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# Reducing anxiety, geriatric depression and worry in a sample of older adults through a mindfulness training program

## Reducción de la ansiedad, la depresión geriátrica y la preocupación en una muestra de adultos mayores a través de un programa de entrenamiento en *mindfulness*

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### Abstract

This study aimed to analyze the effects of a mindfulness training program on anxiety, worry, and geriatric depression in a sample of older adults. A randomized controlled trial with pretest-posttest measurements was used on an experimental group ( $n = 42$ ) and a control group (waiting list;  $n = 45$ ). Participants in the experimental group completed the Short Cognitive Examination, the Penn State Worry Questionnaire (PSWQ), and the Geriatric Depression Scale. Analyses showed significantly stronger reductions in geriatric depression, anxiety and worry in the experimental group than in the control group, confirming the effectiveness of mindfulness techniques in reducing these conditions and, especially, for the trait-worry variable, followed by important changes in anxiety, depression and meta-worry. This is one of the few studies examining the effects of mindfulness training in the elderly. Results are especially noteworthy because traits are quite resistant to change. Implications for future research and intervention are underlined.

**Key words:** Mindfulness, Geriatric Depression, Anxiety, Worry, Older adults.

### Resumen

Se analizan los efectos de un programa de entrenamiento en *mindfulness* en la ansiedad, la preocupación y la depresión en una muestra de adultos mayores en este estudio controlado y aleatorizado con medidas pretest-posttest con un grupo experimental ( $n = 42$ ) y control (lista de espera;  $n = 45$ ). El grupo experimental completó el Mini-Examen cognitivo, el Inventario de Preocupación de Pensilvania, y la Escala de Depresión Geriátrica. Se obtuvieron mayores reducciones significativas en este grupo comparado con el grupo control, confirmando la efectividad de las técnicas de *mindfulness* en la reducción de estos trastornos y, especialmente, en la variable preocupación de rasgo, seguida de importantes cambios en ansiedad, depresión y metapreocupación. Este es uno de los pocos estudios que examinan los efectos del entrenamiento en *mindfulness* en la tercera edad. Los resultados son especialmente importantes porque los rasgos son resistentes al cambio. Se destacan implicaciones para la investigación futura e intervención.

**Palabras clave:** Mindfulness, Depresión Geriátrica, Ansiedad, Preocupación, Adultos mayores.

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## Introduction

The significance of the phenomenon of the aging population is now recognized at all levels due to its important economic and social consequences (Cancino & Rehbein, 2016). Never before in history has the number of elderly in Western societies been so high. Health is one of the fields aging affects the most. Old age is a risk factor for many chronic disorders that are often disabling, and thus require more attention from health and social services.

Depression and anxiety are among the most prevalent health problems in the aging population. Some seniors may become depressed due to the perception of their own deterioration, threats posed by changes in the social environment, or due to changes in brain structures associated with affectivity in aging, and so forth. Their own cognitions, including worry, are important mediators in the presence of depressive and anxiety symptoms. Moreover, cognitive depression factors may be favored by the negative social vision and stereotypes of old age (Gázquez, et al., 2009; Cardila et al., 2015; Méndez, 2015; Ortega y Calero, 2015; Clemente, García-Sevilla, & Méndez, 2015; Lamont, Swift, & Abrams, 2015).

The prevalence of a major depressive episode or symptoms of depressive disorder in the general population is 5%, and increases in medical contexts to 6-9% of the geriatric population, 17-37% of elderly patients in primary care, 30% of acute inpatients, 40% of elderly in nursing homes, etc. Diagnosis of depression is complicated by overlapping organic complaints secondary to medical conditions (Arrieta & García, 2009; Black, O'Reilly, Olmstead, Breen, & Irwin, 2015).

