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Never too old to learn : the effectiveness of the Coping with Depression course for elderly

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Never too old to learn

The effectiveness of the Coping with Depression course
for elderly

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Never too old to learn. Effectiveness of the Coping with Depression course for elderly

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Never too old to learn

The effectiveness of the Coping with Depression course
for elderly

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General introduction

General Introduction

This thesis evaluates a group intervention developed for the prevention and treatment of late life depression. In this time and age many adults will have had some experience with depression, either by knowing a relative, friend or colleague who was depressed, or by having lived through it themselves. Although the public is relatively well informed about depression, many still find it hard to understand how debilitating a depressive episode is. Being disabled because of a physical ailment (a broken leg or pneumonia) might be much easier to comprehend and doesn't seem to imply a personal weakness. This is especially true for the older generation, who grew up when less was known about depression. Effective pharmacological and psychological treatments have been developed to ease the burden of an acute depressive episode. Over the years treatment-seeking rates have been increased, especially for the middle-to-older adult and the young elderly (Bristow & Patten, 2002). However, in a longitudinal community study in the Netherlands, Beekman, Deeg, Braam, Smit and van Tilburg (1997) found that elders with major or minor depression were not adequately treated despite the fact that they were seen regularly by their general practitioner (GP). Antidepressants and community mental health services were underused, whereas medical health services were excessively used (Beekman et al., 1997).

The likely reason is that the symptoms are not recognized for what they are by the depressive elderly person him/herself or by his/her family or medical professionals. Symptoms such as memory loss and impaired executive functioning are seen as part of the normal aging process or beginning dementia. Feelings of sadness and lack of enjoyment are labelled as grief; grief over loss of physical faculties, loss of partner, loss of peers. Furthermore, the older elderly grew up in a time when depression as such was not recognised and one was urged not to give in to a negative mood. They may not insist on being treated for their feelings of misery.

In this chapter, section 1 will deal with depression, its course, risk factors and prevalence in the elderly; section 2 will focus on curative and preventive interventions in the elderly. Because the subject of this research project was the effectiveness of the Coping With Depression (CWD) course as it is provided by the community mental health care system in the Netherlands, section 3 will describe in more detail the CWD course and the common practice of the prevention departments of the Dutch community mental health centres (CMHCs) in recruiting and enrolling participants than is done in chapters 3 and 4, which concern the effectiveness of the CWD course and the predictors of treatment outcome. The chapter ends with an outline of the chapters of this thesis.

1. Depression in the elderly

1.1 Diagnosis

Depression is a serious mental illness which lasts for at least two weeks and is characterised by a profound sad mood and lack of enjoyment (anhedonia) (American

Psychiatric Association, 1994). Apart from these core characteristics, a depressed patient suffers from a range of cognitive, behavioral and somatic complaints (see table 1). A distinction is made between major depression and subthreshold, minor or subclinical depression when high levels of depressive symptoms are reported, but not all criteria for diagnosis of major depressive disorder (MDD) according to the diagnostic and statistical manual of mental disorders – 4th edition (DSM-IV; APA, 1994) are met.

It is generally thought that subthreshold depression (SD) is more prevalent in primary care and community populations, whereas MDD is found more in the specialty mental health sector (Pincus, Davis & McQueen, 1999). A problem is the great variation in criteria sets used to diagnose these so-called ‘minor forms’, with the result that prevalence rates vary greatly depending on the set used. The criteria sets used by most authors include the two core symptoms sadness and anhedonia and a clinical criterion stating that it causes clinically significant distress or impairment in social, occupational or other important areas of functioning (Pincus et al., 1999). DSM-IV includes Minor Depression under the Depressive Disorder not otherwise specified (NOS). Minor Depression is diagnosed when at least two but less than five depressive symptoms are present during a two week period, with no history of a major depressive or manic episode or Dysthymia, which precludes intermingling with an incomplete recovery from a major depressive episode. Dysthymia is another DSM-IV disorder often considered to be a form of minor depression. Dysthymia differs from MDD in the severity and duration of the symptoms. The sad mood is present most of the time and has been present during at least two years. Other diagnoses are based on the severity of the symptoms and the use of screening questionnaires (Feldman, Robins & Jaffe, 1998). Well-known are the Beck Depression Inventory (Beck, Ward, Mendelson, Mock & Erbaugh, 1961), the Hamilton Rating Scales for Depression and Anxiety (Hamilton, 1967) and the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977). The latter was used in the research reported in this thesis. The number of symptoms reported during the previous week is summed; a sum score above 15 is an indication of a clinically relevant depression in the general population (Radloff, 1977; Beekman et al. (1997a).

