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ORIGINAL ARTICLE

Transcultural Pilot Study of the Efficacy of Reminiscence Therapy for Mexican and Spanish Older Adults with Different Levels of Cognitive Decline

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Abstract

The main objective for this study is to analyze the impact of a positive reminiscence therapy program (REMPOS) in cognitive functioning and depressive symptomatology for older adults in different vital situations (healthy aging, mild cognitive impairment, and Alzheimer's disease).

This is a transcultural comparative study (older people from Spain and Mexico). A randomized design with pre-posttest measurement and twelve groups was formulated, during a period of six months of intervention (3 in Mexico and 3 in Spain). The design had: 6 experimental groups with REMPOS intervention (3 in Mexico and 3 in Spain) during a period of six months and 6 control groups that received cognitive stimulation.

While a key aspect of this study is the cross-cultural differences, an important part is to determine whether each experimental group had similar results in terms of the change in magnitude between the pre and post analysis. In general, intervention significantly improved cognitive function and decreased depressive symptoms.

These findings provide further evidence about the efficacy of the REMPOS therapy between different types of aging and both geographical and cultural contexts (Spain and Mexico).

Keywords Aging · Cognitive stimulation · Depressive Symptomatology · Memory and Reminiscence

Extended author information available on the last page of the article

Introduction

Over the last decades changes in the sociodemographic curve led to a significant increase in life expectancy (Eurostat, 2020), although this situation is also associated with a higher prevalence of cognitive impairment and dementia. Epidemiological studies point to the importance of mood change in older adults, difficulties doing daily activities and the consequences that derive from loneliness (Armitage & Nellums, 2020; Berg-Weger & Morley, 2020). All these factors undermine the bases for resilience and adaptive response, making them especially vulnerable to disorders linked to emotional dimensions of identity (e.g., depression and helplessness) as stated in different studies (Chen, 2020; Sundstrom et al., 2020; Zhou, 2020).

A great deal of research shows that reminiscence therapy is one of the most used non-pharmacological therapies to treat cognitive and emotional problems of older adults (e.g., Khait and Shellman, 2020; Ching et al., 2020; Khait et al., 2021; Kim and Lee, 2019; Park et al., 2019). The reason behind its popularity has to do with the effect it has on the Autobiographical Memory (AM) and the possibility of rewriting personal experiences (Afonso et al., 2015; Fernández et al., 2020). There are different types of reminiscence therapy (RT) in terms of the application modality and the therapeutic objectives. One of the most implemented is "life review", which has an individual format and the purpose is aimed at achieving a feeling of reconciliation with the past to give meaning to your life (Frankl, 1984), a shared cross-cultural dimension (Hofer et al., 2020). On the other hand, general reminiscence addresses the stimulation of AM in a less structured way during a variable number of sessions on specific topics from the past. Reminiscence can be carried out individually or in a group, being a method that improves cognitive functioning and reduces depressive symptomatology by stimulating autobiographical memory. The evidence of the efficacy of RT in samples of healthy older people has been controversial, and benefits for people with dementia are evident despite the studies and results being less robust than those relating to healthy people (e. g. Dempsey et al., 2014; Huang et al., 2015; Moon and Park, 2020; O' Philbin et al., 2018; Park et al., 2019; Thomas and Sezgin, 2021; Woods et al., 2005). There is little literature about the comparison of the continuum in the aging process from a normal to a pathological aging, using the same therapeutic interventions and evaluating similar dimensions, namely reminiscence. And we refer specifically to the efficacy in the transition stage between both realities, which is the clinical entity of Mild Cognitive Impairment (MCI) (Van Van Bogaert et al., 2016).

Positive Reminiscence Therapy Program (REMPOS) is a reminiscence program developed by Cabaco (2019) which uses triggering stimuli, generic or specific, that facilitate accessibility to AM. REMPOS is based on the Review of Life focused on Specific Positive Events (ReViSEP) developed by Serrano (2002), which has an interview format that's administered individually, with a 4-session structure and progressive contents such as infancy, adolescence, adulthood, and a life summary. REMPOS is a group program intervention with a broader content structure both in time and the objectives that need to be trained. Both share the epistemological foundation in Positive Psychology (Seligman, 2011) and the main focus in improving AM specifically in recalling positive memories. In previous studies, the results show REMPOS

has an improvement in cognitive and emotional variables in samples of healthy and impaired older people (Villasán, 2019; Villasán et al., 2021).

Spain and Mexico are countries with a very different cultural and demographic background, social and economic context of aging, but with important commonalities, namely language, which offers the possibility of developing joint intervention strategies in the context of aging. Research has found important differences between these two countries, for instance, in Spain, external elements such as social relationships and environment are considered more important for the quality of life, whereas in Mexico, internal elements such as health and functional capacity are more valued (Santacreu et al., 2016). However, there is a lack of comparative research on psychological functioning in different countries (e.g. Dahlberg et al., 2018), namely about interventions in older adults for which there is an important and growing need in both countries.

