

A Review of Psychological Intervention in Alzheimer's Disease

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ABSTRACT

The rising incidence of Alzheimer's disease over the last few decades has led to it becoming considered a challenge for health and social care systems worldwide. Examining it from a psychological viewpoint, the benefits of approaching its study from a global perspective have been proposed, taking into consideration much more than the cognitive impairment by which it is characterized. There is growing interest in the non-cognitive symptoms (depressive, psychotic and disturbing and/or inappropriate behavior) observed in Alzheimer's patients, especially considering that the limitations placed on the patients' well-being are coupled with the impact on the tolerance levels of their caregivers with a consequent increase in burden and stress. The undeniable relevance of this situation has led to attempts being made to verify if this interest is reflected in proposals of preventative and therapeutic actions aimed at improving the quality of life for Alzheimer's patients and their families. For this reason, we have reviewed publications relating to this field from specialized Spanish journals with the greatest impact on the IN-RECS (Impact Index of Spanish Social Science Journals), dated between 1990-2010. The results show that there are relatively few publications on Alzheimer's and very few providing information regarding therapeutic actions of any kind, as if from a psychological perspective, there was very little to be said on the subject.

Key words: Alzheimer's disease, bibliographical review, psychological intervention.

According to the World Alzheimer Report (Wimo & Prince, 2010), published by ADI (Alzheimer Disease International), there are currently 35.6 million people with Alzheimer's worldwide, and by the year 2030 this figure will be 65.7 million, rising to 115.4 million by the year 2050. This data, together with the costs incurred by the disease, estimated to be 604 billion dollars worldwide, has led the authors of the report to conclude that Alzheimer's disease (AD) is the most significant crisis of the century in socio-medical terms. With regard to Spain, Selmes (2003) state that there are 450,000 people with Alzheimer's and there will be nearly one million in the decade 2010-2020, rising to approximately one and a half million by 2050. More recently, Virués Ortega *et al.* (2011) estimate that 9% of the Spanish population over 75 years old suffer from some type of dementia (290,000 people), with AD representing 6.4%, with an increase proportional to age, as well as a large number of undiagnosed cases of dementia. The costs generated by dementia in Spain totaled 17,908 million dollars in 2009 (Wimo, Winblad, & Jönsson, 2010). As such, AD has become a social and medical challenge, bringing with it the necessity to develop professional actions which respond to the needs of the patients and their caregivers.

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AD is generally associated with cognitive disorders (mainly memory deficit and problems with abstract reasoning and orientation), but AD has many other clinical, behavioral and emotional characteristics which affect both those suffering from the disease as well as those who care for them. Bolger, Carpenter and Strauss (1994) categorize these disorders in (a) depressive symptoms (anhedonia, dysphoria, depression, reduced appetite and weight, lack of concentration, feelings of guilt, tendency to shout) observed in 50% of the patients, (b) psychotic symptoms (hallucinations, deliria, paranoia) observed in 50% of the patients and (c) disturbing and/or inappropriate behavior such as agitation (75% of patients), wandering (60% of patients), aggressiveness and violence (20% of patients) and loud shouting (25% of patients). Such characteristics are related to a decrease in the caregivers' tolerance levels and an increase in burden and stress levels (Dunkin & Anderson-Hanley, 1998; Schultz & Williamson, 1991; Vespa, Gori, & Spazzafumo, 2002), and in many cases are the main reasons for institutionalizing the patient, when it becomes more difficult for the family to continue caring for him or her in the family environment (Cohen *et al.*, 1993; Pruchno, Michaels, & Potashnik, 1990; Teri, 1997). These disorders (or "no-cognitive symptoms") are habitual, although prevalence data varies between studies. For Massaia, Villata, Cappa, and Pallavicino (2001), the interest in behavioral problems in these patients is rising, placing its prevalence at between 40% and 90%, and explaining the lack of consistency in the data by the lack of existing consensus for its evaluation. Erkinjuntti, Ostbye, Steenhuis and Hachinski (1997) explain the variations in prevalence by differing diagnostic criteria while Droes (1997) indicates that these variations would depend on the extent and the localization of cerebral damage, premorbid personality and environmental, physical and relationship-related characteristics of each patient. In a retrospective review of medical archives, Jost and Grossberg (1996) state that 81% of patients showed irritability, agitation and aggressive behavior from the tenth month after diagnosis; 72% showed depression, mood changes, social withdrawal and suicidal thoughts 26 months before the diagnosis; and 45% developed hallucinations, paranoia and delusions from 0.1 months after diagnosis. For Hope, Keene, Fairburn, Jacoby, and McShane (1999) and Jost and Grossberg (1996), these alterations or disorders can occur at any moment during the course of the illness and can be present from the very beginning. They are described by Dunkin and Anderson-Hanley (1998) as heterogeneous and fluctuating, influenced by the environment or aggravated by emotion expressed by the caregivers. As such, considering more than a direct effect on neurological impairment, it has been proposed that environmental changes could be the origin of these alterations: environmental changes seen or experienced as hostile could well lead to the appearance of aggressive behavior; travelling or trips could exacerbate some cognitive symptoms (Raskind, 1999). Furthermore, the central role played by the caregiver in explaining frequency and severity of behavioral problems in patients with dementia has been highlighted (Dunkin & Anderson-Hanley, 1998), and there have been relationships found between premorbid personality and the appearance of non-cognitive disorders in AD (for example, Holst, Hallberg, & Gustafson, 1997; Meins, Frey, & Thiesemann, 1998; and Kolanowski & Garr, 1999). As such, the natural history of these behavioral changes related to AD has not been well established; but we do know that they are very common, that some of these emotional and behavioral

