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Well-Being, Self-Efficacy and Independence in older adults: A Randomized Trial of Occupational Therapy

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ABSTRACT

Objective: The main objective of the research was to analyze whether there were differences in the effects of individual and group occupational therapy (OT) treatment on psychological well-being, self-efficacy and personal independence.

Method: A randomized clinical trial (N = 70; age = 85 years, SD = 4) comparing individual versus group occupational therapy treatment for 6 months was conducted. The evaluation was performed with the Barthel Index (Personal Independence), the Ryff Wellness Index (Well-being), the Global Self-Efficacy Scale (Self-efficacy) and the Geriatric Depression Scale (Affective state Scale).

Results: Results showed a decrease in individual treatment scores in the variables autonomy, environmental mastery, personal growth and purpose in life, reflecting worse self-acceptance and negative well-being as well as a lower ability to maintain stable relationships. By contrast, group treatment users maintained more stable social relationships and exhibited a greater ability to resist social pressure, to develop their potential skills and to define their goals in life. There were statistically significant differences in overall self-efficacy ($p < 0.001$), emotional well-being ($p < 0.001$) and personal independence ($p = 0.013$), with better scores in group versus individual treatment.

Conclusions: Group occupational therapy interventions in older adults could be the treatment of choice in people with depressed state, improving their emotional well-being, sense of self-efficacy and level of personal independence in basic activities of daily living.

1. Introduction

Performing an activity (i.e., “doing”) is the main tool used by occupational therapists to achieve maximum independence among patients, understood as the ability to perform activities of daily living or ADLs (Romero-Ayuso, 2007). Autonomy is the ability to act independently of physical forces and influences maintaining control over events that occur depending on their context, for example regarding activities of daily living (basic, instrumental or advanced), productive activities (paid or unpaid), leisure activities, social participation and rest (Braynov & Hexmoor, 2003).

The main difference between independence and autonomy is that independence means doing things for oneself without depending on a third person, and autonomy is the ability to act and make personal choices.

Self-efficacy is a highly effective predictor of motivation and

learning in human beings. It is sensitive to changes in context and leads to reactions in activity choices, effort and persistence and also to emotional reactions (Zimmerman, 2000). By contrast, well-being is a multidimensional concept in which multiple factors are involved, such as mental, physical, social and environmental aspects related to a person's life. Therefore, the search for strategies to achieve happiness, positive experiences, satisfaction, pleasure and prosperity in life is a factor that helps understand people's lives, both individually and collectively by society (Pinto, Fumicelli, Mazzo, Caldeira, & Martins, 2017). Accordingly, quality of life is the optimal state of well-being in the dimensions of health (i.e., physical, mental, social, emotional and spiritual), while well-being is the result of an active process aimed at improving the individual's lifestyle.

The loss of autonomy is a slow and continuous process that can limit quality of life. Autonomy is defined as a multidimensional concept that plays a fundamental role in the individual's perception of his or her

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personal situation within the physical, mental, social and spiritual dimensions and is intrinsically linked to people's quality of life. In general, diseases that predispose to a loss of function begin by affecting the most complex ADLs first before impacting the simplest and most basic ones, namely eating (King & Guralnik, 2010).

Considering this, activities performed in a therapeutic context should meet a number of requirements such as having an objective or purpose; they should also be considered meaningful to patients, making them feel competent and self-sufficient, and cover patients' needs with respect to their status (i.e., physical, cognitive, social and emotional) throughout their lifetime (American Occupational Therapy Association, 2014).

The environment plays an important role in helping individuals increase their physical abilities or reducing their abilities to perform a particular task. The environment may play a significant role along with personal characteristics and activity demands in the aging process, independence and quality of life. When the effect of the environment is negative and disability arises, well-being, self-efficacy and independence decrease (Prieto Flores et al., 2008).

According to the Kawa model, the environment and individuals are closely interconnected and form a whole in a harmonious relationship. This model argues that individuals belong to a social context in which they form a whole with the community. The onset of illnesses limits their possibilities of performing activities with the community (Wada, 2011).

The Person-Environment-Occupation (PEO) model seeks to examine the barriers or supports that can be used by occupational therapists based on the constructs of the individual, the occupation and the environment. The relationship between these three items and the occupational therapist's practice is unique and requires careful examination to address the obstacles that arise in order to produce supports by developing an appropriate transmission strategy (Metzler & Metz, 2010). This model advocates identifying supports and barriers at the professional level, analyzing the occupation and practice environment that surrounds the patient and selecting activities that build on supports and reduce barriers.