This study aims to analyze the efficacy of the REMPOS therapy program in comparison to a standard classic intervention (cognitive stimulation) in terms of cognitive functioning and depressive symptomatology. In addition, it is intended to verify the differential efficacy in healthy older people and older people with different levels of cognitive deterioration. It also intends to verify the cross-cultural usefulness of the REMPOS program in two samples of Spanish and Mexican older adults.

Materials and Methods

Participants and Design

The participants were 144 older adults, 77 from Spain and 67 from Mexico. Proportions of each gender were similar in both samples, 75.3% females (58 females, 19 males) in the spanish sample, and 76.1% females (51 females, 16 males) in the mexican sample, giving a total of 75.7% females (109 females, 35 males) in the full sample. The mean age was 79.9 years (SD = 9.28) for the full sample, 83.1 years (SD = 7.54, range between 65 and 97 years) for Spain, and 76.2 years (SD = 9.74, range between 62 and 97 years) for Mexico. Men in both countries had similar mean ages, with 79.3 years (SD = 7.18) for Spanish men, and 77.3 years (SD = 8.65) for Mexican men. With a mean age of 84.3 years (SD = 7.3) Spanish women were older than Mexican women in the sample, who had a mean age of 75.8 years (SD = 10.1).

Inclusion criteria included: (1) be 65 years of age or older; (2) with healthy aging (HA) or MCI or a previous diagnosis of Alzheimer's Disease (AD) and (3) who resided or visited Residential Care Facilities (RCFs) or day centers where the intervention was carried out.

Instruments

All participants performed a pre and posttest assessment with Montreal Cognitive Assessment (MoCA) (Gallego et al., 2009), the Mini- Mental State Examination (MEC) (Lobo et al., 2008), and the Geriatric Depression Scale (GDS-30) (Yesavage et al., 1982; Camacho-Conde & Galán-López, 2021). After the pretest evalua-

tion, participants integrated in the REMPOS intervention program (Cabaco, 2019) (experimental groups) or in a standard cognitive stimulation program (Cabaco, 2016) (control groups) in both the Spanish and Mexican samples, followed by posttest evaluation.

Procedures

There were four phases within this study:

(1) Contact with the institutions, RCFs and Daycare Centers for older adults. In both countries, older people pertaining to the three types of subsamples (healthy aging, with MCI or incipient AD) were recruited in these institutions. Due to the level of autonomy, the HA and MCI participants were recruited from Daycare Centers, while the participants with incipient AD were recruited from the Residential Care Facilities. The typology differs between the two countries in terms of affiliation, organization, and operation, but it still aids in understanding the source of the sample. Presentation of the purpose of this study, the planned schedule, as well as the methodology to 12 institutions located in the city of Salamanca, Spain and in the city of Tijuana (Mexico), having accepted to participate.

(2) Selection of participants, pre-test evaluation and group creation. The sample was selected by mass screening incidentally through. The total sample was divided into twelve groups (Table 1): six experimental groups with three levels of aging (HA, MCI and AD) and six control groups with similar levels of aging (HA, MCI and AD). The participants of the HA and MCI groups did not have a previous diagnosis of AD. The HA participants had no sign of cognitive deficit and MCI participants have signs of cognitive deficit according the cut-off established for Mexico (HA, MEC ≥ 24 and MCI, MEC < 24) and Spain (HA, MEC > 25) and MCI (MEC < 25) The participants of the AD group have AD diagnosis. A total of 144 participants were included.

(3) Intervention: implementation of 12 sessions of REMPOS therapy with the experimental group (AD, MCI and HA) and 12 sessions with Cognitive Stimulation

Table 1 Comparison of pre-test scores across countries

	Spain Mean (SD)	Mexico Mean (SD)	*t*	df	*p*	Hedge's g
Alzheimer	n = 26	n = 21				
MOCA	13.4 (4.9)	7.43 (5.4)	3.96	40.8	**0.005**	1.17
MEC	22.2 (4.4)	14.4 (6.7)	4.62	33.1	**0.001**	1.38
GDS	8.9 (3.8)	12.2 (7.5)	-1.88	28.4	0.562	-0.60
MCI	n = 24	n = 22				
MOCA	12.1 (4.4)	10.4 (3.8)	1.38	43.9	0.875	0.41
MEC	19.8 (3.6)	17.5 (3.9)	2.02	42.9	0.543	0.60
GDS	13.4 (5.4)	11.5 (7.3)	1.00	38.7	1.00	0.30
Healthy Aging	n = 27	n = 24				
MOCA	19.2 (4.2)	20.0 (3.9)	-0.65	48.9	1.00	-0.18
MEC	27.5 (2.3)	26.0 (1.8)	2.73	47.9	0.114	0.76
GDS	13.4 (5.1)	10.4 (5.9)	1.95	45.6	0.543	0.55