Anxiety disorders share some characteristics with depression, such as stress or inability to relax, sleep disorders, and physical symptoms. Anxiety can also be associated with other psychiatric disorders or secondary to other processes. Prevalence is around 11% in the elderly, but is comorbid in 30% of elderly patients with major depression (Arrieta & García, 2009; Foulk et al., 2014). Thus, this group of people could be vulnerable to physical conditions related to high anxiety, such as high blood pressure, cardiovascular diseases, and other health problems which could become chronic. Excessive concern or worry in the form of intrusive, repetitive negative thoughts about future events is a clinically relevant phenomenon closely related to anxiety, which is also extremely frequent in the elderly. In brief, aging is typically associated with an increase in objective sources of stress that could lead to more negative affect,

including anxiety and depression (Nuevo & Montorio, 2005; Delgado et al., 2010).

Depression and anxiety are mental health conditions that compromise quality of life among older adults (Arrieta & García, 2009; Foulk, Ingersoll-Dayton, Kavanagh, Robinson, & Kales, 2014). Despite this, a very limited number of studies have attempted to empirically find the strategies best suited for clinically coping with excessive worry, anxiety and depression in old age (Nuevo & Montorio, 2005; Foulk et al., 2014).

As the elderly often take multiple medications for their mental and physical health, identifying effective psychological interventions to reduce the need for polypharmacy is valuable. Moreover, depression can be understood as a disorder in which mood dominates cognition, rendering it relatively inflexible and reducing opportunities to alter it. While cognitive and interpersonal psychotherapies can clearly be helpful, it makes sense that other techniques designed to alter mental states, such as mindfulness, might also be useful in lessening depression. These techniques may work by teaching depressed individuals how to modify their current mental state (i.e., moods), and providing flexibility in altering the typically unremitting pall of sadness experienced in depression. Meditation techniques could also be used to help release the thoughts that maintain depressive affect.

From a more general perspective, some authors have considered *Mindfulness* to be a feasible therapeutic tool or intervention technique (e.g., Franco, 2009; Kabat-zinn, 1990; Segal et al., 2010), because through its practice, the individual learns to observe and accept the thoughts, sensations, and emotions he or she experiences without making any attempt to eliminate, modify or alter them. *Mindfulness* has been accepted in contemporary psychology as an approach to higher awareness and skilled response to the mental processes that contribute to emotional distress and maladaptive behavior (Bishop et al., 2004). Practicing *mindfulness* allows one to contemplate thoughts and sensations as events in a continuous stream that are only noticed and observed, while remaining aware that they are transitory and non-permanent. This breaks the habitual think-feel-act pattern as well as the habit of judging and evaluating thoughts as if they were independent entities. This way one learns to observe those thoughts without having to react to them. The aim of *mindfulness* is to feel things as they are occurring without trying to control them or act upon them. So to a certain extent, it is similar to exposure techniques and favors self-control (Delgado et al., 2010; Franco, Mañas, Cangas, Moreno, & Gallego, 2010; Włodarczyk et al., 2016)

Research in different samples, including professionals and students, has confirmed that *mindfulness* exercises reduce worry and mood disturbance (nervousness, emotional distress), increasing muscular relaxation, emotional calm, and overall well-being (Amutio, Martínez-Taboada, Hermosilla, & Delgado, 2015; ; Delgado et al., 2010; Martín et al. 2014; Franco, Amutio, López-González, Oriol, & Martínez-Taboada, 2016; Schmidt & Vinet, 2015). The effectiveness of *mindfulness* techniques in improving psychological distress in its different manifestations (e.g., anxiety, depression, stress, insomnia, etc.) has been demonstrated, as has its ability to improve several types of medical conditions, including cancer, hypertension, psoriasis, asthma and fibromyalgia (Amutio, Franco, Mercader, Pérez-fuentes, & Gázquez, 2015; Carlson, Specia, Faris, & Patel, 2007; Parra & Latorre, 2013) (For a more exhaustive review, see Gotink et al., 2015; Carlson, 2012; Chiesa & Serreti, 2009; Irwing, Dobkin, & Park, 2009).