Large studies like the Medical Outcomes Study (MOS; Wells et al., 1989), and in the Netherlands the Groningen Longitudinal Aging Study (GLAS; Ormel et al., 1998), showed that the impact of MDD or subthreshold depression (SD) on the quality of life was greater (more dysfunction, poorer health perception and well-being) than that of chronic medical conditions like heart-lung diseases, coronary conditions, diabetes, and hypertension (Ormel et al, 1998). Furthermore, depression is considered an independent risk factor for the onset of cardiovascular diseases (CVD) (Fraser-Smith & Lespérance, 2006; Kooy, et al., 2007). In patients with established CVD, depression increases the risk of mortality and cardiac events (Fraser-Smith & Lespérance, 2006).

Table 1. *Major Depressive Disorder and Dysthymia according to DSM-IV*

	Major Depression	Dysthymia
Core symptoms	Depressed mood Loss of interest (anhedonia)	Depressed mood
Additional symptoms	Changes in weight or appetite Change in sleep pattern Psychomotor agitation or retardation Loss of energy Feelings of guilt or worthlessness Loss of concentration/indecisiveness Thoughts of death, suicidality	Appetite change Change in sleep pattern Loss of energy Feelings of worthlessness Loss of concentration/indecisiveness Feelings of hopelessness
Time criteria		
Continuity	Most of the day Every day	Most of the day Most days
Duration	At least 2 weeks	Two years
Symptom score	Both core symptoms + 3 additional symptoms One core symptoms + 4 additional symptoms	Core symptom + 2 additional symptoms

Apathy, which is part of the depression syndrome, can be an early sign of dementia in the elderly (Onyike et al., 2007). However, it is also considered a distinct syndrome, (Marin, Butters, Mulsant, Pollock & Reynolds, 2003) with its own pathogenesis, treatment and prognosis, in non-demented elderly (Vinkers, van der Mast, Stek, Westendorp & Gussekloo, 2006). Feil, Razani Boone and Lesser (2003) found that apathy was related to executive functioning in non-demented older depressed individuals.

1.2 Course of depression

The onset of the first depressive episode can happen at any age from childhood to old age, but the common age of onset lies before age 30 (Burke, Burke, Regier & Rae, 1990). Depending on the study depression is defined as late onset depression when the first episode occurs after the age of 55, 60 or 65. In a large representative sample of community-living elderly aged between 65 and 84 of the Amsterdam Study on the Elderly Amsterdam Study of the Elderly (AMSTEL; van Ojen, Hooijer, Lindeboom & van Tilburg, 1995), 31% reported the first onset between 50 and 65 and 14% reported the onset after 65. Results from clinical studies comparing early onset depression

(EOD) with late onset depression (LOD) have suggested that EOD is associated more with genetic vulnerability and personality disorder, whereas vascular diseases and white matter lesions in the brain are implicated in LOD (Ernst, 1997; Murata et al., 2001). Recent prospective studies argue against the so-called vascular depression hypothesis. Generalized atherosclerosis precedes cognitive decline, but not depression (Vinkers et al., 2005).

Symptoms can differ by age and by age of onset. In a study of lifetime symptomatology of depression in the elderly, Heun, Kockler, and Papassotiropoulos (2000) found that loss of interest, thought disorder and tiredness were more characteristic for the younger elderly, but did not depend on age of onset. Low spirits and feelings of worthlessness are more frequent in EOD, but did not depend on age. However, in a recent community-based study in an aging population in the Netherlands no clear differences were found in etiology and phenomenology between early and late onset depression (Janssen, Beekman, Comijs, Deeg & Heeren, 2006). In a prospective population-based study of the very old, the Leiden 85-Plus study, no relationship was found between depression and vascular diseases either (Vinkers et al., 2005).