Putnam argues that activity stimulates the process of adapting among individuals and promotes a greater consistency and stability in adaptation to change, which older individuals do not easily tolerate. The aim is to keep individuals occupied as long as possible, thus giving meaning and continuity to the activity and also improving perceived quality of life (Putnam, 2011). It has been proven that people who continue to perform their activities of daily living independently show better self-efficacy and overall well-being than those who do not.

Occupational therapy plays a very important role in the field of gerontology and geriatrics as a way of improving the independence of patients, reinforcing their development and preventing disability, thus improving their quality of life. Considering that patients are older adults, it is very important to enhance their quality of life and well-being through occupational therapy. It is also important to use tools and methods that can make it possible to achieve the objectives of the treatment and assess the starting point of patients to monitor their evolution (Kielhofner, 2006).

Another element to take into account is that "doing" is the main tool used by occupational therapists to achieve maximum independence, understood as the freedom to act, say and decide, and autonomy, defined as the degree of independence and power in actions and decision making.

Loss of autonomy, which is very common among older adults, is a slow and continuous process that can limit quality of life, understood as the set of subjective and objective factors that contribute to people's well-being (Turcotte, Carrier, Desroiers, & Levasseur, 2015).

As shown by Jessen-Winge, Petersen and Morville, it is very important for older adults to actively perform their activities of daily living, which are related to their health, well-being and positive experiences. Their findings have shown the existence of two key factors

that influence the well-being of older adults: independence in the performance of activities of daily living and the possibility of choosing their daily occupations. These highly related factors make it possible to find a balance between carrying out activities alone or accompanied by others that can improve the well-being of the elderly (Jessen-Winge, Petersen, & Morville, 2018).

Kumar and colleagues argue that an occupational therapy program led to better quality of life among the older adults who participated in it. The intervention focused on short-term physical and psychological components such as psychological well-being, motivation, positive outlook, performance of activities of daily living and improvement of affective state. At the end of the treatment, a substantial improvement was observed in the study participants (Kumar et al., 2014).

Based on Larson's Dynamic Time-Occupation Model (DOiT), there is a relationship between activity, ability and subjective perception of the passage of time and the patient's subjective experience of well-being as well as feedback resulting from the completion of the activity are key. This model, which was used to plan the activities of this research, promotes the dynamic participation of therapists in the selection of customized therapeutic activities and facilitates potential therapeutic pathways and strategies. The therapist provides positive experiences, which leads to a favorable change in the perception of both the complexity of the activity and the time required to perform it (Larson, 2004).

González and Extremera (González & Extremera, 2010) analyzed the association between optimism, self-esteem, ADL performance and well-being in older adults. They found a moderate correlation between well-being variables and participation in social activities and activities outside the home. Their results also revealed that self-esteem was significantly associated with social and creative activities and that the relationship between optimism and social and leisure activities was positive. In addition, Giesbrecht and Miller showed an interesting relationship between psychological well-being and functional level of performance in activities of daily living. One of the approaches of social cognitive theory is to advocate for self-efficacy as an influence on successful performance by looking at others' success, making the stimulus meaningful and appropriately interpreted as a positive user experience (Giesbrecht & Miller, 2017). In this regard, several models have emphasized the importance of considering self-efficacy as a priority element in occupational therapy evaluation and intervention (Tombly, 2001; Kielhofner, 2010; Kayama, Kobayashi, & Tsurumi, 2014).

Self-efficacy and self-esteem can decrease through lack of activity, which leads to a feeling of low self-efficacy in individuals. In general, the feeling of competence or self-efficacy is more robust between the ages of 25 and 65; this is the period when individuals have higher optimal levels of activity, with improved performance and diversified roles. By contrast, from the age of 65 onwards people gradually withdraw from these roles and their associated activities gradually decline; it is then that individuals become increasingly vulnerable to the influence of feelings of low self-efficacy and personal competence and a decrease of their psychological well-being (Mas & Desiderio, 2009). The literature reports that a great proportion of individuals aged 65 or more have problems of low self-efficacy, depression and a state of low quality of life and well-being; this contributes to lower rates of recruitment and retention, compromising individuals' personal independence (Corcoran et al., 2016).

