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Droes, R.M.; Breebaart, E.; van Tilburg, W.; Mellenbergh, G.J.

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Effect of Integrated Family Support Versus Day Care Only on Behavior and Mood of Patients With Dementia

ROSE-MARIE DRÖES, ELLES BREEBAART, TEAKE P. ETTEMA,
WILLEM VAN TILBURG, AND GIDEON J. MELLENERGH

ABSTRACT. *Objective:* This study tests the hypothesis that integrated family support, in which patients and caregivers are both supported by one professional staff, is more effective in influencing behavior problems and mood of the dementia patient than nonintegrated support, such as psychogeriatric day care only. *Design:* A quasi-experimental pretest-posttest control group design with matched groups was applied. *Setting:* Psychogeriatric day-care centers of four community centers and three nursing homes. *Participants:* Fifty-six dementia patients living at home and their caregivers. *Intervention:* The patients in the experimental group ($n = 33$) participated together with their caregivers in an integrated family support program, whereas the patients in the control group ($n = 23$) received psychogeriatric day care only. *Measurements:* Behavior problems and mood were observed using standardized behavior observation scales. *Results:* After 7 months the experimental support program, compared to the regular psychogeriatric day care, showed a large positive effect on the total number of behavior problems (effect size .75), and also specifically on the degree of inactivity (effect size .66) and nonsocial behavior (effect size .61). No effect on mood was found. *Conclusions:* In influencing the total amount of behavior problems, as well as the degree of inactivity and nonsocial behavior, the integrated family support program proved to be more effective than psychogeriatric day care. Because behavior problems are an important determinant for admission of persons with dementia into a nursing home, integrated family support may contribute to the delay of institutionalization.

Behavioral and mood problems of persons with dementia often make it difficult to take care of these people at home. Research shows that behavioral problems constitute the main determinant

of institutionalization of a person with dementia into a nursing home (Christie & Wood, 1988; Grafström et al., 1994; Reisberg et al., 1987; Steele et al., 1990). It is also well known that behavioral problems

From the Department of Psychiatry, Faculty of Medicine (R.-M. Dröes, PhD; and W. van Tilburg, PhD, MD), and the Institute for Research in Extramural Medicine (T. P. Ettema), Vrije Universiteit, Amsterdam, The Netherlands, the Association of Organization of Catholic Senior Citizens, 's Hertogenbosch, The Netherlands (E. Breebaart), and the Faculty of Psychology,

Universiteit van Amsterdam, Amsterdam, The Netherlands (G. J. Mellenbergh, PhD).

Offprints. Requests for offprints should be directed to Rose-Marie Dröes, PhD, Department of Psychiatry, Vrije Universiteit, Valeriusplein 9, 1075 BG Amsterdam, The Netherlands. e-mail: rm.droes.emgo@med.vu.nl

increase as the dementia progresses (Hope et al., 1997; Hwang et al., 1997; Rubin et al., 1987; Teri et al., 1988). Teri and coworkers (1988) observed that only 8% of the mildly demented patients they examined exhibited three or more behavior problems, compared to 88% of patients with severe dementia. Mood problems, however, are expected to diminish as the dementia progresses (Merriam et al., 1988), because a person with dementia gradually becomes less aware of his or her own deterioration.

In the past 10 years, the idea has gained ground that behavior and mood problems of persons with dementia are related not only to the degeneration of the brain but also to the problems of adapting to and coping with their own mental deterioration and the dramatic changes this causes in their lives (Cohen et al., 1984; Cotrell & Schulz, 1993; Dröes, 1991; Kiyak & Borson, 1992). In accordance with the adaptation process in chronic physical diseases (Moos & Tsu, 1977), persons with dementia are assumed to encounter some general adaptive tasks, for example coping with the disabilities resulting from the dementia, preserving an emotional balance, maintaining a positive self-image, and maintaining social contacts (Cohen, 1991; Cotrell & Lein, 1993; Dröes, 1991; LaBarge & Trtanj, 1995). The adaptation process, in other words the accomplishment of these tasks, is assumed to be influenced by the pre-morbid personality of the person with dementia, illness-related factors, and the interaction between the patient and his or her environment, for instance family caregivers. Recent studies seem to confirm these ideas (Cotrell & Lein, 1993; Dröes, 1991; LaBarge & Trtanj, 1995; Magai et al., 1997).