changes tend to occur before others, following a recognizable sequence and that they show great individual variability.

From analysis and better understanding of this summary of variables, the necessity of caregiving for AD which goes beyond merely attending to the patient's neurobiological deficit is evident. That is to say, together with the undeniable impairment it implies for the patients, the difficulties and discomfort that the families have to face when dealing with maladaptive behavior should be considered and lead to the development of interventions aimed at this type of issues. At the horizon of these interventions should be the consideration that problem behavior of Alzheimer patients is not simply the direct result of cerebral impairment but the individual way in which each patient adapts or faces the consequences of their dementia (Droes, 1997). These behavioral disorders are often interpreted as a primary manifestation of neurochemical and neuropathological abnormalities characteristic of dementia (Cummings, 1997; Levy, Cummings, & Kahn-Rose, 1999), although they actually seem to be dependent on social background (environmental changes and caregiver personalities) and on psychological aspects of the individual (Chatterjee, Strauss, Smyth, & Whitehouse, 1992; Meins *et al.* 1998). On this subject, Burgio *et al.* (1994) clearly see these environmental factors continue to have an influence on patients' behavior even if they experience a degenerative neurological disorder. In other words, the way in which the patient -and their environment- copes with their illness and the limitations it brings with it, would lead them to maintain (or not) an emotional balance and a positive -or negative- image of himself or herself, accepting (or not) an uncertain future and (mal)adapting to his or her new care environment, whether it be with the family who in turn undergo greater or less significant changes after the diagnosis or in a professional environment, with regulations and the necessity to develop new relationships with staff and other people.

It shouldn't be forgotten that in our culture, the level of information which gets diffused to the general public in various ways allows for beliefs related to AD -and other subjects- to be developed, and as such, simply with the diagnosis, both the diagnosed and their family undergo a series of psychological functions which to some extent, determine the future development of the illness in each case. This, added to the neurological impairment should be taken into account for the development of intervention programs aimed at those aspects of the illness which are known to respond to a variety of behavioral, environmental and psychological treatments, thus improving both the lives of the patients and their families (Maletta, 1988). More specifically, Buchanan (2006) notes that behavioral or environmental interventions are necessary and useful in order to approach the behavioral problems which may come with dementia and they represent an alternative to medication, with the difference that the latter comes with serious side effects such as sedation, social isolation, increased agitation levels, confusion and disorientation. In fact, it has been well-established that non-pharmacological treatments can help improve behavioral disorders in patients affected by AD (Buchanan, 2006; Maletta, 1992; Holm *et al.*, 1999; Parnetti, 2000; Massaia *et al.*, 2001).

