the validation of our findings and to explore possible differences between the two populations. To conclude, future studies should investigate the mechanisms through which mindfulness affect shame memories.

Implications and Conclusions

This study outcomes carry implications for using mindfulness as a clinical and non-clinical intervention, contributing with experimental evidence about its effectiveness to address psychopathology and shame features, specifically in an online format. Our findings indicated that an online mindfulness meditation could be a suitable approach to work with shame memories as well as to manage external shame, self-criticism, social anxiety, anxiety, and depression, in a Portuguese non-clinical sample.

Overall, the current study showed that shame memories are workable, that this experiment design is an effective way of developing mindfulness competencies and to address psychopathology, shame and shame memories. Nevertheless, we believe that it is possible to add support to our findings with methodological improvements.

Conflict of interest

The authors declare no conflicts of interest.

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