Notes. Hypothesis testing are independent samples Welch t-test, and p values are corrected for multiple comparison with Holm correction

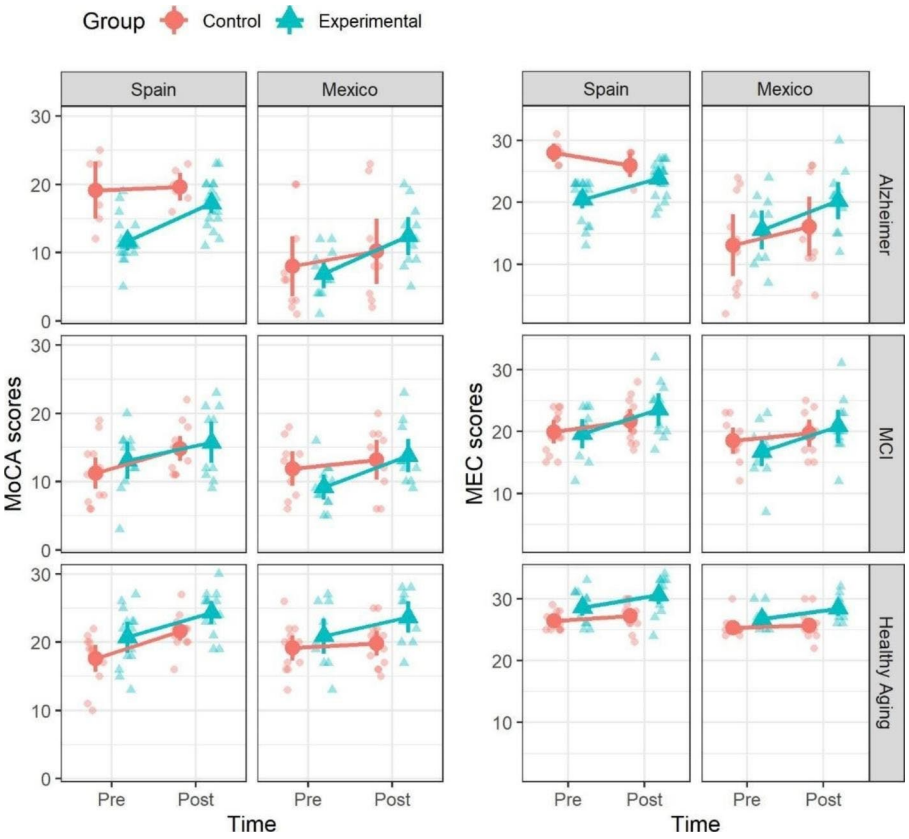

Fig. 1 MoCA and MEC scores pre and posttest for each type of aging, condition, and country

therapy with the control group (AD, MCI and HA) in unison with both countries. In order to implement both types of intervention programs to the Mexican population, certain linguistic modifications had to be made to improve the comprehension of the older people. The groups were formed by a maximum of 13 people for the HA and MCI groups, and by a maximum of 11 people for the AD groups, having two 1 h sessions per week.

The guide used for cognitive stimulation were exercises selected from the program developed by Cabaco (2016). The theme of each session is: 1. Cues to improve registry: concentration; 2.Organizing information; 3.Visualization and misattributions; 4.The importance of language; 5.Routes and semantic knowledge; 6. Reading and comprehension, and procedural knowledge; 7.Basic math and arithmetics; 8. Math skill stimulation; 9.Relational memory training I; 10. Relational memory training II; 11.Importance of self-regulation and attention and 12.Breathing exercises.

The REMPOS (Cabaco, 2019) consists of the following sessions: (1) Introduction to reminiscence; (2) Everyday things; (3) My present-past-future; (4) Interpersonal relationships; (5) Important dates; (6) Celebrating dates/ holidays; (7) Occupations and professions; (8) Games; (9) Remembering loved ones; (10) Music and memo-

ries; 11. Reirpos (positive emotions through laughter) and 12. Laughing more, living more.

(4) Posttest evaluation of all the participants (experimental and control group). All of the repeated measures were done between 3 and 3.5 months.

Data Analysis

There were two main questions for the intended comparison across countries. First, we tested if there were any differences across the three types of aging between Mexico and Spain. For this question, we compared only the pre-test scores across all six measures, for the three types of aging, controlling for type-1 errors by correcting for multiple comparisons with the Holm method. The main findings relate to the differences found in these comparisons.

Second, we analyzed if the effects of the interventions varied across countries. For this question, we ran $2\times2\times3\times2$ repeated measures ANOVAs with the predictors time (pre, post scores, only within-subjects measures), condition (experimental, control), type of aging (healthy aging, MCI, AD), and country (Mexico, Spain). When any of the interactions with country and type of aging were significant, we ran repeated measures ANOVAs for each type of aging, with predictors Time, condition, and country. Furthermore, we tested for the interaction between time and group condition for each type of aging in each country, which would allow us to say if the interventions differ across types of aging in each country. Finally, we ran simple main effects analyses for the predictor time within each group condition in each country, to further clarify the interactions in each country. These last simple main effects were already reported in the previous studies, but here we report the comparison across countries, for which we include these results in the Supplementary Table 1.