In conclusion, it is necessary to explore the relationship between all these variables since there are no previous studies about this. The main objectives of this study were the following: 1) determine the effect of group and individual occupational therapy on individuals' level of independence in the performance of ADLs and 2) explore differences between groups and which types of interventions lead to the best results in the elderly regarding their personal independence in a residential environment. We also intended to determine 3) whether there is a relationship between the different dimensions of psychological well-

Table 1
Baseline data before the intervention.*

	Ind. TRT		Group TRT		p value	Differences between groups	
	n	%	n	%			
Sex					.588	.594	
	Male	29	51.8	27	48.2		
	Female	8	44.4	10	55.6		
Educational level					.428	.424	
	Primary	23	62.2	18	48.6		
	High school	9	24.3	14	37.8		
	University	5	13.5	5	13.5		
	Mean		SD	Mean	SD	p value	Differences between groups
Age		85.22	4.00	85.57	4.04	0.860	-.171
Barthel		55.86	30.085	52.14	30.853	.612	7.284
GDS		6.46	2.356	6.51	2.293	.918	.556
GSE		24.43	5.532	24.23	5.320	0.878	.200
Ryff	A	20.29	4.390	19.94	4.158	.738	1.022
	PR	22.17	1.932	21.91	1.704	.557	.436
	Auton.	27.49	4.591	26.77	3.797	.481	1.007
	EM	20.63	1.942	20.37	1.911	.578	.460
	PG	24.97	1.902	24.37	2.045	.208	.472
	PL	20.83	3.601	20.40	3.310	6.06	.827

A (Self-acceptance); PR (Positive Relations); Auton (Autonomy); EM (Environmental Mastery); PG (Personal Growth); PL (Purpose in Life); GDS (Geriatric Depression Scale); GSE (General Scale Efficacy); Barthel (Barthel Index); Educational level (Basic, High School, University); TRT (Treatment) *Two patients who died in each group were not included.

being, self-efficacy and the level of independence in performance of ADLs in comparisons between groups.

2. Material and methods

This research was based on a randomized experimental trial with a pre-post design comparing two types of treatment: individual occupational therapy and group occupational therapy.

The research hypothesis was that there would be differences in the effects of individual and group occupational therapy (OT) treatment on psychological well-being, self-efficacy, affective state, and personal independence in an elderly population.

The initial sample of this study consisted of 112 older adults living in retirement homes. The final sample comprised 74 subjects divided into two groups of 37 participants. Table 1 shows the sociodemographic characteristics of the sample. In both groups, the inclusion criteria were reading ability and normal cognitive function (i.e., score > 22 in the Mini-Mental Scale, which is the cut-off point according to the scoring instructions of the version adapted to the Spanish population) (Lobo, Saz, & Marcos, 2002; Miquel & Agustí, 2011). The exclusion criteria were correct health conditions that do not contraindicate or prevent treatment such as hearing loss, animal fear, acute visual impairment, intermittent claudication or repeated failure of performance during the study (the above exclusion criteria were designated in the flowchart as "not being able to carry out the activity without difficulty").

The clinical trial was conducted in two state-assisted retirement homes in Malaga, Spain, which agreed to participate in the research. There were no differences in the characteristics of each center, participants or methods of recruitment. All participants were interviewed at the beginning of the research to collect the necessary sociodemographic data (i.e., age, sex, educational level); in addition, the researchers verified that the cognitive level and skills and abilities of participants were appropriate to participate in the study (i.e., to carry out the necessary activities). During the interview, researchers explored the purpose and duration of the intervention and asked for participants' consent prior to enrollment in the intervention. The clinical trial was registered in the ClinicalTrials.gov website with identifier XXX and approved by the Ethics Committee. All participants gave their written consent.

Study planning and sample selection took place between January

and March 2015 (3 months). Pre-test values were recorded in April of that year. Once the sample was selected, participants were randomized to one of two groups of 37 participants (i.e., individual occupational therapy and group occupational therapy). After the pre-test evaluation, the intervention began in the month of May and lasted until the end of October. Post-test values of participants were recorded between November and January. The statistical analysis was performed between March and December.

All subjects were blinded during the study, that is, they did not know whether the treatment to which they were assigned was control or experimental. In all groups, activities were carried out three times a week with a duration of 45 minutes each session. The activities planned in each of the working groups were carried out in a schedule of three sessions per week, with possible changes of schedule depending on festivities or other events and a duration of 45 minutes per session approximately.