On this topic, Olazarán *et al.* (2010) point out that the pathological process of AD entails a great variety of opportunities for intervention, highlighting the realistic and affordable contribution of non-pharmacological treatments as an improvement in

the provision of care for Alzheimer's patients and their caregivers. Buchanan (2006) offers an adequate review of empirically supported interventions for the treatment of these patients' behavioral and emotional problems as well as those encountered in their tasks of daily living. In general, it deals with using well-known procedures, proven to be efficient in other areas of action, including graduated support, differential reinforcement, extinction and simple changes made to the surrounding environment which can have notable effects on a variety of behaviors. The advantages of these procedures lie in the fact that they encourage the independence of the patient, they increase access to reinforcement contingencies and most importantly they do not produce the iatrogenic side effects found, for example, in psychotropic medication.

Once the necessity and benefits of specifically attending to behavioral problems in the field of AD interventions have been proposed the question emerges of what contributions have been made to this area by different scientific-professional disciplines whose field of action includes AD. A preliminary approach to the issue in general points to two main ideas. On the one hand, interventions specifically targeting memory deficits, and on the other, general interventions or comprehensive programs aimed at treating the other substantial elements of AD, such as cognitive impairment, motor control, gnosia, tasks of daily living, phasias, family problems, etc. (Rodríguez & Antequera, 2004). We should bear in mind that the efficiency criteria which should preside over these actions mean taking the individual differences which distinguish the course of the illness into account and not seek the permanent remission of the deficits. Attempts should be made to maintain cognitive and behavioral functioning for as long as possible, taking preventive measures against behavioral problems and increasing access to reinforcement interactions (Buchanan, 2006; Rodríguez & Antequera, 2004). Furthermore, Rodríguez and Antequera note that individualization of treatment will help to maintain the patient's motivation, will avoid frustration when faced with task and will favor the appearance of positive emotions on successfully completing tasks, etc.

More specifically, in this report, as an initial overview, we propose a view of the possible contributions or proposals stemming from Spanish Psychology in the past decade, based on a far from encouraging fact. In the Olazarán *et al.* (2010) review regarding the efficiency of non/pharmacological treatments for AD, the authors point out that 97% of the publications analyzed were written in English. As such, a bibliographical review is offered, which, at the very least, should allow for the interest and dedication which the psychological field in Spain has contributed to analysis and interventions in behavioral disorders in patients affected by AD over the past 10 years to be briefly displayed.

METHODS

Type of study

A formal analysis and interpretation of articles referring to Alzheimer's disease published in Spanish psychology journals over the last 10 years is offered. As mentioned, the main point of interest is to summarize the applications or proposals

related to psychological interventions for the behavioral disorders which characterize this disease. Thus, the review is focused on collecting such proposals, if existent, and later proceeding on to their analysis and categorization into therapeutic or preventive and, where appropriate, according to theoretical and empirical foundation.

Materials

A review has been carried out of publications relating to Alzheimer's appearing over the last two decades (from 1990 to 2010) in Spanish psychology journals with the greatest impact on the *Índice de Impacto de la Revistas Españolas de Ciencias Sociales* (IN-RECS, Impact Index of Spanish Social Sciences Journals). Specifically, the first 25 journals from the said index were chosen (Table 1).

Procedure

Once the time period to be reviewed and the selection criteria of the journals had been established, a list of their web page addresses was compiled. This was the main source of information in the search of articles of interest. In the respective web pages which had a 'search' option available, the key words 'Alzheimer' and 'dementia' were used, to find published contents. When this option was not available, the search was

Table 1. Articles about Alzheimer's disease published in the 25 Spanish psychology journals of greatest impact in 2010 according to IN-RECS data base.

Position	Journals	Impact factor	Number of articles
1	International Journal of Clinical and Health Psychology	2.068	1
2	Anales de Psicología	1.068	10
3	Estudios de Psicología	0.968	1
4	Revista de Psicopatología y Psicología Clínica	0.956	1
5	The Spanish Journal of Psychology	0.921	0
6	International Journal of Psychology & Psychological Therapy	0.899	0
7	Psicothema	0.809	15
8	Q1 Ansiedad y Estrés	0.786	1
9	Psicológica	0.659	2
10	Adicciones. Revista de Sociodrogalcohol	0.600	1
11	Revista de Psicología del Deporte	0.568	1
12	Revista de Logopedia, Foniatría y Audiología	0.567	3
13	Revista de Psicodidáctica	0.561	0
14	Papeles del Psicólogo: Revista del Colegio Oficial de Psicólogos	0.545	1
15	Cuadernos de Psicología del Deporte	0.353	0
15	Psicología Conductual	0.353	7
16	Infancia y Aprendizaje	0.323	0
17	Revista de Historia de la Psicología	0.318	0
18	Revista de Psicología Social	0.267	0
19	Q2 Boletín de Psicología	0.250	0
20	Revista Española de Orientación y Psicopedagogía	0.247	0
21	Electronic Journal of Research in Educational Psychology	0.245	0
22	Anuario de Psicología	0.211	0
23	Trastornos Adictivos	0.194	0
24	Siglo Cero	0.185	0