Longitudinal research has shown that depression is a recurrent disease in which acute depressive episodes are followed by periods of complete or partial recovery (Judd *et al.*, 1999; Mueller et al, 1999). The mean duration of a depressive episode is between four and six months and most people (87%) recover without treatment within two years (Coryell et al., 1994). This leaves a substantial minority of 15% for whom the depression is chronic as defined by DSM-IV, i.e., lasting more than two years. The chance of the recurrence of a new depressive episode is high too. Mueller et al. (1999) conducted a 15- year observational follow- up study and found that 85% of the 380 subjects had a new depressive episode within 15 years of follow- up. The mean time to a recurrence was 145 weeks ($SD = 160$). The individual rate of recurrence increases with the number of episodes (Kessing, Hansen, Andersen, & Angst, 2004), and Kruijshaar et al. (2005) have estimated that the mean life time prevalence is around 7-8 episodes. In late life remission rates hardly differ from those in mid-life depression, but relapse rates appear to be higher in older persons (Mitchell & Subramaniam, 2005). In other words, depression can often be considered a lifelong condition.

1.3 Risk factors

A wide range of socio-demographic, psychosocial and illness-related variables have been identified as risk factors for incidence, severity, course and remittance of depression. The most striking is the gender difference: epidemiological community surveys have shown that women suffer twice as often as men from depression (Blazer, Kessler, McGonagle, & Swartz, 1994; Weissman & Olfson, 1995). This difference in prevalence remains in old age, although it becomes less pronounced (Stek, Gussekloo, Beekman, van Tilburg, & Westendorp, 2004).

Reviewing the literature on risk factors for depression among community living seniors Cole and Dendukuri (2003) concluded that bereavement, sleep disturbance, disability, prior depression, and female gender were significant risk factors for the incidence of depression. Risk factors for the first episode differ from those for recurrent episodes. Major negative life events are associated with first episodes (Kessler, 1997) regardless of age of onset (Schoevers et al., 2000). Residual symptoms and the number of previous episodes are the greatest risk factors for a recurrence (Judd et al., 1998; Kessler, 1997). Gender specific risk factors were found in the AMSTEL study (Schoevers et al., 2003). In women a personal history of depression and functional disability (activities of daily living) were risk factors for relapse or chronicity, while in men these were loss of spouse and instrumental disability (i.e. instrumental activities of daily living). In older adults, Beekman et al. (1995) compared risk patterns for minor and major depression. They concluded that a history of previous episodes is the largest risk factor for major depression, while minor depression seemed more of a reaction to life stress common to aging, particularly deteriorating physical health (Beekman et al., 1997b). Debate is going on whether SD and MDD are placed on a continuum, or that underneath the similar phenomenological expression lay different mechanisms (Geiselman & Bauer, 2000). It has been well-demonstrated that untreated subclinical depression is a risk factor for a MDD a year later, especially if it is coupled with a negative life event (Beekman et al., 1995).

Whether age itself is a vulnerability factor is not clear. Schoevers et al. (2000) concluded that the effect of age disappeared when other potentially relevant factors were controlled for. On the other hand, Rothermund and Brandstädter (2003) found in their longitudinal study assessing depression symptoms in six age cohorts that from the age of 66, both men and women report more depressive symptoms.

Depression and cognitive decline are highly correlated. In the Leiden 85-Plus study, a prospective population-based study of the very old, generalized atherosclerosis was related especially with memory loss. In this prospective study it was found that depression followed cognitive decline, but did not predict cognitive decline (Vinkers, Gussekloo, Stek, Westendorp &, van der Mast, 2004). Poor daily functioning and institutionalisation were significant characteristics for the incidence of depression in the very old. Just as in the younger old the remission rates were poor and relapse rates were high (Stek et al., 2006).