With these two analyses strategies we expected to find out if there were differences in the samples of the two countries before the interventions, and if the interventions had different effects across countries.

Scores were assumed to be robust enough to analyze them with parametric statistics, based on the assumptions analyses reported by the authors (Villasán, 2019).

Results

Differences Across Countries

To identify cross-cultural differences in the Spanish and Mexican samples, we compared only the pre-test scores in the six dependent measures, correcting for multiple comparisons, which are shown in Table 1. The Alzheimer's sample showed significant differences across countries in the cognitive scores, MoCA ($p=.005$, Hedge's $g=1.17$) and MEC ($p=.001$, Hedge's $g=1.38$), where the Mexican sample had lower scores, but the MCI and healthy aging samples did not show significant differences.

Supplementary Table 1 presents the effects of the interventions across countries in Cognitive functioning (MoCA and MEC) and depressive symptomatology (GDS).

Effects of the Interventions Across Countries in MoCA Scores

For the MoCA scores, the triple interaction between condition, time and type of aging ($F(2,129)=3.736$, $p=.026$, $ges=0.008$) and the interaction between type of aging and country was statistically significant ($F(2,129)=9.883$, $p=.0001$, $ges=0.116$). More importantly, the double interaction between condition and time was significant ($F(1,129)=17.091$, $p<.001$, $ges=0.019$). According to this pattern of results, the difference between the effectiveness of the experimental and control treatments depends on the type of aging only, but not the country. Nonetheless, since there was also an interaction between type of aging and country, we ran repeated measures ANOVA for each type of aging with the predictors time, condition, and country, to test where the interaction between condition and time differed.

In the Alzheimer's group, the interaction between condition and time was significant ($F(1,42)=30.62$, $p<.001$, $ges=0.05$) and found a significant effect of time only for the experimental groups in both Mexico and Spain, but not for the control groups of either country.

For the MoCA scores in the MCI group, the triple interaction between condition, time and country was statistically significant ($F(1,41)=5.067$, $p=.03$, $ges=0.018$), meaning that the interaction between condition and time differed across countries. The interaction between condition and time was significant in the Mexican sample ($F(1,19)=6.86$, $p=.017$, $ges=0.045$), but not in the Spanish sample ($F(1,22)=0.469$, $p=.50$, $ges=0.003$). Simple main effects for the predictor time in experimental and control groups of either country showed that in the Spanish sample, the control condition improved with the intervention, while the adjusted p value for multiple comparisons did not reach statistical significance for the experimental condition. In the Mexican sample, only the experimental group improved. In summary, the experimental treatment was better than the control in the Mexican sample of MCI patients, while it was less effective than the control condition in the Spanish sample.

For the MoCA scores in the healthy aging group, main effects of time ($F(1,46)=33.465$, $p<.001$, $ges=0.152$) and condition ($F(1,46)=9.639$, $p=.003$, $ges=0.136$) were statistically significant, but not the main effect of country ($F(1,46)=0.116$, $p=.735$, $ges=0.002$). We still tested simple main effects of time in each condition in each country, from which we found that the predictor time was significant in both experimental and control conditions of the Spanish sample, but only in the experimental condition of the Mexican sample. Since the interactions including country were not significant, these results are not clear whether the statistical power was low to detect those interactions, or to detect the effect of time in the control group of the Mexican sample.

In summary, there was a clear pattern for the MoCA scores, where the Alzheimer group showed the stronger improvement with the reminiscence program compared to the control condition. In the healthy aging sample, although the reminiscence program was also effective, the effect was not stronger than cognitive training. These two results were similar in both countries. On the contrary, in the MCI sample, the reminiscence program had higher effectiveness than the control condition only in the Mexican sample, while the control condition showed better results in the Spanish sample.

Effects of the Interventions Across Countries in MEC Scores

For the MEC scores, the triple interactions between the predictors time, country, and type of aging ($F(2,129)=4.324$, $p=.015$, $ges=0.008$), and between condition, country and type of aging ($F(2,129)=5.187$, $p=.007$, $ges=0.066$) were statistically significant. Moreover, the double interaction between condition and time was significant ($F(1,129)=31.001$, $p<.001$, $ges=0.029$). With this pattern of results, where the separate effects of time and condition varied across types of aging, we ran separate repeated measures ANOVA for each type of aging with the predictors time, condition, and country, to test where the interaction between condition and time differed across countries.