In the past, various programs such as day care, other forms of respite care, and family support groups were developed to support dementia patients and their caregivers (Zarit et al., 1999). Only a few studies have investigated the effect of those programs on behavior problems and mood of the demented person (Brodaty & Gresham, 1989; Lawton et al., 1989; Mintzer et al., 1997; Seltzer et al., 1988; Vernooij-Dassen & Persoon, 1990; Wells et al., 1990). The results of these studies are ambiguous. Although it is expected, in light of the ideas mentioned, that integrated family support will have a more positive effect on the adaptation process of persons with dementia than nonintegrated support such as day care, no comparative research has been done until now.

Therefore our main question was: Is integrated family support, compared to psychogeriatric day care only, more effective in positively influencing the behavior problems and mood of demented persons? The support program that we studied, the Amsterdam Meeting Centers program, has been offered in public community centers since 1993. It aims to give patients and their family caregivers, besides information, the practical, emotional, and social support they need to cope with the consequences of dementia in their life. Such a comprehensive and integrated type of family support is in agreement with the "Practice Guidelines for the Treatment of Patients With Alzheimer's Disease and Other Dementias of Late Life" (American Psychiatric Association, 1997). The study was executed by the Department of Psychiatry of the Vrije Universiteit in Amsterdam from October 1994 until June 1996.

METHOD

Design

In the study a quasi-experimental design was used: a pretest-posttest control group design with two matched groups. The dementia patients who participated in the experimental Amsterdam Meeting Centers support program, and who in that context visited one of the four day-care centers of this project, were compared on a number of behavioral aspects and mood to persons with dementia who visited three regular psychogeriatric day-care centers in the Amsterdam region. Three measurements were executed: immediately before the support program was started (baseline), after 3 months of support, and after 7 months of support.

Because of the limited waiting lists for psychogeriatric outpatient treatment in the Amsterdam region, the groups could not be composed on the basis of random assignment. They were therefore formed "naturally." The patients with dementia who were presented by their caregiver or home care service to the Amsterdam Meeting Centers project were automatically placed (after their written consent was obtained) in the experimental group; those who were presented to the centers for regular day care were placed in the control group. Frequency matching took place on a group level, based on average values and standard deviation, for the following characteristics: severity of the dementia and degree of assistance/care needed by the patient, and the feeling of competence of the caregiver. During the experimental period, possible longitudinal changes in the persons with dementia were monitored (severity of the dementia, illness, physical disability,

medication, and the use of types of support not offered in the experimental and the control group). Dropout and special events in the period of 1 month before the measurement were also checked.

Subjects

The experimental group consisted of 33 dementia patients, and the control group consisted of 23 dementia patients. The patients in the experimental group were recruited from the four day-care centers of the Amsterdam Meeting Centers project, and the patients of the control group from three regular psychogeriatric day-care centers in Amsterdam. Some of the characteristics of the patients in both groups and their caregivers are included in Table 1.

There was an almost statistically significant difference ($t_{54} = -1.93$; $p = .06$) in the mean age of the persons with dementia between the experimental and control groups. However, the total age distribution showed *no* statistically significant differences between the groups ($\chi^2 = 5.24$; $p = .15$). The difference in mean age was caused mainly by six persons with presenile dementia in the experimental group. We decided not to exclude the group aged younger than 60 from our sample, because the younger and older persons with dementia in the community centers showed essentially comparable cognitive and behavioral problems, and because in the experience of the personnel, the younger spouse caregivers shared many problems with the older spouse caregivers in coping with the demented person.

Other statistically significant differences between the groups were found in marital status ($\chi^2 = 4.86$; $p = .03$) and in

the relationship of the central caregiver to the person with dementia ($\chi^2 = 10.70$; $p = .01$). Compared to the control group there were twice as many spouses in the experimental group.

In principle, only patients diagnosed with dementia syndrome were admitted to the research group. Some patients (three in the experimental group and three in the control group) who entered the support programs with the diagnosis "amnesic syndrome" and "dementia due to alcohol" (Korsakov syndrome) were also included, because they showed global impairment during neuropsychological testing at the start of our project. If no diagnosis was available, the general practitioner was asked to perform this evaluation based on a standard dementia protocol (Dröes & Breebaart, 1994). Another option was to refer the patient to a memory clinic or a regional institute for mental welfare.

A second selection criterion was the severity of dementia. Only persons with slight to severe dementia (see Table 1) were admitted to the study. Persons with a *very* severe form of dementia are generally not admitted to the Amsterdam Meeting Centers program, because the community centers lack the facilities to offer the intensive care and/or nursing those patients need.