carried out using *Dialnet*, employing the same key words in each of the titles published during the established time period. Once the articles had been reviewed, those which were not specifically dedicated to AD (or dementia), even if the topics were mentioned in the text in some way, were discarded before the final calculation and analysis.

RESULTS

In line with the objective proposed, the main interest guiding the analysis of the selected bibliography is to detect contributions and concrete proposals coming from the main Spanish psychology journals in the field of intervention and analysis of behavioral disorders in Alzheimer's patients. As such, attention was paid to both the proposed objectives as well as the type of methodology and the participants involved in the reviewed studies (Table 2).

Firstly, the scarce number of works about Alzheimer's published in this time period stands out (only 44), all of which appear in 12 of the 25 selected journals, with the journal *Psicothema* being the one which has published the largest amount of these studies, with 15 articles. The journal *Anales de Psicología*, with 10 publications relating to Alzheimer's is in second place in relation to number of articles in this field. *Psicología Conductual* offers 7 articles, placing it third in the ranking. The rest of the journals have 1, 2 or 3 articles about Alzheimer's over the two decades, with it worth highlighting that it is the journal *Revista de Logopedia, Foniatría y Audiología* which has published three articles on this topic. Only 2 of the first 10 selected journals have not published an article about Alzheimer's (only 3 of the 14 which occupy the first quartile of the impact index).

Looking at the number of publications of interest by year, in the majority of studied years there has been at least one article published (the exception is the early years of the 90's), with the most (6) being published in 2009 (Table 3).

In relation to the type of population involved in the published studies, it can be highlighted that 26 of them were carried out with Alzheimer's patients, 11 with the patients' families or caregivers, 2 with patients and families together and 5 with other population types (elderly without the illness, adults with Down's Syndrome and people with mental disabilities, patients with progressive primary aphasia and patients with mild cognitive impairment).

The majority of studies published (39 of 44) relate to epidemiological or descriptive questions, or those of theoretical reviewing of the topic (Table 4). More precisely, 22 articles are focused on the evaluation of cognitive aspects of diverse natures and other clinical or neuropsychological characteristics; 6 works deal with the evaluation/assessment of variables related to tolerance, burden, burnout... in families and/or caregivers; another 3 demonstrate a review of the psychological interventions or actions available for different problems faced by both patients and caregivers; only one is dedicated to the incidence/prevalence of the illness and, finally, 2 address different questions simultaneously (incidence analysis and evaluation of burden aspects in families)

Table 2. Articles about Alzheimer's disease published in the 25 Spanish psychology journals of greatest impact (IN-RECS): Authors, objectives, methodology and participants involved.