For the MEC scores in the Alzheimer's groups, all the double interactions between time and country ($F(1,42)=7.144$, $p=.011$, $ges=0.018$), between condition and country, ($F(1,42)=7.014$, $p=.011$, $ges=0.129$), and between time and condition ($F(1,42)=14.948$, $p=.0004$, $ges=0.038$) were statistically significant. This pattern of results indicates that the difference in effectiveness between experimental and control conditions does not depend on the country, but the general effect of both interventions did vary across countries. To understand these interactions, we ran simple main effects analyses of the predictor time across both experimental and control groups in each country, adjusting p values for multiple comparisons. The simple main effects showed that both experimental groups in Spain and Mexico had statistically significant differences between pre and post measures, while the control groups in either Spain or Mexico did not (see Supplementary Table 1). An interesting pattern that emerges here is that, while in Mexico both interventions improved MEC scores, in the Spanish sample the control group had lower scores post-intervention, even though none of these differences in the control condition reached statistical significance. In summary, although in general the Mexican sample had lower MEC scores, the reminiscence program showed greater improvements on the Alzheimer's groups compared to the control condition in both countries.

For the MEC scores in the MCI groups, the triple interaction between predictors time, condition, and country was not statistically significant ($F(1,41)=0.106$, $p=.746$, $ges=0.0004$), indicating that the difference in the effect of each condition (experimental and control) was equivalent in both countries. Neither of the double interactions between country and time ($F(1,41)=0.106$, $p=.746$, $ges=0.0004$), or between country and condition ($F(1,41)=0.213$, $p=.647$, $ges=0.004$) were statistically significant. More importantly, the significant double interaction between condition and time ($F(1,41)=7.728$, $p=.008$, $ges=0.025$) indicated that the effect of the intervention was different in the experimental and control conditions. To further analyze these differences, we ran simple main effects analyses for the predictor time, in each condition (experimental and control) in each country. Both experimental groups in Spain and Mexico showed significant differences between pre and post intervention measures, and both control groups did not (see Supplementary Table 1). In summary, the reminiscence program had a larger effect on the MCI sample in both countries, compared to the control condition.

For the MEC scores in the healthy aging group, the double interaction between time and condition was statistically significant ($F(1,46)=7.596$, $p=.008$, $ges=0.027$).

These results meant that there was a difference in the effectiveness of the experimental and control conditions, but it did not differ across countries. To further analyze these interactions, we ran simple main effects analyses of the predictor time for each condition in each country. As expected, the experimental groups in both Spanish and Mexican samples had statistically significant differences between pre and post intervention scores; but none of the control groups showed these differences (see Supplementary Table 1). In summary, measured by MEC scores, the reminiscence program showed higher improvements in the healthy aging samples than the control condition, and this applied for both countries.

In summary, the reminiscence intervention showed greater improvements in MEC scores for all three types of aging compared to the control intervention, and this was similar across both countries. In contrast to the MoCA scores, the MEC scores showed an improvement pattern similar across types of aging and countries. The only exception was for the Alzheimer's group in the Spanish sample, where the participants in the control condition had lower MEC scores after the intervention.

Effects of the Interventions Across Countries in GDS Scores

For the GDS scores, the triple interaction between predictors time, condition and country was statistically significant ($F(1,129)=15.088$, $p<.001$, $ges=0.014$), as well as the interaction between time, type of aging and country ($F(2,129)=6.037$, $p=.003$, $ges=0.011$). Given that the interaction between time, condition, and country was significant, this meant that the difference in the effectiveness in experimental conditions (experimental and control groups) varied across countries. We ran separate repeated measures ANOVA with predictors time, condition and country for each type of aging.

For the GDS scores in the Alzheimer's groups, the triple interaction between condition, time, and country was statistically significant ($F(1,42)=6.944$, $p=.012$, $ges=0.014$), meaning that the double interaction between condition and time, and therefore the difference in effectiveness between experimental and control conditions, varied across countries. To further analyze this, we ran separate repeated measures ANOVA for each country, and tested the double interactions between time and condition. In the Spanish sample, neither the double interaction between time and condition ($F(1,24)=1.68$, $p=.207$, $ges=0.007$), nor the main effects of time ($F(1,24)=1.04$, $p=.317$, $ges=0.005$), and condition ($F(1,24)=0.18$, $p=.675$, $ges=0.007$), were statistically significant. On the contrary, in the Mexican sample, the double interaction between time and condition was statistically significant ($F(1,18)=17.2$, $p<.001$, $ges=0.069$). To confirm the pattern of results that would give rise to this interaction, we ran simple main effects for the predictor time in each experimental condition in each country. As expected, the experimental group in the Mexican sample showed statistically significant differences between pre and post GDS scores, but not in the control group (see Supplementary Table 1). Surprisingly, even with adjusted p values for multiple comparisons, the experimental group in the Spanish sample showed this difference, but not the control group (see Supplementary Table 1). In summary, the effectiveness of the reminiscence program in GDS scores varied across countries, where the experimental group in the Mexican sample showed stronger effect than the

control group. Although this pattern was also present in the simple main effects in the Spanish sample, the effect was stronger, nearly double, in the Mexican sample.