After dementia syndrome had been diagnosed by the physician, the researchers assessed whether the person in question met the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition revised (DSM-III-R; American Psychiatric Association, 1987), and the selection criteria with regard to severity of the dementia (see Instruments and Procedures section). In addition, data on the caregivers were collected because of the matching criterion "feeling of competence."

The effect study was done exclusively among persons with dementia who had participated in the support program for at least 3 months. In the experimental group, two measurements (at baseline and after 3 months) were carried out on 33 dementia patients, and three measurements (at baseline and after 3 and 7 months) on 26 patients. Dropout reasons in the experimental period were as follows: the patient had not yet used the support program 7 months ($n = 5$) or had been transferred to a regular day-care center ($n = 2$) during the research period. In the control group, two measurements were carried out on 23 patients and three measurements on 16 patients. There were also various reasons for dropping out during the experimental period in this group: admission into a nursing home ($n = 4$) or hospital ($n = 2$) and somatic illness ($n = 1$).

Before participation in the project, all patients and caregivers received verbal and written information on the support programs and procedures of the research project. From all the dementia patients and their caregivers, written consent was obtained. They were free to end their participation at any time, for instance if they were not satisfied with the support program or could not agree with the research procedures in the second instance.

The Support Programs

Integrated Family Support. The Amsterdam Meeting Centers support program offers information and support to patients with dementia and their family caregivers. Theoretically this integrated support program is based on the so-called adaptation-coping model (Dröes, 1991, 1996, 1997; Dröes & van Tilburg, 1996; Lazarus & Folkman, 1984): The patient

TABLE 1. Data on Persons With Dementia in the Experimental and Control Groups at the State of Participation in the Day-Care Program of the Amsterdam Meeting Centers Project and in Regular Day Care, Respectively

	Experimental Group (n = 33)	Control Group (n = 23)	Test Statistic	p
Sex				
Male	18 (54.5%)	11 (47.8%)	$\chi^2 = 0.25$	.62
Female	5 (45.5%)	12 (52.2%)		
Age				
Mean (SD)	72.0 (11.0)	77.0 (6.8)	$t_{54} = -1.93$	.06
<60	6 (18.2%)	—	$\chi^2 = 5.24$	.15
60–69	4 (12.1%)	3 (13.0%)		
70–79	14 (42.4%)	10 (43.5%)		
80–92	9 (27.3%)	10 (43.5%)		
Marital status				
Married or cohabiting	25 (75.7%)	10 (43.5%)	$\chi^2 = 4.86$	.03
Widowed or single	8 (24.3%)	13 (56.5%)		
Type of dementia				
Dementia syndrome	8 (24.2%)	6 (26.1%)	$\chi^2 = 4.39$	.62
Alzheimer's disease	14 (42.4%)	9 (39.1%)		
Vascular dementia	2 (6.1%)	4 (17.4%)		
Amnesic syndrome	3 (9.1%)	3 (13.0%)		
Organic mental syndrome	2 (6.1%)	—		
Frontal lobe dementia	3 (9.1%)	1 (4.4%)		
Korsakov syndrome	1 (3.0%)	—		
Severity of the dementia ^a (BCRS)				
Mean BCRS score (SD)	31.45 (6.9)	34.43 (7.4)	$t_{54} = -1.54$	.13
Slight dementia	5 (15.2%)	2 (8.7%)	$\chi^2 = 3.42$	.33
Moderate dementia	14 (42.4%)	7 (30.4%)		
Moderately severe dementia	11 (33.3%)	8 (34.8%)		
Severe dementia	3 (9.1%)	6 (26.1%)		
Physical disability (ASEP 3A)				
Slight (0–1)	22 (66.7%)	14 (60.9%) ^a	$\chi^2 = 2.06$	.36
Moderate (2–3)	10 (30.3%)	6 (26.1%) ^a		
Severe (4–6)	1 (3.0%)	3 (13.0%)		
Primary caregiver				
Partner	26 (78.8%)	9 (39.1%)	$\chi^2 = 10.70$	.01
Daughter/son (in-law)	7 (21.2%)	11 (47.8%)		
Other	—	3 (13.1%)		

Note. The underlined χ^2 values are statistically significant. ASEP 3A = Assessment Scale Elderly Patients, subscale 3A; BCRS = Brief Cognitive Rating Scale.