Another category of prognostic factors is formed by cognitive vulnerability markers. One of these is autobiographical memory specificity (AMS), which is the ability to remember personal events with contextual detail (Tulving, 2000). Autobiographic memory is part of the episodic memory system (Tulving, 2000). The Autobiographical Memory Test (AMT; Williams & Broadbent, 1986) is a task used to measure it. Studies comparing younger depressed adults with healthy adults showed that the former did significantly worse on recalling specific memories (Brittlebank, 1983; van Vreeswijk & de Wilde 2002; Williams, 1996). It was found that these patterns persisted once a patient had remitted (Mackinger, Pachinger, Leibetseder, &

Fartacek, 2000; Nandrino, Pezard, Poste, Reveillere, & Beaune, 2002; Park, Goodyer, & Teasdale, 2002; Spinhoven et al., 2006; Williams, 1996). These findings suggest AMS is not mood- state dependent but an enduring characteristic of people with lifetime depression. AMS showed prognostic properties by predicting the persistence of an acute depression. However, it did not predict relapse/recurrence in a sample of remitted mid- life adults (Spinhoven et al., 2006). Whether AMS as measured with the AMT is a possible marker for depression vulnerability in older adults has been described in chapter 5.

1.4 Prevalence

Depression is widely prevalent in the adult population; in the National Comorbidity Survey the prevalence estimate for current major depression was 4.9% and for lifetime major depression was 17% (Blazer et al., 1994). These rates may be biased by recall problems. In a recent study, an indirect estimation method was used to estimate lifetime prevalence in Australia and the Netherlands. For both countries the model estimated that the lowest proportion of cases was much higher: 30% for men and 40% for women (Kruijshaar et al, 2005).

In the elderly prevalence of major depression is much less, namely around 3%. But when less rigorous diagnostic criteria are used, 8 – 15% suffers from subclinical or minor depression (Beekman, 1995; Beekman, Copeland & Prince, 1999; Blazer 1987; Karel & Hinrichsen, 2000). In our rapidly aging population the absolute number of cases will become a large burden for the mental health care system. In 2007 for instance, 2,348,243 Dutch citizens (14.4% of the total population) will be over 65 years, and in 2017 this number will have risen to 3,002,165 (18% of the total population) (statistics from Central Bureau for Statistics, 2007). By that time the number of elderly individuals that need treatment for major and minor depression will have increased 28% (375,713 in 2007 versus 480,336 in 2017). These figures underscore the importance of prevention of depression, not only for the elderly but for the whole population.

2. Interventions

Interventions can be either curative or preventive. Although prevention is better than cure, many people have to be ill before they seek treatment.

2.1 Treatment of acute depression

Psychopharmacological (antidepressants) and psychological treatments have proved to reduce depression substantially in younger adults and are now well accepted. In older adults they are effective too. A systematic review of the efficacy of antidepressants for elderly of 55 and older suffering from major depression showed that antidepressants were more effective than placebo (Wilson, Mottram, Sivanranthan, Nightingale, 2001). In this review, no distinction was made between the young-old (55 – 75) and older-old (≥ 75), who typically have a high prevalence of medical co-morbidity. Studies of the efficacy of antidepressants in the very old are inconclusive. Gildengers

et al. (2002) compared the older-old to middle-old and younger-old. They found that older-old patients responded as quickly and successfully as the young- and middle-old. However, in a recent study of the efficacy of antidepressants in the older-old, medication was not more effective than placebo (Roose et al., 2004).

In several different meta-analyses and reviews on the efficacy of psychological treatments the conclusion was drawn that successful treatment of major depression does not depend on age (Arean & Cook, 2002; Bartels et al., 2002; Engels & Vermeij, 1997; McCusker et al., 1998). However, in these reviews no distinction is made between young-old and old-old either. Arean and Cook (2002) concluded that psychotherapy treatments were acutely efficacious in treating major depression in the older ambulatory person, but that more research is needed on the efficacy of such treatments in the frail elderly. In their meta-analysis of the efficacy of treatments of geriatric depression Bartels et al. (2002) found support for the effectiveness of antidepressants and psychosocial treatment - especially cognitive therapy, behaviour therapy, or the combination cognitive behaviour therapy (CBT) - in the treatment of major depression. Response rates to antidepressants and psychological treatment were similar. The efficacy of combined treatment compared to single therapy (pharmacotherapy or psychotherapy) was associated with a small improvement in efficacy.