For the GDS scores in the MCI sample, the triple interaction between time, condition, and country was statistically significant ($F(1,41)=6.20$, $p=.017$, $ges=0.018$). This triple interaction meant that the double interaction between time and condition, which is indicative of the difference in the effectiveness of the experimental condition compared to the control, varied across countries. To further test this, we ran separate repeated measures ANOVA with predictors time and condition for each country. In the Spanish sample, neither the double interaction between time and condition ($F(1,22)=0.015$, $p=.903$, $ges=0.0001$), nor the main effects of time ($F(1,22)=0.766$, $p=.391$, $ges=0.004$) and condition ($F(1,22)=0.00001$, $p=.998$, $ges<0.0001$) were statistically significant. In the Mexican sample, only the double interaction between time and condition was statistically significant ($F(1,19)=9.52$, $p=.006$, $ges=0.056$). To clarify the meaning of this double interaction, we ran simple main effects analyzes with the predictor time for each condition in each country. As expected, the experimental group of the Mexican sample showed statistically significant differences between pre and post GDS scores, but not the control group. Neither the experimental nor the control groups of the Spanish sample showed differences pre-post intervention. In summary, in the MCI sample, the reminiscence program showed greater effects than the control condition only in the Mexican sample.

For the GDS scores in the healthy aging sample, the double interaction between time and country was statistically significant ($F(1,46)=8.154$, $p=.006$, $ges=0.03$), but the double interaction between time and condition was not ($F(1,46)=0.959$, $p=.332$, $ges=0.004$). To further clarify these double interactions, we ran separate repeated measures ANOVA with predictors time and condition for each country. Neither of the double interactions between time and condition in either the Spanish ($F(1,25)=0.404$, $p=.531$, $ges=0.002$) or Mexican ($F(1,21)=2.54$, $p=.126$, $ges=0.024$) samples were significant. In the Spanish sample, the main effect of time was significant ($F(1,25)=41.4$, $p<.001$, $ges=0.2$), but not the main effect of condition ($F(1,25)=3.29$, $p=.082$, $ges=0.1$). On the contrary, in the Mexican sample, the main effect of condition was significant ($F(1,21)=12.4$, $p=.002$, $ges=0.321$), but not the main effect of time ($F(1,21)=1.06$, $p=.315$, $ges=0.01$). To confirm the effects of each intervention, we ran simple main effects analyses for each condition in each country. In the Spanish sample, as expected from the significant main effect of time, both experimental and control groups showed differences between pre and post intervention GDS scores. Interestingly, in the Mexican sample, the experimental group showed significant differences between pre and post intervention scores, but not the control group (see Supplementary Table 1). In the case of the Mexican sample, there was a clear difference between the experimental and control group from the beginning, which could have masked the effect of the experimental condition, as seen in Fig. 2. In summary, the overall pattern is that both the reminiscence intervention and the control condition had positive effects in lowering GDS scores in the Spanish sample, but in the Mexican sample this happened only in the reminiscence group.

In summary, overall, in GDS scores, the reminiscence intervention showed stronger results in the Mexican sample in the three types of aging, whereas in the Spanish sample only the healthy aging group showed pre-post differences and on both condi-

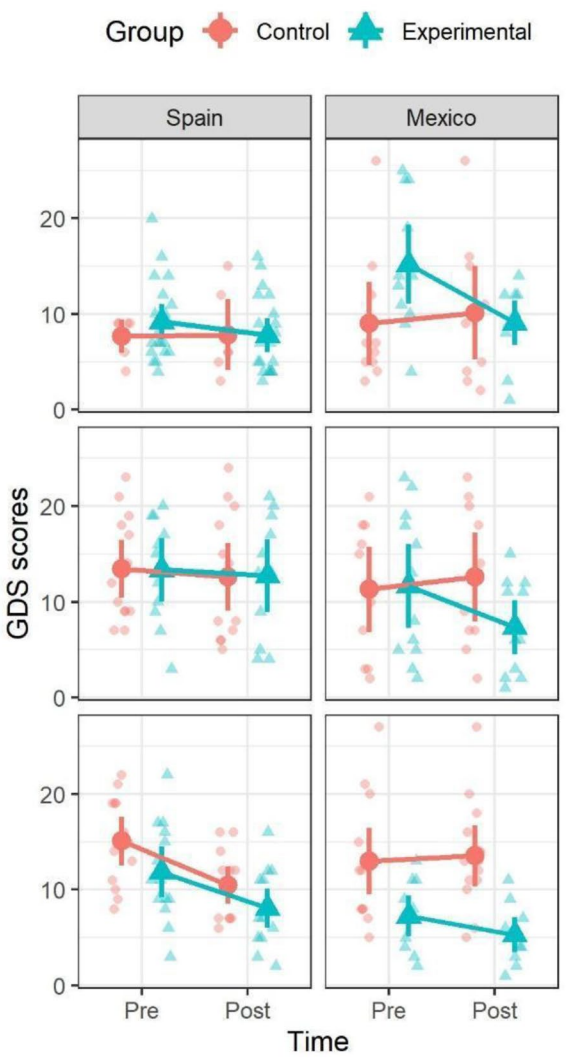

Fig. 2 GDS scores pre and posttest for each type of aging, condition, and country

tions. Therefore, the reminiscence intervention had differential cross-cultural effects in GDS scores, where the Mexican sample benefited from the intervention, but the Spanish sample less so.