^aClassification determined by Dröes (1991).

with dementia as well as his or her family caregiver is supported in coping with the adaptive tasks encountered as a consequence of the dementia.

For persons with dementia, day care is organized 3 days a week on Monday, Wednesday, and Friday from 10 a.m. until 4 p.m. in several public sociocul-

tural community centers. These persons with dementia are assisted individually and in a group setting by a small professional staff (a psychologist, an activity therapist, and a nurse assistant). Depending on the adaptive tasks the individual patient seems to have problems with, the support strategy emphasizes information, reactivation, resocialization, and/or optimizing emotional functioning. Elements from different treatment methods are utilized, such as reality orientation, validation, reminiscence, and psychomotor therapy. Examples of some (modified) everyday creative and recreational activities that are offered are as follows: reading the newspaper together, preparing lunch, washing dishes, going shopping, listening to music, group discussions, playing memory games, and participating in a movement group and excursions.

Besides the support that is given to the persons with dementia, the program also offers information and practical, emotional, and social support to the family caregivers. This is done by several means. For instance, the assistance strategy for each participant with dementia in the program is discussed with the caregiver, and it is agreed that the planned strategy is followed as much as possible in the home environment as well. The caregivers are "educated" in 10 informative meetings and emotionally supported in a discussion group meeting once every 2 weeks, in which they can participate as long as they feel the need to do so. Finally, they can utilize the weekly consulting hour for more personal support and advice, and participate in social activities organized by the center to expand their social network.

Regular Psychogeriatric Day Care. Psychogeriatric day care in The Nether-

lands is usually offered in separate units in nursing homes specialized in offering care to patients with dementia. Treatment is offered by multidisciplinary teams in which the social, psychological, paramedical, and medical disciplines are represented. Treatment varies from social activities, reality orientation training, reminiscence, validation, psychomotor therapy, and music therapy to medical care, physiotherapy, or ergotherapy if necessary. Though the offered activities are comparable to the activities offered in the Amsterdam Meeting Centers (see above), the family is only marginally involved in the care for the demented person, and generally the only support they receive are incidental contacts with the social worker and other professional staff members and one or two informative meetings a year. In this regard, regular day care differs essentially from the integrated family support program of the Amsterdam Meeting Centers.

Instruments and Procedures

The collection of data took place over a period of 18 months. Standard reliable and valid instruments were used for the selection of persons with dementia and the effect measurements. First, we used instruments to check for the diagnosis of dementia syndrome. The part of the Dutch version of the CAMDEX (Derix et al., 1991) that examines cognitive functions (CAMCOG) was used ($\alpha = .93$) to assess cognitive impairments (including memory, language, action, and perception). This test was conducted by two trained independent researchers and five trained medical and social gerontology graduate students. Because the independent researchers were responsible for

the total research project, it was impossible for them to be unaware of the group the subjects were in. However, these researchers conducted testing only in the baseline measurement. Though the purpose was to keep the students unaware of the group patients belonged to, it proved impossible to prevent the caregivers from talking about the day care in the nursing home or the Amsterdam Meeting Centers project. Because this happened quite often, we cannot consider the researchers "blinded."

To determine the impact of the impairments on the everyday functioning of the patient and the severity of the dementia, the Dutch versions of Reisberg's Brief Cognitive Rating Scale and Global Deterioration Scale (GDS) (Muskens, 1993; Reisberg, 1983) were used ($\alpha = .90$). These were completed by the supervisors of the day-care centers 1 month after the patient had been admitted, and after discussing the patient's home functioning with his or her caregiver.

To determine other possible causes for cognitive deterioration, the Cornell Depression Scale (Alexopoulos et al., 1988; $\alpha = .84$) was used to assess depression, and the attending physician of the person with dementia completed a checklist that is part of a standard dementia protocol. (On the basis of this checklist, the physician reported on the general physical examination, simple neurological examination, laboratory research, other psychiatric disorders, and clinical assessment.)

With regard to matching on the variables "feeling of competence," "in need of care/assistance," and "severity of the dementia," we used the modified version of the Feeling of Competence Scale (Teunisse & de Haan, 1994; $\alpha = .79$), the subscale "In need of care" of the

Assessment Scale for Elderly Patients (Van der Kam et al., 1971; $\alpha = .94$), and the aforementioned GDS. The first scale was completed by the caregiver of the demented person, and the other two by the supervisors of the day-care centers.