Both group and individual activities were classified into the following groups: 1) ADL training (feeding, oral hygiene, bathing, grooming, dressing, personal care, medication management, health maintenance, functional mobility, bowel control, pet care, caring for others, communication, community mobility, money management and food preparation); 2) Sensory-motor stimulation (sensory awareness, sensory processing, proprioceptive, tactile, visual, auditory, gustatory and olfactory senses, body schema, laterality, figure-background, spatial relationships, reflexes, range of motion, muscle tone, strength, endurance, postural control, fine-thick coordination, motor control, praxis, bilateral integration, viso-motor integration and midline crossing); 3) Cognitive area (reaction capacity, reality orientation, recognition, initiation and termination of activity, memory, sequencing, categorization, spatial operations, concept formation, problem solving, learning, generalization and attention); 4) Psycho-social skills area (self-concept, role playing, social behavior, interpersonal skills, self-expression, self-management, time management, self-control, community participation, leisure and free time).*; and 5) Animal assisted therapy (AAT)".

The activities that were conducted during the research consisted of three 45-minute weekly sessions during the six-month treatment (May-October). In both treatment modalities, activities included personal independence training (ADLs), sensory-motor stimulation activities, cognitive stimulation, and animal-assisted therapy (described in the

Supplementary Information). The intervention focused on the analysis of basic and instrumental activities of daily living. Only occupational group therapy participants were also trained in psychosocial skills, as such skills are not normally included in individual activities.

Participants as mentioned above were randomly assigned to four subgroups within each type of treatment to facilitate study performance: three groups of 9 participants and one of 10 participants.

In the individual occupational therapy treatment, patients worked independently of other patients and without social interaction in order to improve skills such as attention or concentration in specific activities that require continuous supervision and improve the effectiveness of individual work. This type of approach focused on the activities of subjects assigned to individual treatment, with the goal of maximizing patient autonomy to function without help through a positive feedback to improve confidence, self-efficacy and subjective experience (Fletcher-Smith, Walker, Cobley, Steultjens, & Sackley, 2013; Quiroz & Rangel, 2013).

Regardless of the group occupational therapy group patients were assigned to, they worked together in the same room sharing group experiences and problems but also carrying out the activities proposed to them jointly. Even when they performed the same activity as in individual therapy groups, the fact of performing it together turned it into a different approach. Such activities can lead to a relationship between patients, with the therapist acting as the director of the activity. The feedback increases as it given not only by the therapist but also by the rest of patients, who work actively to choose the activity and make decisions related to it (Kayama et al., 2014; Nagayama, Tomori, Ohno, Takahashi, & Yamauchi, 2015).

The following instruments were used:

Ryff's Psychological Well-Being Scale, adapted to Spanish by Van Dierendock. This scale is composed of 39 items and has an internal consistency (Cronbach alfa) of 0.78-0.81 (Díaz et al., 2006), supporting its valid use among older adults (Tomás Miguel, Meléndez Moral, & Navarro Pardo, 2008). Its aim is to measure the degree of psychological well-being of individuals.

The Spanish version of Schwarzer and Jerusalem's *General Self-Efficacy Scale* (GSE) (Baessler & Schwarzer, 1996), which has an internal consistency of 0.84 (SanJuan Suarez, Pérez García, & Bermúdez Moreno, 2000). The aim of this scale is to measure the degree of generalized self-efficacy of individuals through 10 statements.

The Barthel Index, which comprises 10 items and has an internal consistency of 0.86-0.92 (Cid-Ruzafa & Damián-Moreno, 1997). Its aim is to measure the level of dependence in the performance of ADLs.

Finally, the *Geriatric Depression Scale* (GDS), which comprises 15 items and has an internal consistency of 0.94 (Aguado et al., 2000). Its aim is to assess depression in the geriatric population.

The sample size selected for the study (74 participants) was determined using EPIDAT 4.0 software for a mean comparison of matched samples with a power (1-beta) of 80%, a significance level of 95%, a range of error of 5% and a total of 65 participants, with an additional nine subjects to cover potential losses during the intervention.

According to sample size calculations, a total of 74 participants (37 in each group) was required to present a hypothesis with a power of 80% (see Table 1). Patients were randomly assigned to individual therapy or group therapy following simple randomization procedures with STATA software.