Reference	Summary	Subject Matter	Participants
Fernández JR <i>et al.</i> (1990)	Evaluation to determine if socio-biographic, clinical and psycho-socio variables are related to the tolerance of the family member dealing with the patient suffering from dementia.	Burden	Patients and family
Muñoz JM <i>et al.</i> (1995)	Measuring of differences in attention functions, memory, visuospatial elements and arithmetical skills between Alzheimer's sufferers and elderly people without Alzheimer's disease (AD) using the Luria-Nebraska neuropsychological battery.	Descriptive	Patients
Espert R <i>et al.</i> (1996)	Updated review of the post-mortems of 33 cases of Primary Progressive Aphasia (PPA), published between 1982 and 1996, considering it as an atypical variant of AD.	Other	PPA patients
Algado MT <i>et al.</i> (1997)	Incidence and prevalence analysis of AD in Alicante province, with an evaluation of the effects produced by caring for a sick person on personal and family life, as well as on the social life of the family caregivers.	Various	Family / Caregivers
Laserna JA <i>et al.</i> (1997)	Comparison of relatives of patients with AD and of elderly people without AD with regards to levels of depression, anxiety, degree of social support and self-efficacy.	Burden	Family/Caregivers
Perea MV & Ladera V (1997)	Study of the relationship between AD patients' performance in different neuropsychological tests with degree of cerebral perfusion using single-photon emission computed technology (SPECT).	Descriptive	Patients
Dávila G & Navarro JF (1998)	Description of the main sleep disturbances related to eating disorders, drug dependency, AD and various childhood disorders.	Descriptive	Patients
Peinado AI & Garcés de los Fayos EJ (1998)	Description of the emotional effects suffered by relatives of people with AD acting as caregivers, in particular, Burnout syndrome, indicating a series of variables which on appearing, influence and change the caregiver-patient relationship.	Burden	Family/Caregivers
Peraita H & Sánchez ML (1998)	Evaluation of lexical-semantic and semantic-categorical disorders in patients with mild and moderate Alzheimer's dementia (in comparison with people without AD).	Descriptive	Patients
Redolat R & Carrasco MC (1998)	Listing of a series of therapeutic strategies and factors related to plasticity for therapeutic use, built on the premise that brain plasticity could be an important factor in the treatment of cognitive disorders associated with ageing.	Other	Patients
Roig MV <i>et al.</i> (1998)	Measurement of overloading in caregivers of Alzheimer's sufferers, obtaining a profile of the caregiver with the greatest overload.	Burden	Family / Caregivers
Peraita H <i>et al.</i> (1999)	Analysis of semantic-categorical disorders in a group of AD sufferers and a control group.	Descriptive	Patients
Díaz C <i>et al.</i> (2000)	Review of a previous study with new measures and an analysis of the verbal fluency tests and definition of categories in AD patients.	Descriptive	Patients
Peña J <i>et al.</i> (2000)	Analysis of the prevalence of dementia in people over 80 in the municipality of Oviedo and a clinical evaluation following diagnostic criteria DSM-III-R.	Incidence	Elderly over 80 years old
Peraita H <i>et al.</i> (2000)	Evaluation of knowledge of semantic categories with reference to living persons and objects in people diagnosed with probable AD and healthy elderly people.	Descriptive	Patients
Ruiz-Adame M (2000)	Expounding of AD incidence and prevalence data and the main clinical characteristics, proposing activities to be carried out by the psychologist in the intervention with patients and caregivers.	Various	Patients and family
Álvarez D <i>et al.</i> (2001)	Study of relationship between AD neuropathology and deteriorated attention functions, concluding that the posterior attention network and the anterior attention network are affected in different ways.	Descriptive	Patients

Table 2 (cont.). Articles about Alzheimer's disease published in the 25 Spanish psychology journals of greatest impact (IN-RECS): Authors, objectives, methodology and participants involved.