Several behavior problems, such as reduction of initiative, aggressive behavior, inactivity, and nonsocial behavior, were quantified. To measure a decrease of initiative in daily life, the caregiver of the person with dementia was asked to complete the written Interview for Deterioration in Daily Life in Dementia (Teunisse, 1995; $\alpha = .90$). To assess the degree of aggressive behavior, inactivity, and nonsocial behavior in the day-care setting, subscales 2 and 4 of the Assessment Scale for Elderly Patients (Van der Kam et al., 1971; α 's = .78 and .88) and scale 1 of the Behavior Observation Scale for Intramural Psychogeriatrics (Verstraten & Van Eekelen, 1987; $\alpha = .83$), respectively, were filled out by the supervisors of the day-care centers. Although the various instruments give an impression of the presence of the separate behavioral problems, in our opinion analysis of the data gathered in this way does not yield a solid overall picture of the presence of (in many cases multiple) behavior problems in the person with dementia. That is why, to evaluate the effect on this variable, we also constructed a composite measure, "behavior problems," based on the assessment scales listed.

To assess the variable "mood," two instruments were used: the Dutch versions of the Philadelphia Geriatric Center Morale Scale (Dröes, 1991; Lawton, 1975; Ryden & Knopman, 1989; $\alpha = .74$) and the Cornell Depression Scale (Alexopoulos et al., 1988; Dröes, 1996). The first was administered to the demented person by independent

researchers, and the second was completed by the supervisors of the day-care centers, based partly on interviews with the person with dementia and partly on information provided by the family caregiver about the demented person's functioning at home.

To assess changes in "severity of dementia" and "physical disability" during the experimental period, the aforementioned GDS and scale 3A of the Assessment Scale for Elderly Persons ($\alpha = .74$) were used respectively. To check for the variables "psychotropic drugs," "use of other types of support," "reason for dropout," and "special events," the caregivers were questioned during the various measurements on the basis of a questionnaire designed by the authors.

Because a particular order in tests and questionnaires may cause a systematic (group) effect, an order based on a so-called "balanced incomplete block design" was used when several questionnaires were completed by the same assessor successively.

Data Analysis

For the data analysis, we used the SPSS-Windows 6.0 program (SPSS Inc., Chicago, IL, USA). To determine whether the experimental group and the control group were comparable on the matching criteria at baseline, we calculated means and standard deviations, and *t* tests were executed between the groups. To check for longitudinal changes on the variables "severity of dementia," "physical disability of the demented person," and "use of other organizations" (between groups), *t* tests were done on the longitudinally observed changes in the groups between measurements 1 and 2 and between measurements 1 and 3. (We did

not conduct an analysis of variance that included all three measurements based on a so-called "repeated measures design" because of the differences in numbers of demented persons who participated in the second and third measurement.) All *t* tests were two-tailed with a 5% significance level.

Univariate covariance analyses were subsequently carried out on the effect measures (after 3 and 7 months). The baseline was included in the analysis as covariate. Because of the expected surplus of the experimental support program on the selected variables, we used one-tailed tests with a significance level of 5%.

For each dependent variable, we furthermore examined the size of the measured effect on a group level. To calculate the effect sizes, we used the mean scores in the posttest adjusted for baseline scores, and standard deviations from the adjusted scores of the experimental and the control group. To assess the size of the effect, we followed the guidelines set by Cohen (1977): small effect $d = .2$, medium effect $d = .5$, large effect $d > .8$.

Because behavior problems are expected to increase as the dementia progresses, we felt that less increase in behavior problems in the experimental condition, as compared to the control condition, could already be considered a positive effect. With regard to mood problems, we expected to observe a larger decrease in the experimental condition.

RESULTS

The *t* tests showed no significant differences between the groups on the matching variables at baseline (see

Table 2), or in longitudinal changes in "severity of dementia," "physical disability," and "use of other organizations" (Tables 3 and 4). During the experimental period, we observed a larger increase in severity of dementia in the experimental group than in the control group, but this difference proved statistically insignificant. In other words, during the relevant period, the groups did not change on these control variables in such a way that it might explain possible treatment effects.

Tables 5 and 6 contain the mean scores and standard deviations of the

separate behavior problems and mood on the second and third measurements, as well as the collective measure for behavior problems. In addition, the tables contain the adjusted scores and standard deviations of the variables as used in the analyses of covariance, as well as the calculated effect sizes.