The sampling was reported using descriptive statistics for both quantitative and qualitative variables. Differences in the main variables of the study were analyzed using the t-test or the Mann-Whitney test, depending on whether or not they followed a normal distribution. The chi-square test was used to determine the existence of differences in distribution according to sex, age and educational level. The independent variable was the methodology of occupational therapy (i.e., individual or group). The main dependent variables (i.e., self-efficacy, well-being, personal independence and affective state) were analyzed using a repeated-measures ANOVA for within-subject and between-

subject factors in order to obtain changes within the group and between groups. Statistical significance was set at $p < 0.05$. Data were analyzed using SPSS software, version 21.0. and collected by only one occupational therapist in both retirement homes (single blind).

3. Results

Four patients – two in each group – did not complete the intervention because they died, reducing the number of participants to a total of 70. The distribution according to the type of activity was homogeneous between men and women in both groups ($p = 0.569$). Ages ranged from 78 to 95 years ($p = 0.709$) with a mean of 85.22 (SD = 4.00) in individual intervention participants and 85.57 (SD = 4.04) in group intervention participants. As regards the sex distribution, there was a clear difference between women (77.1%) and men (22.9%) due to the higher mortality among men. There were no differences between groups before the intervention in terms of sex ($p = 0.594$). There were no statistically significant differences in educational level either. In both groups only 13.5% participants had a university degree; 24.3% of participants in the individual group had a high school diploma while 37.8% did so in the group therapy group; 62.2% had not completed primary education in the individual therapy group; this was the case of 48.6% participants in the group therapy group. There were no differences between groups before the intervention in educational level ($p = 0.424$). (see Table 1). A CONSORT flow diagram for recruitment is provided in Fig. 1.

Statistically significant differences were found between the scores of subjects who received group occupational therapy and those who received individual group therapy. The comparison of within-subject scores revealed statistically significant differences ($p = 0.013$); specifically, scores on independence in ADLs (Barthel Index) were much higher in the group occupational therapy group than in the individual therapy group ($p < 0.001$), in which independence worsened after the intervention (see Table 2). The comparison of within-subject scores also revealed statistically significant differences in the psychological variables general self-efficacy ($p < 0.001$), psychological well-being and its subscales, and affective state (GDS) ($p < 0.001$), both in the group occupational therapy participants and in individual occupational therapy participants.

Both groups rated themselves similarly in the psychological variables at pre-test. At post-test, individuals in the group therapy group exhibited higher psychological well-being in all domains. In the individual therapy group, improvements were only observed in self-acceptance ($p < 0.001$) and positive relationships with others ($p < 0.001$) (see Table 2).

Results regarding self-efficacy showed statistically significant differences between both types of treatment ($p < 0.001$). Significant differences were also found in within-subject measures in both group occupational therapy ($p < 0.001$) and individual occupational therapy ($p < 0.001$) groups (see Table 2). Although only group occupational therapy participants improved their self-efficacy, it is important to note that total self-efficacy was lower after individual occupational therapy as opposed to group occupational therapy ($p < 0.001$) (see Table 2).

In addition, as shown in Table 3, a statistically significant strong correlation was found between a) self-efficacy ($p < 0.001$) and self-acceptance and b) Purpose in Life ($p = 0.003$) in individual occupational therapy; statistically significant moderate correlations were found between the subscales of Self-acceptance ($r = 0.549$) and Purpose in Life ($r = 0.486$) in the same therapy group. In group occupational therapy participants, however, a strong positive and significant correlation was found between all domains of psychological well-being and the sense of self-efficacy (Self-acceptance; $r = .806$), (Positive Relationships; $r = .786$), (Autonomy; $r = .746$), (Environmental Mastery; $r = .585$), (Personal Growth; $r = .615$), (Purpose in Life; $r = .845$) and (Personal Independence; $r = .564$) (see Table 3).