Discussion

A key defining element of this article is the transculturality design. Understanding transculturality as a phenomenon that occurs when a social group (Mexico) receives and adopts the cultural forms (in this case the intervention) that come from another group (Spain) (Fernandez et al., 2021).

In this research we tried to determine if the magnitude of the change produced in the pre-post analysis of the samples from both cultural contexts were similar. Although we are aware of the differences that exist in both cultural contexts, for this reason we tried to make the necessary adjustments to the intervention so that it was as similar to the one previously carried out in Spain.

In relation to the cognitive level, we observed significant changes in the groups after the intervention, showing significant improvements in the experimental groups for both countries (AD, MCI and HA) having higher results in Mexico compared to Spain, and also having higher results in both countries for the AD groups. A way to interpret the results could come from the current use of therapies that focus on updating and recording present information, overlooking the fact that if we activate positive memories we can use them as a basis for creating new memories (Villasán, 2017; Villasán et al., 2021).

In regards to the depressive symptomatology, after the intervention we can observe a clear decrease for both countries' experimental groups in the three types of aging (AD, MCI and HA). The decrease in scores is much more significant in Spain's HA group and in Mexico's AD and MCI groups. In regards to the control groups (which received cognitive stimulation), we can observe certain stability in both countries and types of aging except for the HA type of aging in the Spanish sample, which tends to decrease its scores after the intervention. Some possible explanations for these differences may be due to the lack of homogeneity of the samples from both countries, since in the Mexican subsample the levels of cognitive states are lower. Other studies have shown improvements in more deteriorated cognitive levels with this type of intervention (Fernández-Mateos et al., 2022). In this sense, the results of a study conducted in Chile using REMPOS show that several sessions needed specific changes in relation to the presence of functional illiteracy, motor, and sensory limitations in the elderly (Schade et al., 2021). Showing that it's possible that the characteristics of autonomy-dependence may be one of the reasons for the discrepancy. Furthermore, variations in the outcomes may arise from distinct intervention approaches, with on focusing on cognitive facets and the other on emotional elements (González et al., 2019). Cultural differences between Mexico and Spain could explain certain differences in the results. These disparities arise partly from distinct social norms in each country, which impact how events and personal stories are remembered and understood. In a recent comparative study across 26 European countries during the COVID-19 pandemic, Koompai and Royer (2022) examined six variables: quality of life, democracy and trust, working during COVID-19, financial situation, psychosocial, and medical attention. The results reveal two clusters of representations based on certain indicators. Nordic countries, characterized by greater tolerance for uncertainty (forbearance), exhibit higher levels of quality of life even amid the pandemic. In contrast, Eastern European and Mediterranean countries (like Italy, Spain, Greece) exhibit a stronger sense of power distance and uncertainty avoidance, affecting the perception of quality of life. Therefore, this contextual factor is crucial when trying to analyze and comprehend both protective and vulnerable reactions to biographical interpretations, which is evident across European continent and therefore could also apply between Spain and Mexico. Another variable that plays a significant role is the attitudes people have towards aging. In a comparative study between Mexico and

Spain it was found that women generally held more negative attitudes towards aging than men, while young Spaniards displayed the highest number of negative attitudes towards aging (Prieto et al., 2021). These social representations of old age influence the responses older people have towards the aging process. Another possible explanation for the differences found, but one that would need additional research, is the one related to the modalities of reminiscence as a natural and universal process which is inherent to each country. This is shown in a recent study (Akdag et al., 2023) were prosocial and autopositive reminiscence are related to self-improvement, while self-negative reminiscence are predictors of depression or post-traumatic stress, particularly in the context of stressors like the recent COVID-19 pandemic. Overall, the collected results concur that encouraging positive reminiscence among older adults enhances their sense of well-being and strengthens aspects of their positive identity memory. The conclusion drawn is that reminiscence-based programs effectively enhance well-being and perceived happiness in both independent and institutionalized older individuals. Consequently, these interventions will be expanded while considering cultural nuances.