Mindfulness-based interventions, including cognitive therapy (MBCT) for depression, and Mindfulness-based Stress Reduction (MBSR; Kabat-zinn, 1990) show particular promise for the general population. Studies have demonstrated that the effect of MBCT on the prevention of future relapse of depression is at least equivalent to that of antidepressant medication (Segal et al., 2010; Piet & Hougaard, 2011; Gotink et al., 2015). Another similar approach with proven success is a mindfulness technique called *Flow Meditation* (Franco, 2009). This technique has also been applied to different populations, including teachers, students, and immigrants, to reduce psychological distress with proven success (Amutio, Franco, Gázquez, & Mañas, 2015; Franco et al., 2010; Soriano, Franco, & Justo, 2009).

Despite the promising results, to date there have been few attempts to apply MBCT or other mindfulness-based interventions to older adults (Black et al., 2015; Foulk et al., 2014). Given the scarcity of studies on the effectiveness of mindfulness techniques for the elderly, the goal of this study was to verify whether *flow meditation* training can bring about improvement in anxiety, geriatric depression and worry in a sample of older people. We hypothesized that *the flow meditation* training program would be effective for reducing worry, anxiety and geriatric depression in the elderly.

## Methods

### Participants

Participants in this study were 87 students from the University for Seniors at the University of Almeria. The age range was 66 to 82 ( $M = 71,82$ ;  $DT = 14,18$ ), of whom 26% had never studied at all, 49% had a primary education, 15% had completed high school, and, the remaining 10% had attended college. In terms of marital status, 68% were married, 7% remained single, 10% were separated or divorced, and the remaining 15% were widowers. The control group was comprised of 45 subjects (55% female / 45% male). The rest of the participants ( $n = 42$ ) were in the experimental group (57% female and 43% male). Participants were randomly assigned to each of the groups controlling for sex, so there would be a similar number of males and females in each of the groups, and thereby, avoid the influence of this variable in the results of the study.

### Instruments

- *Mini Mental State Examination* (MMSE; Folstein, Folstein, & McHugh, 1975). The Spanish adaptation by Lobo, Ezquerro, Gómez, Sala, & Seva, (1979) was used. This scale evaluates facets of cognitive functioning frequently examined in neuropsychological evaluation of older adults. Scores range from 0-35 points. This instrument was used to screen for subjects with cognitive impairment who were then excluded from data analyses in this study. The cut-off was set to 25 points (Nuevo, Montorio & Ruiz, 2002). The Cronbach's alpha for our sample was 0,84.
- *Penn State Worry Questionnaire (PSWQ)* (Meyer, Miller, Metzger, & Borkovec, 1990). The Spanish version for older people was used (Nuevo, Montorio, & Ruiz, 2002). This questionnaire assesses the general tendency to worry. Each of the 16 items is evaluated on a five-point Likert-type scale ranging from 1 (Not at all typical of me) to 5, (Very typical of me), and the score ranges from 16 to 80 points. The questionnaire showed adequate internal consistency (Cronbach's alpha = 0,95).
- *Meta-worry Scale (MW)*. This is one of the domains or scales in the Anxious Thoughts Inventory (Wells, 1994). It assesses the extent to which a person worries about his or her own worries. This kind of metacognition may play an important role in the etiology and chronicity of

excessive worry. The Spanish adaptation of the scale including six five-point Likert-type items was used with a score ranging from 6-30 points (Nuevo, 2001). The scale has good psychometric properties when applied to seniors (Cronbach's  $\alpha = 0,74$ ).