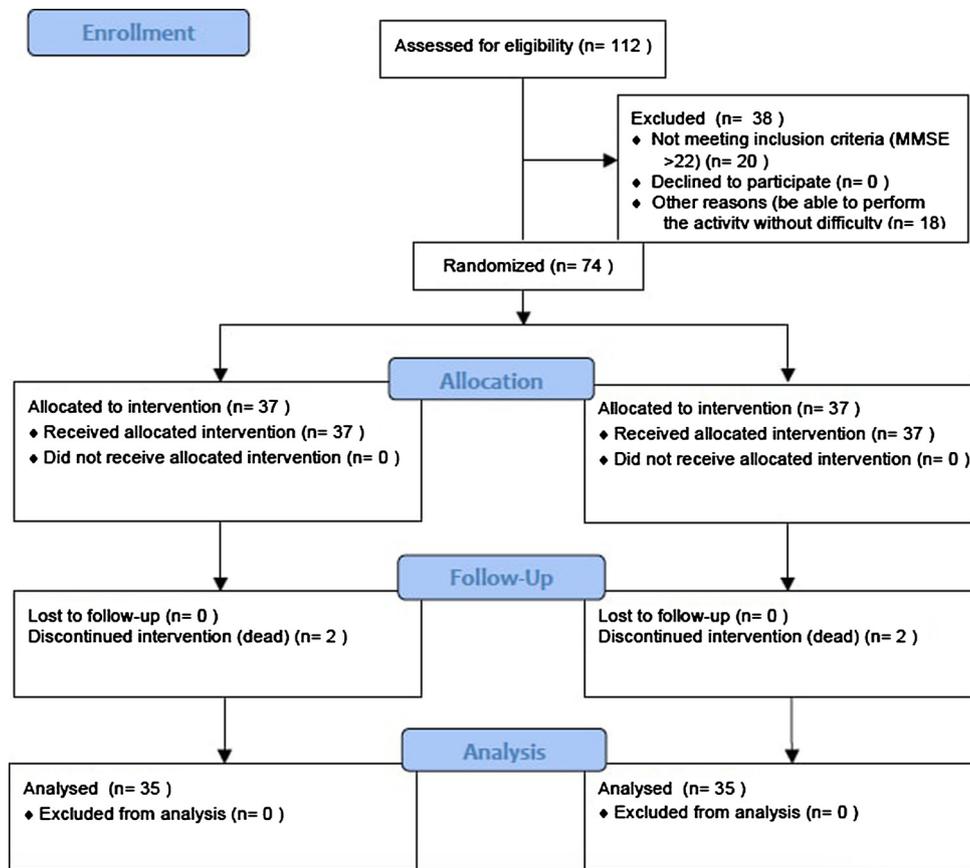


Fig. 1. XXX.

4. Discussion

The results of this study show that personal independence is related to self-efficacy, psychological well-being and affective state through participation in activities. This supports the objective and main hypothesis of the study, which were related to whether there are any differences between individual and group interventions in occupational

therapy treatment and the selected variables.

The results support findings of other studies suggesting that improvement in psychological variables influences the level of independence of ADLs (Hermida & Stefani, 2011). This is in line with improvements in the Barthel Index score (as a result of increased skills needed to perform ADLs), which were observed in participants who received group therapy versus those who received individual

Table 2
Differences between groups after the intervention.

	Individual mean (SD)	Group mean (SD)	F	p value	Pre-Post differences	95% CI		
						Lower limit	Upper limit	
Barthel	41.57 (32.57-50.57)	58.00 (48.54-67.46)	6.542	0.013	-16.429	-29.246	-3.611	
GDS	8.54 (7.79-9.29)	3.89 (3.04-4.73)	70.092	< 0.001	6.214	7.758	9.328	
GSE	16.43 (22.53-26.33)	32.74 (30.81-34.67)	179.016	< 0.001	-16.314	-18.747	-13.881	
Ryff	A	18.91 (17.33-20.50)	27.09 (25.73-28.44)	63.289	< 0.001	-8.171	-10.221	-6.122
	PR	20.20 (18.56-21.84)	26.89 (25.44-28.33)	35.569	< 0.001	-6.686	-8.834	-4.538
	Auton.	27.03 (25.28-28.78)	33.14 (31.62-34.67)	28.641	< 0.001	-6.114	-8.394	-3.835
	EM	21.37 (20.36-22.38)	26.23 (25.03-27.43)	39.634	< 0.001	-4.857	-6.397	-3.318
	PG	25.00 (24.08-25.92)	31.00 (29.59-32.41)	52.372	< 0.001	-6.000	-7.654	-4.346
	PL	20.91 (19.73-22.10)	27.63 (26.33-28.92)	66.487	< 0.001	-6.714	-8.437	-4.992

A (Self-acceptance); PR (Positive Relations); Auton (Autonomy); EM (Environmental Mastery); PG (Personal Growth), PL (Purpose in Life); GDS (Geriatric Depression Scale); GSE (General Scale Efficacy); Barthel (Barthel Index).

Table 3
Results of the Pearson correlation between emotional well-being, self-efficacy and personal independence according to the type of treatment.