Díaz MC <i>et al.</i> (2001)	Analysis of patterns of performance in picture naming tasks and spoken word-picture matching with patients with AD and elderly people.	Descriptive	Patients
Langley LK <i>et al.</i> (2001)	Evaluation of semantic and spatial information attention patterns in young adults, elderly people and patients with AD.	Descriptive	Patients
Ribes R & Sanuy J (2001)	Evaluation of the possibility of using anomia as a diagnostic indicator in the initial stages of AD in people with Down's syndrome.	Other	Adults with Down's Syndrome
Estruch R (2002)	Review of the relationship between alcohol consumption and different medical pathologies, citing studies which show effects where AD appears.	Descriptive	Patients
Manzano G (2002)	Evaluation of evidence related to factorial validity and internal consistency of the three engagement scales as well as their relationship with 'burnout' and furthermore, the relationship between these findings and coping strategies focused on emotion and/or problem-solving.	Burden	Family/Caregivers
Muela JA <i>et al.</i> (2002a)	Evaluation of the adaptation of coping strategies comparing two categories (focused on problem/emotion vs. adequate/inadequate) according to the relationship with <i>perceived load</i> and <i>dispositional optimism</i> in a sample of AD caregivers.	Applied	Family / Caregivers
Muela JA <i>et al.</i> (2002b)	Presentation of a list of potentially stressful situations for caregivers of Alzheimer's sufferers, differentiating between primary and secondary stressors and the relationship with other variables such as the caregiver's perceived load and behavioral disorders of the patient.	Burden	Family/Caregivers
Sebastián MV & Elosúa MR (2002)	Performance comparison of 10 AD patients with 20 healthy elderly people in the Brown-Peterson task, paying specific attention to the material used: meaningless words/syllables, natural/artificial categories.	Descriptive	Patients
Spira AP <i>et al.</i> (2003)	Review of interventions to reduce wandering, disturbing vocalizations and physical aggression in elderly people with dementia, proposing the benefits of intervening using the same operative conditioning principles employed with children and adults.	Treatment review	Family/Caregivers
Rodríguez M & Sánchez JL (2004)	Description of <i>cognitive reserve</i> as the cerebral ability to tolerate the effects of the pathology associated with dementia. Certain variables such as educational and occupational achievement (high cognitive reserve) would be a protecting factor against the clinical expression of dementia.	Descriptive	Patients
Mulet B <i>et al.</i> (2005)	Description of three types of mild cognitive impairment (MCI), indicating their frequency and relationship with AD, concluding that, after two years of monitoring, patients with diffuse MCI developed into AD.	Descriptive	MCI patients
Cullell N <i>et al.</i> (2006)	Use of a <i>psychostimulation</i> program and a speech therapist with a 59 year-old patient to maintain language skills and reinforce general intellectual capacity.	Applied	Patients
Peraita H & Moreno FJ (2006)	Comparison of the semantic-conceptual structure of the categories <i>living beings</i> and <i>non-living beings</i> underlying the categorical representations of Alzheimer's sufferers and the control (healthy elderly people).	Descriptive	Patients
Rogers H & Arango JC (2006)	Review of evidence which supports the concept of retrogenesis in AD, linking it the Piagetian theory of evolutionary development. Examination of the theory of retrogenesis from a clinical, cognitive, functional, neurological and neuropathological perspective.	Other	Patients
Ballesteros S <i>et al.</i> (2007)	Evaluation of invariant perceptual <i>priming</i> in relation to age and the preservation of memory implicit in AD.	Descriptive	Patients

Table 2 (cont.). Articles about Alzheimer's disease published in the 25 Spanish psychology journals of greatest impact (IN-RECS): Authors, objectives, methodology and participants involved.

Losada A <i>et al.</i> (2007)	Review of intervention procedures aimed at reducing malaise in informal caregivers of dependent elderly people. Description of the interdisciplinary intervention program <i>Cuidar Cuidándose</i> (Care, Caring for Yourself)	Treatment review	Family / Caregivers
Bentz BG & Hall JR (2008)	Comparison of the <i>Beck Depression Inventory (BDI)</i> and the <i>Geriatric Depression Scale (GDS)</i> in the evaluation and classification of depression in patients diagnosed with depression, Alzheimer's dementia or both.	Descriptive	Patients
Díaz C & Peraita H (2008)	Neuropsychological evaluation and implementation of a cognitive stimulation program and use of medicines with a bilingual Alzheimer's patient, measuring developments in the two languages over a period of three years.	Applied	Patients
Zamarrón MD <i>et al.</i> (2008)	Measurement of effects of a cognitive stimulation program on the cognitive plasticity of mild Alzheimer's sufferers.	Applied	Patients
Celdrán M <i>et al.</i> (2009)	Analysis of the grandchildren-grandparent with dementia relationship with regards to leisure and care activities.	Other	Patients
Contador I <i>et al.</i> (2009)	Comparison of the performance of AD patients, patients with major unipolar depression and a group of healthy subjects in various tasks related to non-verbal memory, remembering positions and recognition of abstract drawings.	Descriptive	Patients
Froufe M <i>et al.</i> (2009)	Evaluation of executive function through strategic action based on expectation management in a Stroop test of young adults, older people and AD patients.	Descriptive	Patients
Madruga M <i>et al.</i> (2009)	Evaluation of the efficiency of a physical exercise program in home-based care and individually with informal caregivers of AD patients, measuring the levels of perceived load, quality of life and emotional dimension.	Applied	Family / Caregivers
Subirana J <i>et al.</i> (2009)	Attempt to define the importance of evaluation of executive functions and processing speed in order to detect affectation of cognitive functions in the initial stages of cognitive deterioration and of language in the advanced stages.	Descriptive	Patients
Vázquez FL & Otero P (2009)	Efficiency review of psychological interventions to reduce depressive symptomatology in informal caregivers of patients with dementia.	Treatment review	Family / Caregivers
Barrera ML <i>et al.</i> (2010)	Evaluation of likelihood of suffering from frontotemporal dementia or Alzheimer's in relation to the calculated VLOM coefficient (obtained via verbal fluency tests, language, orientation and memory deferred).	Descriptive	Adults without dementia
Sebastián MV & Hernández-Gil L (2010)	Examination of memory and executive functions for changing and distributing attention in 25 AD patients, 9 with frontotemporal dementia in its frontal variant and 25 healthy elderly people.	Descriptive	Patients

Table 3. Distribution, by year, of articles about AD published in the 25 Spanish psychology journals of greatest impact (IN-RECS) between 1990 and 2010.