- *Worry and Anxiety Questionnaire (WAQ)* (Dugas, Freestón, Lachauce, Provencher, & Ladouceur, 1995). This is a 10-item self-report questionnaire. Each item is evaluated on an eight-point Likert-type scale ranking from 0 to 8 (score range 0-80 points). The Spanish version by Montorio, Nuevo, Izal, Márquez, & Losada, (2005) was used. This scale makes a dimensional evaluation of DSM-IV (American Psychiatric Association, 1995) diagnostic criteria for generalized anxiety disorder, making it an instrument with adequate psychometric properties to evaluate the severity of GAD (Montorio et al., 2005). The Cronbach's  $\alpha$  for our sample was 0,90.
- *Geriatric Depression Scale* (Yesavage & Brink, 1983; Sheikh & Yesavage, 1986). The short 15-item version of the scale was used. This version was adapted and validated in the Spanish population by Martínez et al. (2002). It evaluates specific symptoms of geriatric depression. The subject answers "Yes" or "No", depending on how he/she felt last week. A score of 0 to 4 points is considered normal, from 5 to 8 indicates mild depression, 9 to 11 indicates moderate depression, and from 12 to 15 points severe depression. Internal consistency of the scale is high, ranging from 0,78 to 0,99 (Almeida & Almeida, 1999; Gómez-Angulo & Campo-Arias, 2011).

### Procedure

The sample for this study was taken by offering a course in "Learning and Practice of Meditation" to students at the University for Seniors through the University of Almería, Vice-Rectorate of Students. A total of 96 persons signed up to participate, but just 87 of these took part in the study, because students who reported having had previous experience with any relaxation or meditation technique, *taichi*, etc. were disqualified. Participants found to have cognitive deficits after application of the *Mini Mental State Examination* (Lobo et al., 1979) were also disqualified. From the final pool of 87 subjects, 45 were randomly assigned to the control group, and the remaining 42 to the experimental group. Gender was controlled for in order to have the same number of males and females in each of the groups, and so avoid the influence of this variable in the study results.

Once the sample had been finalized, the two groups of participants were evaluated using the instruments described above for an initial measure of their anxiety, depression and worry levels.

Then, the mindfulness intervention program started in the experimental group. Participants in the control group were told that the program would be offered in the near future. The intervention program consisted of learning and practicing Flow Meditation (Franco, 2009) in one weekly 2-h session for a period of seven consecutive weeks. The training program was based on Kabat-Zinn (1990) elements and exercises, mindfulness-related strategies used in acceptance and commitment therapy (Hayes, Stroschal, & Wilson, 1999; Wilson & Luciano, 2002; Carrascoso, 2006) along with explanations and discussions of the metaphors and exercises used in this therapy, and stories and tales from Zen (Deshimaru, 2006) and Vipassana meditation (Hart, 1994).

The aim of these meditation training exercises and metaphors was for the participants to learn to be aware of three processes:

1. Awareness of the tendency of the mind to swing between past and future, while resisting the present, the here and now.
2. Awareness that all personal events (thoughts, sensations and emotions) are emerging and continuously disappearing. It is therefore important to learn how to observe their transitory, temporary nature.
3. Awareness that much energy is wasted daily trying to avoid these private events, considering them negative and annoying, instead of letting them flow and concentrating on those important immediate tasks or activities we have to solve.

The main goal of this intervention program is for the participants to learn to let their thoughts flow, without trying to change them. The aim is not to learn how not to think, but to be reeducated in conditioned, automatic ways of reacting when faced with normally occurring internal and external events. Therefore, instead of trying to fight thoughts, emotions, and feelings, patients are encouraged to let them be and observe how they come and go. This way, they learn how to break the habit of letting their thoughts, emotions, and feelings control them. Patients are aware of their presence, but do not dwell on them or on their content or veracity, and consider them part of a constant flow of events.

*Flow Meditation* involves repetition of a word or mantra with a free and open mind, while directing attention at the abdomen and noticing how one's breath comes in and out, but without trying to alter or modify it, because it is only a matter of becoming conscious of how breathing



occurs naturally and effortlessly. So it is not the thoughts themselves which are essential in this type of meditation, but being aware of them without analyzing, evaluating, or judging them, and simply witnessing how they appear and disappear, while letting them go.