Based on the means of the variables, there was an observed increase in all behavior problems during the experimental period, as well as an increase in the collective measure "behavior problems" in both groups. We observed a comparable development during the ex-

TABLE 2. *T* Tests Conducted on Baseline Data of the Experimental Group and the Control Group

Matching Variables (Range of Scores)	Measurement 1		<i>t</i>	<i>p</i>
	mE (<i>SD</i>) (<i>n</i> = 33)	mC (<i>SD</i>) (<i>n</i> = 23)		
Caregiver				
Feeling of competence (0–108)	78.2 (13.2)	83.6 (9.3)	–1.60	.12
Person with dementia				
Severity of dementia (0–56)	31.5 (6.9)	34.4 (7.4)	–1.54	.13
Degree of needing care/assistance (0–46)	10.2 (7.5)	11.4 (7.2)	–0.59	.55

Note. mE = mean experimental group; mC = mean control group.

TABLE 3. Results of the (Between-Groups) *t* Tests on Observed Differences Between Measurements 1 and 2 in Some Control Variables in the Experimental and Control Groups

Control Variables (Range of Scores)	Measurement 1		Measurement 2		<i>t</i>	<i>p</i>
	mE (<i>SD</i>) (<i>n</i> = 33)	mC (<i>SD</i>) (<i>n</i> = 23)	mE (<i>SD</i>) (<i>n</i> = 33)	mC (<i>SD</i>) (<i>n</i> = 23)		
Caregiver						
Use of other organizations	1.8 (1.2)	1.4 (1.3)	2.2 (1.4)	1.7 (1.3)	–.08	.94
Person with dementia						
Severity of dementia (0–56)	31.5 (6.9)	34.4 (7.4)	34.0 (6.9)	34.5 (7.0)	1.78	.08
Physical disability (0–6)	1.2 (1.2)	1.3 (1.7)	1.7 (1.3)	1.4 (1.6)	1.15	.23

Note. mE = mean experimental group; mC = mean control group.

TABLE 4. Results of the (Between-Groups) *t* Tests on Observed Differences Between Measurements 1 and 3 in Some Control Variables in the Experimental and Control Groups

Control Variables (Range of Scores)	Measurement 1		Measurement 3		<i>t</i>	<i>p</i>
	mE (SD) (<i>n</i> = 26)	mC (SD) (<i>n</i> = 16)	mE (SD) (<i>n</i> = 26)	mC (SD) (<i>n</i> = 16)		
Caregiver						
Use of other organizations	2.0 (1.3)	1.4 (1.4)	2.4 (1.5)	1.7 (1.1)	0.01	.60
Person with dementia						
Severity of dementia (0–56)	30.9 (6.7)	33.8 (6.3)	34.0 (6.1)	38.4 (8.7)	–0.40	.69
Physical disability (0–6)	1.2 (1.3)	1.3 (1.7)	1.7 (1.3)	2.1 (1.8)	–0.84	.41

Note. mE = mean experimental group; mC = mean control group.

perimental period with regard to depressive behavior. The results of the analyses of covariance showed statistically significant differences between the experimental and the control group. In the second measurement, the difference concerns the degree of inactivity: After 3 months, this proved to be significantly lower in the users of the Amsterdam Meeting Centers than in the users of regular day care ($F = 3.31$, $df = 1,55$, $p = .04$). We must point out that given the number of variables examined in this study, there is a chance of finding a statistically significant difference on one of the variables. However, after 7 months, we saw significant differences on three variables, namely inactivity ($F = 4.46$, $df = 1,42$, $p = .02$), nonsocial behavior ($F = 3.29$, $df = 1,42$, $p = .04$), and the total number of behavior problems ($F = 5.79$, $df = 1,36$, $p = .01$). On average, the users of the Amsterdam Meeting Centers scored lower on these variables than the users of regular day care. With regard to inactivity and nonsocial behavior, the difference was moderate (effect sizes .66 and .61 respectively); for the total

number of behavior problems it was a large difference (effect size .75).

No effects were observed on the following variables: reduction of initiative ($F_{m2} = 0$, $df = 1,47$, $p = .99$; $F_{m3} = 0.71$, $df = 1,36$, $p = .20$), aggressive behavior in the day-care center ($F_{m2} = 1.21$, $df = 1,55$, $p = .14$; $F_{m3} = 0.12$, $df = 1,42$, $p = .36$), dissatisfaction ($F_{m2} = 0.80$, $df = 1,51$, $p = .19$; $F_{m3} = 0.21$, $df = 1,38$, $p = .33$), and depressive behavior ($F_{m2} = 2.23$, $df = 1,55$, $p = .07$; $F_{m3} = 0.61$, $df = 1,42$, $p = .22$). With regard to aggressive behavior in the day-care centers, this result appears to be related to the low values already found in the first measurement within the groups (bottom effect).