Individual therapy		Post GSE	Post A	Post PR	Post Auton	Post E.M	Post PG.	Post P.L	Post Barthel
	Post GSE	1	.549**	NS	NS	NS	NS	.486**	.521**
	Post A		1	NS	.646**	.505**	NS	.838**	.485**
	Post PR			1	.586**	NS	.427*	NS	.377*
	Post Auton				1	.388*	NS	.663**	.384*
	Post EM					1	NS	.547**	.654**
	Post PG						1	.356*	.374*
	Post PL							1	.497**
	Post Barthel								1
Group therapy		Post GSE	Post A	Post PR	Post Auton	Post EM	Post PG	Post PL	Post Barthel
	Post GSE	1	.806**	.786**	.746**	.585**	.615**	.845**	.564**
	Post A		1	.867**	.779**	.702**	.655**	.886**	.714**
	Post PR			1	.771**	.696**	.635**	.751**	.656**
	Post Auton				1	.742**	.596**	.758**	.550**
	Post EM					1	.491**	.632**	.726**
	Post PG						1	.665**	.320*
	Post PL							1	.575**
	Post Barthel								1

A (Self-acceptance); PR (Positive Relations); Auton (Autonomy); EM (Environmental Mastery); PG (Personal Growth); PL (Purpose in life); GSE (General Scale Efficacy); Barthel (Barthel Index); **Correlation is significant at 0.01; * Correlation is significant at 0.05.

occupational therapy. In addition, taking into account the levels of motivation and effort when performing an activity, the data suggest that group therapy leads to an improvement in psychological variables first and subsequently to independence in the performance of ADLs.

Differences were observed in the efficacy of group treatment versus individual treatment, specifically in pre-post differences in each of the variables measured, with very high levels of significance (personal independence, self-efficacy and the subscales that make up *Ryff's Psychological Well-Being Scale*).

The corresponding post-test mean scores in the individual treatment group as well as in the group treatment group showed statistically significant differences. Specifically better results were obtained at the group level than at the individual level, as explained in the column corresponding to the pre-post mean differences. In this column, all the differences had a negative sign, which corresponded to a higher score in the type of group intervention as opposed to the individual intervention (see *Table 2*).

Furthermore, as argued by González and Extremera (*González & Extremera, 2010*), there was a relationship between optimism, self-efficacy, self-esteem, well-being and personal independence in the development of ADLs with social participation; this was only found in group treatment and not in individual treatment.

The above data reinforce the study conducted by Putnam, according to whom individuals experience changes in the process of adapting to their environment, for example, due to architectural barriers – a step, for example – or a hip fracture. Given that older adults do not easily tolerate sudden changes, the meaning of the activity, the quality perceived by the user and the level of self-efficacy, well-being, autonomy and personal independence come into play significantly.

Given the main objective of occupational therapy in gerontology and geriatrics – increasing the independence and quality of life of older patients in the face of the constant deterioration that limits their quality of life – any reinforcement during their treatment is vital (*Turcotte et al., 2015*).

The key to the relationship between psychological variables and activity is the subjective experience of individuals and the feedback received by the therapist during the therapy. This differs between individual treatment and group treatment. In the former, feedback is only received by professionals; in the latter, by contrast, feedback is also received by the rest of the people in the treatment groups. The positive experience highlighted by Larson in the DOiT model facilitates therapeutic strategies and dynamic participation, something that is more easily achieved in group treatment (*Larson, 2004*).

Overall, results showed that group treatment and individual treatment led to improvements in all the subscales of well-being, self-

efficacy and personal independence; they also revealed the connections between all the subscales. This has also been shown by articles related to the importance of the environment and how it can influence the performance of ADLs. Some examples are the Kawa model and its interpretation of social aspects and therapeutic potential in occupation and doing (*Wada, 2011*) and also the PEO model in which the occupational therapist identifies the patient's level of autonomy, analyzes the occupation and works with the patient's environment (*Metzler & Metz, 2010*).

Health-related psychological determinants generally refer to the internal domains of quality of life, including levels of stress, anxiety, depression and perceived social support. Psychological and social determinants of health significantly affect health outcomes and mortality in older adults. Older adults who report high levels of life satisfaction, strong social networks and low stress tend to maintain better levels of quality of life; however, older adults with high levels of depression and low social support tend to have lower levels of life satisfaction, well-being and quality of life.

The health benefits of social support for older adults are profound: social support is an important resource provided by the social network itself and gives the feeling that one will receive care in times of need. Higher levels of social support are associated with better health behaviors and better health self-assessment. For older adults, quality of life includes the ability to care for and manage themselves independently. Autonomy (as opposed to dependency) is therefore a key factor in maintaining the health and successful ageing of older adults. The ability to make health decisions, for example in activities of daily living, can significantly influence how older adults perceive their health and well-being (*Tkatch et al., 2017*).