After completing the meditation program, the same questionnaires were administered again to both the control and experimental groups. Posttest scores showed whether there had been any significant variation in the target variables. When the posttest evaluation was finished, the control group was offered the meditation course. At the end of the study, all the participants were informed of the goal of the research and signed their written consent for use of their data, which would be kept confidential and anonymous.

### Design

The effectiveness of the mindfulness intervention program (independent variable) on the study variables, anxiety, depression and worry (dependent variables) was analyzed by means of a controlled and randomized quasi-experimental design with pretest-posttest measures using an experimental group and a waiting-list control group.

### Data Analyses

As data were normally distributed, we employed the student's *t* test for independent samples to determine whether or not there were statistically significant differences between the average scores of the control and experimental groups on the dimensions studied, during each phase of the study. We selected the Student's *t* as our data analysis technique because it is recommended when performing a quasi-experimental research study in which only two groups are compared (control and experimental). The student's *t* was also chosen for its sensitivity and discriminatory capacity for small samples (Rial & Valera, 2008). The student's *t* test for related samples was also used to test for significant differences between average scores during the various stages of the study in both the control and experimental groups. Finally, Cohen's *d* (Cohen, 1988) was used in order to evaluate the magnitude of change exhibited by the experimental group in the variables studied after intervention. In addition, the percentage of change between pretest and posttest scores was calculated. All analyses were performed using SPSS 22.0.

## Results

First, means and SDs of all the variables were calculated in both groups at pretest and posttest (Table 1 and Figure 1)

Analysis of the two groups' average pretest scores revealed no statistically significant differences between them in any of the variables. On the contrary, at posttest, the *t* test independent samples revealed significant differences between the average scores of the experimental and control groups in the trait worry ( $t = 4,58$ ;  $p = 0,001$ ), depression ( $t = 3,93$ ;  $p < 0,005$ ), anxiety ( $t = 3,49$ ;  $p < 0,01$ ), and meta-worry ( $t = 2,91$ ;  $p < 0,05$ ) variables (Table 2).

The Student's *t* test for related samples was also used to test for significant pretest-posttest differences in average scores on the target variables in the experimental and control groups, and found statistically significant differences for trait worry ( $t = -4,29$ ;  $p = 0,001$ ), depression ( $t = -3,84$ ;  $p = 0,005$ ), anxiety ( $t = -3,32$ ;  $p < 0,05$ ), and meta-worry ( $t = -2,08$ ;  $p < 0,05$ ) in the experimental group. On the contrary, the Student's *t* test for dependent samples revealed no statistically significant pretest-posttest differences in the average scores on any of the variables in the control group (Table 3).

The Cohen's *d* (Cohen, 1988) was used to evaluate the magnitude of change in the experimental group after the intervention program had ended. Values greater than 1,5 indicated very important changes, 1,5 to 1 indicated important changes, and 1 to 0,5 is medium changes. Table 3 shows that the Cohen's *d* scores between pretest and posttest measures indicate important changes in the worry-trait variable ( $d = 1,00$ ), whereas medium changes appeared in anxiety ( $d = 0,87$ ), depression ( $d = 0,84$ ) and meta-worry ( $d = 0,68$ ). Finally, the percentage pretest-posttest change in scores was calculated, exhibiting decreases of 18% (anxiety and worry-trait) to 35% for depression in the experimental group (Table 3).

## Discussion

After analyzing the results of this study, we can conclude that the hypothesis stated at the beginning of this article has indeed been confirmed, as there was a significant decrease in worry, anxiety and geriatric depression in older adults in the experimental group compared to the control group. The largest effect sizes were in the trait worry variable, followed by important changes in anxiety, depression and meta-worry. This outcome is especially noteworthy, because traits by definition are more resistant to change. The results support the findings of other studies that have

Table 1. Means and SD of the target variables in the experimental and control groups at pretest and posttest