We investigated whether the effects found had possibly been influenced by changes in use of psychotropic drugs, changes in severity of dementia, other types of support, and special events in the environment of the demented person or the caregiver. This was not the case. There proved to be no significant association between changes in use of psychotropic drugs on the one side and changes in total behavior problems ($\eta^2 =$

TABLE 5. Results of the ANCOVAs at Measurement 2 on Behavior Problems and Mood of Persons With Dementia Involved in the Study

Effect Variables (Range of Scores)	Measurement 1		Measurement 2		Effect Size
	mE (SD)	mC (SD)	mE (SD)	mC (SD)	
Behavior problems				Adjusted mE/mC (SD)	<i>d</i>
Reduced initiative (0–44)	24.8 (8.2)	28.6 (7.8)	26.3 (8.0)	27.4/27.4 (8.3)	.00
Aggressive behavior (0–10)	0.9 (1.0)	0.9 (1.9)	1.4 (1.4)	1.4/1.1 (1.4)	.22
Inactivity (0–14)	4.3 (3.1)	6.1 (3.7)	4.5 (2.9)	5.1/6.2 (3.3)	–.33*
Nonsocial behavior (0–18)	5.3 (2.8)	5.5 (3.5)	5.7 (3.6)	5.8/7.0 (3.8)	–.32
Behavior problems total (0–40)	12.3 (5.1)	14.5 (4.9)	13.5 (5.4)	14.3/15.6 (5.2)	–.25
Mood					
Dissatisfaction (0–17)	4.9 (3.9)	4.2 (3.8)	4.5 (3.4)	4.3/5.0 (3.6)	–.19
Depressive behavior (0–38)	7.1 (3.9)	6.3 (5.4)	8.3 (3.5)	8.2/7.0 (3.4)	.35

Note. For each variable, the effect size is included (nE = 33 in measurements 1 and 2; nC = 23 in measurements 1 and 2). mE = mean experimental group; mC = mean control group; ANCOVA = analysis of covariance.

**p* < .05.

TABLE 6. Results of the ANCOVAs at Measurement 3 on Behavior Problems and Mood of Persons With Dementia Involved in the Study

Effect Variables (Range of Scores)	Measurement 1		Measurement 3		Effect Size
	mE (SD)	mC (SD)	mE (SD)	mC (SD)	
Behavior problems				Adjusted mE/mC (SD)	d
Reduced initiative (0–44)	25.3 (9.5)	28.2 (6.7)	28.6 (8.2)	29.6/31.4 (8.2)	–.22
Aggressive behavior (0–10)	0.73 (.92)	0.56 (1.2)	1.2 (1.4)	1.2/1.1 (1.2)	.08
Inactivity (0–14)	4.3 (3.1)	6.2 (2.9)	4.9 (2.3)	5.3/7.1 (2.7)	–.66*
Nonsocial behavior (0–18)	5.0 (2.8)	4.6 (2.8)	6.2 (2.5)	6.2/7.9 (2.8)	–.61*
Behavior problems total (0–40)	12.1 (5.4)	13.3 (2.6)	14.6 (4.7)	14.9/18.2 (4.4)	–.75*
Mood					
Dissatisfaction (0–17)	5.0 (4.2)	4.1 (3.8)	5.2 (3.7)	4.9/4.5 (3.5)	.11
Depressive behavior (0–38)	7.3 (4.1)	5.1 (4.8)	9.3 (4.9)	8.9/10.0 (4.7)	–.23

Note. For each variable, the effect size is included (nE = 26 in measurements 1 and 3; nC = 16 in measurements 1 and 3). mE = mean experimental group; mC = mean control group; ANCOVA = analysis of covariance.

* $p < .05$.

.001), inactivity ($\eta^2 = .04$), or nonsocial behavior ($\eta^2 = .005$) on the other side in either one of the groups. As already mentioned (see Table 4), the groups did not differ in change in severity of dementia during the experimental period or in use of support by other organizations. In only one case in the control group, a special event had taken place before the third measurement (the demented person had fallen and this had increased his need for physical assistance/care). However, this person did not score significantly different from before on any of the scales used for the effect measurement, so we assume that this has not influenced the effects found.