Year	Articles	Year	Articles	Year	Articles
1990	1	1997	3	2004	1
1991	0	1998	5	2005	1
1992	0	1999	1	2006	3
1993	0	2000	4	2007	2
1994	0	2001	4	2008	3
1995	1	2002	5	2009	6
1996	1	2003	1	2010	2

Table 4. Main issues discussed in Alzheimer's disease articles published in the 25 Spanish psychology journals of greatest impact (IN-RECS) between 1990 and 2010.

Issue	Articles	%
Applications with patients	3	6,82
Applications with family/caregivers	2	4,55
Evaluation/assessment of cognitive elements and other epidemiological characteristics related to AD	22	50
Evaluation/assessment of different aspects related to tolerance, burden, burnout... of families/caregivers	6	13,64
Incidence/prevalence	1	2,27
Review of available treatments for different problems in this field	3	6,82
Various topics together	2	4,55
Other	5	11,36

while another 5 are related to a variety of topics such as cerebral plasticity in ageing, post-mortem reviews of cases of progressive primary aphasia (as an atypical variant of AD) or the relationships between grandparents with dementia and their grandchildren.

Only 5 of the 44 studies published are applied, understanding as applied those in which some form of treatment is used to produce changes (improvements) in the patients' or in their family's/caregivers' behavioral repertoire. Of these, 2 relate to the assessment of different intervention programs with the patients' caregivers: Muela, Torres, and Peláez (2002) assess different coping strategies; and Madruga, Gozalo, Gusi, and Prieto (2009) evaluate the efficiency of a physical exercise program with informal caregivers. Of the three applied studied which were carried out with Alzheimer's patients, two are case studies. One of these (Cullell, Bruna, & Puyuelo, 2006) applies a psychostimulation and speech therapy program aimed and maintaining the language skills and reinforcing the general intellectual capacity of a 59 year-old patient. In the other (Díaz & Peraita, 2008), a program of cognitive stimulation and medication is employed with a bilingual patient, measuring his development in the two languages over a period of three years. Another studied applied to Alzheimer's patients entails measuring the effects of a cognitive stimulation program on the cognitive plasticity of a patient in the mild stages of the disease (Zamarrón *et al.*, 2008).

DISCUSSION

The benefits of approaching the study of AD from a global psychological perspective, going beyond merely analyzing the cognitive impairment by which it is characterized have been considered. As noted in the introduction, the characteristics of AD, affecting the patient in a variety of areas, translate into a wide range of necessities over the course of the illness; hence the convenience of considering other alternate actions besides pharmacological treatments which, although seeming to ease the development

of the main symptoms of the disease, have limited effects or are not prescribed to treat the whole range of the patient's needs and furthermore, have undesirable side effects. With the aim of assessing the available alternatives from a psychological viewpoint in the specialized journals of greatest impact in our country, the results of this review seem to indicate that we are dealing with a task which is yet to be realized, or at the very least, one which has been scarcely considered.

Corresponding with Olazarán *et al.* (2010), AD signifies an opportunity for the development of interventions in the social field, in the immediate environment of the patients and, of course, on a directly therapeutic level with them, as the cognition and behavioral functioning of the person are all affected in the development of the pathological process. Furthermore, if it is taken into account that there are millions of people affected by the illness worldwide, with corresponding social and financial costs, it can be easily justified that a discipline such as Psychology (regardless of the fact of what other disciplines do) should play a more extensive role in the systematic investigation of strategies which could be proposed as alternatives of choice when dealing with the illness.