Variables	PRETEST				POSTTEST			
	Control		Experimental		Control		Experimental	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Anxiety	41.5	10.9	40.3	9.6	42.9	11.6	32.8	7.5
Depression	7.3	4.8	7.9	3.7	8.2	5.1	5.4	2.9
Worry (Trait)	32.9	7.4	31.6	6.2	33.7	8.1	25.6	5.8
Meta-Worry	13.1	4.7	12.6	3.9	13.6	4.9	10.1	3.4

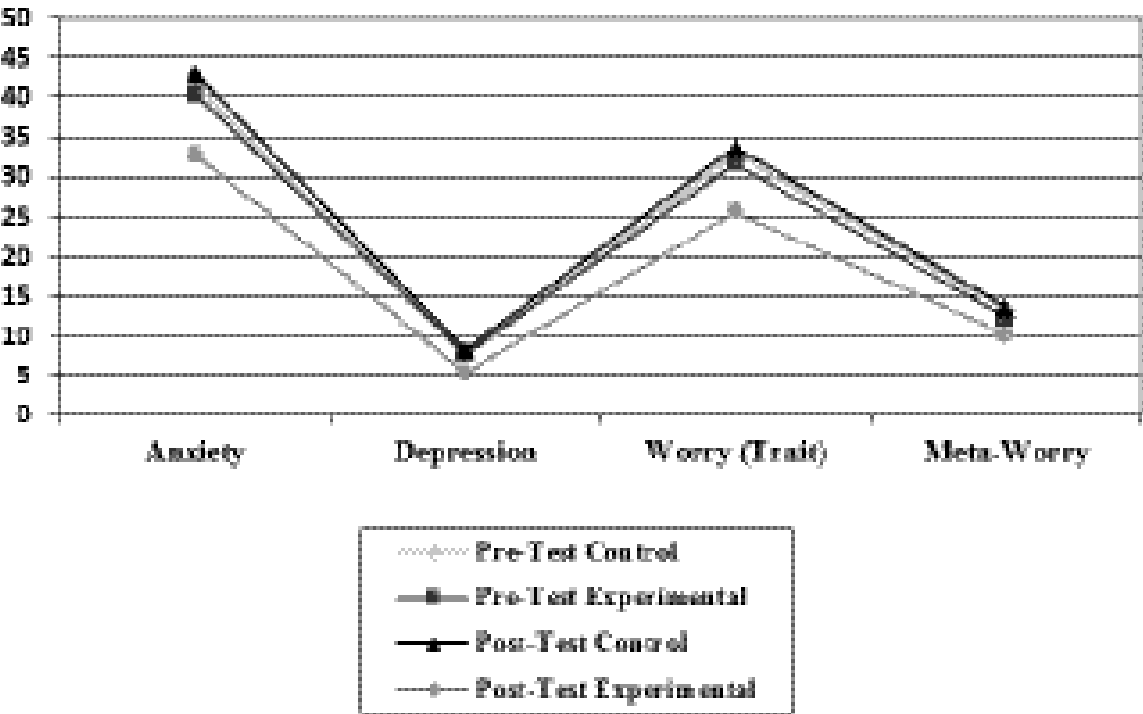


Figure 1. Average pretest and posttest scores for the experimental and control groups

Table 2. The Student's *t* test of independent samples for the Pretest and Posttest differences between the Control and Experimental groups for the target variables

Variables	PRE-TEST		POST-TEST	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Anxiety	.439	.721	3.49	.007**
Depression	.468	.609	3.93	.004***
Worry (Trait)	.349	.738	4.58	.001****
Meta-Worry	.677	.493	2.91	.028*

Note: \*\*\*\**p* = .001; \*\*\**p* < .005; \*\**p* < .01; \**p* < .05

Table 3. Results of the Student's *t* test for related samples for pretest-posttest differences in target variables, size effects, and percentage change in the Control and Experimental Groups