DISCUSSION

On the basis of this effect study, we conclude that participation of demented persons and their caregivers in the integrated family support program Amsterdam Meeting Centers has had a large significant positive effect on the behavior problems of the participants with dementia. The behavior problems of the participants in this new type of support program prove to have increased less than those in demented persons who made use of regular psychogeriatric day care. Effects were found on specific behavior problems (inactivity and nonsocial behavior) as well as on the total number of observed behavior problems. This effect was not caused by differences on either the matching variables (severity of dementia, degree of needing care of the demented person, feeling of competence of caregiver) or on autonomous changes in severity of dementia, physical disability, the use of other organizations, special events, or illness.

Because inactivity and nonsocial behavior, in terms of adaptation and coping, can be seen as indicators of the problems that the patient experiences in coping with his own disabilities and maintaining social contacts, respectively, one could conclude that the participants in the Amsterdam Meeting Centers project, after participating in the support program, seemed to have less problems with these adaptive tasks than the users of the regular psychogeriatric day care. The effects occur especially after a period of 7 months of participation, which is an argument in favor of long-term support.

It should be noted that there was a difference between the groups with respect to the central family caregivers: There were almost twice as many spouses in the experimental group as in the control group (79% versus 39%). This difference was to be expected, first of all, because caregivers other than spouses are more likely to utilize the respite day centers in nursing homes so they can continue with the usual activities in their lives such as education, work, marriage, or raising children (Zarit et al., 1999), and secondly, because the Amsterdam Meeting Centers organized the support activities for the caregivers only during the day. It is difficult to determine if this difference in type of caregiver had any influence on the effects we found. Until now, no research has been done on the relation between specific behavior problems of the person with dementia and the type of caregiver. We do not expect, however, that the influence of day care per se on behavior problems of the person with dementia will increase if the caregiver is a spouse. In our opinion, the degree in which the primary caregiver is involved in the care offered by the day

center is crucial for increasing the 24-hour impact. In that case, cohabiting with the person with dementia (regardless of whether they are spouses) will probably reinforce this impact. It would be interesting to focus future research on this subject.

Another notable difference between the groups was the number of young patients with Alzheimer's disease (AD). Six participants of the Amsterdam Meeting Centers project were aged under 60, compared to none in the control group. In The Netherlands, as in other countries (Newens et al., 1995; Williams, 1995), young AD patients (and their spouses) rarely use the regular day centers in nursing homes, because of the mean age of the participants (mostly elderly people) in those centers. The Amsterdam Meeting Centers project demonstrated that the young AD patients and their spouses were much less resistant to participation in the general community centers that are frequented by people of all ages. This was a surprising finding and motivated the personnel of the centers to pay more attention to this group of patients in their information to the public and to other professionals who offer care to these patients.

In light of the fact that earlier research identified behavioral problems of dementia patients as a main determinant for institutionalization in a nursing home (Christie & Wood, 1988; Grafström et al., 1994; Pot, 1996), integrated long-term support of dementia patients and their caregivers may be expected to contribute to the delay of admission of the patient into a nursing home. Research to test this expectation will be executed in the near future. Because the literature does not answer the question for which caregiver/demented patient delaying

admission to the nursing home is indicated (or a realistic option), it would be very valuable to focus future research on discovering the determinants for delaying admission to a nursing home, for example, certain characteristics of the demented patient and/or the caregiver, financial and personal situations, and the availability of (social) support.

The integrated support program did *not* have *more* effect on mood problems (dissatisfaction with life and depressive behavior) of the persons with dementia than the regular psychogeriatric day care. Therefore, in terms of adaptive tasks, it cannot be concluded that participants in the Amsterdam Meeting Centers project were more successful in maintaining an emotional balance than the participants in the regular psychogeriatric day care. Contrary to expectations (increase in life satisfaction, decrease in depressive behavior with the progression of the disease; Merriam et al., 1988), the degree of (dis)satisfaction remained almost constant and the depressive behavior increased during the experimental period in both groups. Although this increase was smaller in the experimental group, it did not reach the level of statistical significance. This is one of the problems frequently encountered in quantitative research with small groups. In future evaluation studies, it might therefore be advisable to add qualitative methods, in which special attention is given to the experiences of the patient with dementia (Cotrell & Lein, 1993; Cotrell & Schulz, 1993). This is especially important because knowledge about the subjective experiences of patients is essential to provide better care in the future and to improve the patient's quality of life and well-being (Cotrell & Schulz, 1993; Moos & Tsu, 1977).

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