Given the expected rise in population over the next 30 years according to the World Health Organization (WHO, 2020), that state it will go from a 12% to a 22% (some 400 million older adults over 80 years of age), it is imperative to continue developing research that show the efficacy of non-pharmacological therapies. This demographic estimation affects both Spain and Mexico, since Spain's population of 65 years and older in the year 2035 is estimated to be around 26.5% of the total population (INE, 2020), and in Mexico's case the information provided in 2020 suggests that population of 60 years and older increased from 5 to 15.1 million people (Grande et al., 2021). Therefore, the interventions focused on reminiscence have the potential to improve cognitive and emotional functioning due to the type of activities and techniques which are related to recalling past events and experiences, that seems to be necessary throughout aging and in older age since it helps integrate the past and present self, it reinforces one's own identity, increases self-esteem and helps people redefine their past and present selves (Justo-Henriques et al., 2020; Pino & Escárcega, 2016; Salazar-Villanea, 2020; Serrat et al., 2021; Villasán et al., 2021).

In previous research (Villar & Serrat, 2017; Villasán et al., 2021), where REMPOS therapy was applied to autonomous older people with different levels of cognitive impairment, the experimental group showed a statistically significant increase in cognitive function, life satisfaction and self-esteem, as well as a decrease in depressive symptoms when comparing the results to the control group. In this research, we extended the previous data to test the effectiveness of the REMPOS program in Mexico and Spain with the confirmed cross-cultural evidence, also considering the normal and pathological aging factors that were previously mentioned.

It is also important to mention the limitations that our research had. Our sample groups were defined by a cognitive screening test (MEC) that's widely used with normal group distribution. Nevertheless, when compared to the other cognitive screening test (MoCA), the group distributions did not adjust to the typical cutoff points, and even when using the correlation between those measures, there are several considerations (including education) that can have a notable impact on MoCA performance.

Specifically, the majority of the sample had a primary and secondary education level or even less, which could've had an effect on the performance and thus scores.

Among other considerations, all participants in the group defined by MEC scores lived in nursing homes, which could be associated with a higher prevalence of undiagnosed or early-stage cognitive impairment, in a context where there are few stimulating daily activities. Although we think the groups were correctly identified, they did not perform as well as we expected in all the cognitive tasks. Nonetheless, all three of the experimental groups showed significant improvements in these tasks.

Also, some limitations should be considered for future work. First of all, it is a pilot study, so the sample size should be increased to generalize the results. It would also be necessary to expand the results and their consistency using a longitudinal methodology, to verify the stability of the improvements. Second, we used a convenience and non-probabilistic sampling, which could represent a bias regarding the representativeness of the Spanish and Mexican population of older adults. Third, greater homogeneity in the distribution by sex is needed, since the proportion of men is much lower.

Conclusions

This study explored how REMPOS therapy relates to the cognitive and affective variables and significant improvements stand out between the pre-test and post-test scores in relation to the intervention (experimental and controls), in the six experimental groups (AD, MCI and HA) for both countries.

Although reminiscing was considered as a possible sign of dysfunction or cognitive impairment in older age, it is currently considered to have adaptive functions serving as a positive predictor of mental health in older people (Kirk et al., 2019). The interventions that are based in reminiscence therapy are associated with a significant increase of general cognitive function and a decrease in depressive symptomatology (Villar & Serrat, 2017; Villasán et al., 2021).

We can't help but to emphasize the importance of the decrease in the depressive symptomatology in four experimental groups (AD and MCI), in contrast to the control groups (AD, MCI and HA). It is unclear why Spain's MCI experimental group did not respond as well to the intervention like the other four experimental groups. Some factors that could explain this are the low education levels and atypical baseline group measurements; in other words it could have been possible for some subjects on the MCI group to be better categorized in the AD group. Another possible consideration is the degree of awareness or agnosia that is specific to the MCI population; this very specific level of awareness could have affected their level of confidence during the intervention and thus skewing the results.

In general, the results showed in our research are consistent with other studies were they also demonstrate a decrease in depressive symptoms as one of the main objectives that occur when implementing reminiscence therapy in older adults (Afonso & Bueno, 2010; Afonso et al., 2011; Cappeliez & O'Rourke, 2006). Any non-pharmacological intervention that can decrease depressive symptoms in older people is of clinical importance (Villasán, 2017), since depressive symptoms are

quite common in aging. This result is consistent with previous studies that show how reminiscence plays an important role in older people's health due to its therapeutic and adaptive nature., therefore, influencing their quality of life (González-Arévalo, 2015; Villasán, 2017).

In conclusion, this study has shown positive results using a non-pharmacological therapy in older people. It is imperative to emphasize that people with cognitive impairment (specifically AD) show a better improvement in cognition and emotional aspects. Thus, the results found are quite encouraging, and indicate the need to continue promoting studies on this topic, since the use of REMPOS had shown to significantly decrease depressive symptoms, improve cognition and life satisfaction, increase the recall of specific memories, which are all imperative factors in the psychological well-being and quality of life of older people.

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Data Availability The data that support the findings of this study are available from the corresponding author upon request.

Declarations

Competing interests The authors have no conflicts of interest to declare.

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