Variables	Control		Experimental		<i>d</i>	%
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>		
Anxiety	.527	.614	-3.32	.011*	.87	-18.61
Depression	.415	.484	-3.84	.005**	.84	-35.44
Worry (Trait)	.786	.321	-4.49	.001***	1.00	-18.99
Meta-Worry	.811	.297	-2.08	.044*	.68	-19.84

Note. \**p* = .001; \*\**p* = .005; \**p* < .05

confirmed the effectiveness of *mindfulness* techniques in reducing these conditions and others, including insomnia, (Black et al., 2015), diabetes, and coronary heart disease (Keyworth et al., 2014) in older adults (Gallegos, Hoerger, Talbot, Moyinhan, & Duberstein, 2013; Meeten, Whiting, & Williams, 2014; Young & Baime, 2010).

In old age, the reduced future time perspective may lead persons to focus more on the present moment in a non-judgmental way and to accept illness as a natural component of life (Carmona, Requena, Rosario, & López, 2015; Hoogland, 2015). Additionally, through mindfulness, rather than trying to modify negative or painful thoughts, feelings and sensations, it is possible to learn to let them flow by, and accept their presence, instead of confronting them directly, and not try to modify, change or alter them. Moreover, according to recent studies, control strategies such as avoidance, substitution, or elimination of uncomfortable private events (i.e., thoughts, emotions, bodily sensations, etc.) may actually increase the intensity, frequency, duration, or even accessibility of the unwanted feelings, thereby generating further problems and suffering (Amutio, Franco, Mercader, Pérez-fuentes, & Gázquez, 2015; Delgado et al., 2010), because thoughts, feelings and emotions follow laws which do not allow their direct, voluntary control (Soriano, Franco, & Justo, 2009).

Several different mechanisms have been proposed for the changes involved in *mindfulness*: meta-cognitive awareness, non-attachment and decreased cognitive fusion, decreased rumination and reappraisal, the experience of positive emotions, emotional and physiological regulatory mechanisms, changes in the perspective of the self, and even neurofunctional and structural changes in the brain (Davidson, 2010; Hölzel et al., 2011; Vago & Silbersweig, 2012; Tang, Lu, Fan, Yang, & Posner, 2012). Different approaches focus on different aspects. However, no one model appears to be sufficiently comprehensive in describing the mechanistic details of the change. Although a complete review of the mechanisms and networks inducing mindfulness is beyond

the scope of this paper, it is clear that more research in this respect is needed.

Regarding the limitations of this study, lack of an active control group makes it very difficult to completely eliminate any effects of unspecified factors, such as social support, or positive hope on the results. Lack of follow-up measures also makes it impossible to determine whether changes made will remain stable over time.

In the light of these results and considering the aforementioned limitations, we carefully assert that *mindfulness* techniques, and more specifically Flow Meditation, may be useful and effective for intervention intended to reduce psychological distress and its many different components, including depression, anxiety and even trait worry in older adults. These results suggest that although the components of the MBSR program are not identical to those of Flow Meditation, their effects on the psychological variables studied seem to be similar. However, studies in this area must isolate the effects on the psychological variables by the many different mindfulness training programs that exist today more clearly, so intervention can target symptoms more specifically. We therefore strongly emphasize the need for conducting research to isolate the program components or elements responsible for changes. In this regard, a study by Delgado et al., (2015) has concluded that the interoceptive components of mindfulness, including paying attention to the body and affective-emotional states, were more effective in reducing chronic worry than attention to mental states or thoughts.

In conclusion, *flow meditation* training is a promising group-based intervention for lowering psychological distress, including worry and anxiety, and depression in older adults. This is one of the few studies examining the effects of mindfulness training in the elderly. Further longitudinal studies with long follow-ups and active control groups are needed to confirm these findings. Lastly, one of the main advantages of this program is that it can be given as a group, which reduces the costs to participants and the burden on



clinicians. It also implies the optimization of the economic and social resources invested in health.

**Conflict of Interest Statement:** The authors declare that the research did not involve any commercial or financial relationship that could be construed as a potential conflict of interest.

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