However, the review of publications which should bring together the results of research carried out in Spain during the last decade shows a somewhat discouraging panorama. The number of publications dedicated to AD is limited, and the majority of these publications (50% of the total number) are reviews or are dedicated to describing-correlating a wide range of characteristics. Whilst doubtless of the usefulness of this information, it would still be worth hoping for a leap forward in the development and proposals of interventions with patients and caregivers, whether family or not, and whether in the home or in residential institutions of one type or another. In line with the information gathered, the "applied" studies which have been published over the past years (barely 11% of the total amount relating to the disease) are directed equally at patients and caregivers (three and two studies). As well as there being few studies, it is also striking that the investigation carried out with caregivers is focused on direct intervention with them, applying coping strategies and physical exercise or problem-solving programs, with the objective of reducing their levels of burden or preventing depressive states, without carrying out studies aimed at efficiently providing caregivers with the specific skills to manage problem situations with patients or the help and training to maintain basic skills. That is to say, with direct intervention with the caregivers being a suitable and necessary objective, and along the same lines as the aforementioned studies, research in this field can be considered limited and needing further development of training actions or programs for caregivers, in the same way as is done with parents of children with developmental disabilities or other similar problems (for example, Rey, 2006; Robles & Romero, 2011). Caregivers should be provided with strategies allowing them to effectively face and deal with patients' behavior and which could, furthermore, have beneficial effects in terms of decreased burden and stress levels etc. as they would feel in possession of the necessary skills to manage situations which are sometimes felt to be insuperable. On the other hand, the applied studies carried out with patients with AD, as they are few in number, offer little variability. Two refer to only one patient, applying a psychostimulation and speech therapy program in one case (Cullell, Bruna,

& Puyuelo, 2006) and combining a cognitive program and medicines in the other (Díaz & Peraita, 2008). Lastly, the effects of a cognitive stimulation program conducted with a group of AD patients in the mild stages of the disease were assessed (Zamarrón *et al.*, 2008). It would appear that contributions are scarce.

In the introduction to this text, the necessity to develop intervention strategies (or at least apply those which have already been developed and shown to be effective) directed at behavioral problems (whether because of excess or deficit) commonly related to AD and which could be incorporated as an extra element in care programs was established. On seeing the results of the completed review, this necessity seems to be confirmed and uncovered. In 21 years, the top Spanish psychology journals have published 44 articles on AD (in general terms) and only 5 of these (giving an average of 0.23 articles per year) give information on some type of intervention in this field, whether with patients or their families. Furthermore, of the three reported interventions with patients, two are case studies. Whilst, without doubt, providing important information on the subject, we are still missing a more ambitious kind of informative report, with random controlled tests.

The scarce attention paid to AD by the field of psychological research remains to be explained, even more so when we consider the magnitude of the problem it poses. It could well be suggested that drug treatment has been established as the only reply to the problem. It has already been mentioned that dealing with this problem from a psychological viewpoint would require placing the focus of patient care on more than just neurobiological impairment, and considering the conceptualization of maladaptive behaviors as a result of the way in which patients (and their environment) adapt to or deal with dementia instead of believing that it simply a direct effect of cerebral impairment (Droes, 1997). If not, the belief that cerebral impairment is the direct cause of the patient's behavior means focusing some type of intervention on improving the neurological damage which would, indirectly, have effects on a behavioral level; and for this, there is a wide range of drugs available. Moreover, as we know, pharmacological treatment is much easier to administer than any other type of treatment, making adherence easier and placing it ahead of other possible treatments. However, as Olazarán *et al.* (2010) note, the use of non-pharmacological treatments for AD is a realistic and affordable option which has been proven to have positive results in terms of improving patients' cognition, behavioral problems, mood and the realization of tasks of daily living, obtaining similar effects as those achieved with medicine but without their undesirable side effects. The lack of funding could also explain the lack of research into proposed alternative interventions which, in turn, would justify why other solutions (again, pharmacological) already exist and no more are needed. It is also possible that the understanding that AD develops in a continual and irreversible way, with impairment levels getting worse and worse may lead people to believe that interventions aimed at improving questions of behavior like those already stated are destined to fail and as such, favoring the use of palliative treatments.

Whatever the case may be, this neglect of AD by Psychology professionals continues to draw attention, if not in the field of research into the development of new action proposals (or the improvement of already-existing ones) focused on the well-

being of Alzheimer's patients and their caregivers, then in the utilization of the known, documented, available and efficient tools (Buchanan, 2006; Fisher & Carstensen, 1990).

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