In the same way that improvement in psychological variables can increase success in exhibiting personal independence, compatibility between the environment and the individual can improve or decrease the performance of the activity, leading him or her to finish the activity or not (*Llobet, Avila, Farrás Farrás, & Lluch Canut, 2011*).

Rodin argued that there is a relationship between personal independence and affective state. In a residential environment, group activity increases the feeling of happiness and stimulates the performance of activities thanks to feedback received through it and other users, which could explain, at least in part, the increase in Barthel's score (*Kumar et al., 2014; Rodin, 2014*).

In addition, results showed an increase in depressive symptom scores in participants. These symptoms have been associated with a decrease in personal independence (*Petrie, Moss Morris, Grey, & Shaw, 2004*).

Previous research has found that people have the ability to adapt to

ongoing changes in their environment, whether physical or self-adaptive. This capacity to adapt to change influences the individual's degree of independence and consequently his or her well-being (Putnam, 2011; Herranz Aguayo, Lirio Castro, Portal Martínez, & Arias Fernández, 2013; Shimada, Nishi, Yoshida, Tanaka, & Kobayashi, 2016). The continuous and gradual establishment of activity patterns has a positive effect on the personal independence of the subject. Our results showed that personal independence affected well-being, leading to this favorable effect only in group intervention participants (see Table 3). In addition, the results of this study showed that participation in group activities was associated not only with a better affective state but also with optimal overall well-being, which is consistent with the findings of other authors (Quiroz & Rangel, 2013).

Studies such as that of Gallagher, Muldoon and Pettigrew propose a model that reinforces the objective of our study to use group work and social activities in order to enhance patients' abilities related to self-efficacy and well-being psychological variables. This model seeks to integrate doing around a social context that forms our identity and organizes our occupations, which directly influence our well-being and health. Giving meaning to doing through a meaningful activity in occupational therapy has the therapeutic potential of an activity that allows the individual to participate in the community and consequently enhances his or her physical and psychological well-being (Gallagher, Muldoon, & Pettigrew, 2015).

5. Conclusions

The personal independence of institutionalized older adults who received group occupational therapy increased significantly, while that of those who received individual occupational therapy decreased. Between- and within-subject comparisons revealed significant differences according to type of treatment, with a significant increase in the post-test scores in the occupational therapy group, and a negative sign in scores of users receiving individual occupational therapy (Table 3).

The feeling of self-efficacy and improvement in affective state can increase individuals' commitment in the performance of an activity and consequently lead to greater personal independence. Functional deterioration not only compromises independence but can also affect the psychological well-being of individuals and their affective state, as their personal autonomy is strongly reduced. These disabilities often develop because the individual's situation acts as a barrier to normal functioning and leads to inactivity and weakness, thus accelerating the physiological decline, with the same effect as a real disability; this, added to the deterioration associated with age, results in a greater loss of personal independence. Decreased personal independence can deprive individuals of the feeling of being productive and able to perform a greater number of tasks without the help of others.

A limitation of the study was the size of the sample. A total of 112 people initially met the inclusion criteria; of these, 74 voluntarily accepted to participate.

Some studies have analyzed the influence of variables such as self-efficacy, well-being, affective state and personal independence. The novelty of this study is the use of occupational therapy as a treatment, comparing individual versus group therapy. The use of occupational therapy together with the empowerment and measurement of these psychological variables was associated to a substantial improvement both the quality of life and the well-being of institutionalized elderly people.

In conclusion, the introduction of group therapies to enhance the social skills and affective state of patients in occupational therapy seems to lead to a significant increase in the capabilities and skills of individuals, which is linked to personal independence and an improvement in their welfare, self-efficacy and affective state. In turn, this is likely to lead to a significant increase in the predisposition of individuals towards other therapies in the residential environment.

The findings of this study support a change in the approach to

treatment of elderly people and in the implementation or performance of the interventions. Treatments should not only focus on improving the abilities and capacities of individuals but also on other variables that can positively influence self-efficacy, well-being, affective state and personal independence.

Ethics approval

Ethics approval was obtained for the current study.

Declaration of authorship/Conflict of interest statement

All authors contributed to the conception and design of the study; the acquisition, analysis and interpretation of data for the research; and the drafting the manuscript. They all approved the final version of the manuscript.

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