Chronically ill or severely depressed patients seemed to benefit the most from adding psychotherapy to antidepressant medication (Friedman et al., 2004). The evidence base for the treatment of subthreshold depression (SD) is much smaller. Formulating guidelines for late-life depression Baldwin et al. (2003) concluded that there is no evidence that antidepressants were effective in SD, but there was some evidence that 'waiting and seeing' and offering structured support to patient and caregiver were effective.

2.2 Prevention of depression

Prevention is described as 'to stop something from happening' (Longman dictionary of contemporary English, 1988). The old system proposed in 1957 by the Commission on Chronic Illness Prevention consisted of three types: primary prevention aimed at decreasing the number of new cases (incidence). The aim of secondary prevention was lowering the number of established cases (prevalence) and tertiary prevention focused on decreasing the amount of disability associated with an existing disorder. In this classification system only primary prevention seems to fit the Longman definition of prevention. Secondary prevention corresponds with treatment and tertiary prevention with maintenance care. Currently the term prevention is reserved for what used to fall under primary prevention. It is divided into three categories (Mrazek and Haggerty, 1994):

Universal prevention when it is a measure for the general public or all members of specific groups (pregnant women, elderly, teenage girls). The measures have an educational character.

Selective prevention aims at people at risk for developing a mental disorder, but who are at the time (mentally) perfectly well. Risk can pertain to biological, psychological or social factors which are related to the disorder. In this study: older people with lifetime depression, but who are currently well. Widowhood or physical illness adds to the older person's vulnerability for depression.

Indicated prevention is meant for high-risk individuals who show minimal but detectable signs of illness; however the DSM criteria are not met. Elderly with subthreshold depression would be candidates.

3. 'Coping With Depression' course for the elderly

Effective low threshold interventions have been developed to reach the therapy-shy. In 1984, Lewinsohn et al. (1984) created the Coping With Depression (CWD) course for adults with major depression. Since then this psycho-educational course has been adapted for different populations (for instance adolescents, middle-aged adults, elders, and chronically ill patients) and implemented in the mental health care system in different countries (Germany, The Netherlands, USA). In the Netherlands it has successfully been implemented in mental health care systems that cater to different groups. For instance, all colleges offer the course to students, and the prevention arm of the mental health care system provides the course for middle-aged adults and older adults. A meta-analysis of outreach programs for depressed elderly showed that this type of intervention had a medium-sized effect (Cuijpers, 1998c).

The majority of the prevention departments of the community mental health centres (CMHCs) offer the course twice a year to older persons. The course is a group intervention of 10 sessions lasting two hours and a booster session, two months after the course has finished. The course is described as a toolbox containing different tools known to be useful in reducing depression. The tools are relaxation techniques, pleasant activities, assertiveness skills and constructive thinking. The course is based on the social-learning theory of depression in which the lack of enjoyment, the inertia and the negative expectations about feeling better prevent the depressed person to seek pleasant activities. Methods known from cognitive-behavior therapy such as homework assignments are also used to bring about the improvements changes. The group size varies between six and ten participants and usually two course trainers are attached to the course.

Participants, who do not need a referral, are recruited by advertising in the local media, and senior journals. The treatment department of the CMHCs are also notified of the start of the next course. This recruitment strategy results in very heterogeneous groups with participants who suffer from an acute MDD as well as persons with hardly any depression symptoms during the course. At the intake interview, carried out by the group leader who is usually a psychologist, the following topics are discussed: demographics (age, civil state, children, and income), life events like recent bereavement, health, and depression-related symptoms, current and in the past. A self-report questionnaire such as the CES-D (Radloff, 1977) or the Geriatric Depression

Scale (GDS; Yesavage, 1983) is used to assess the current level of depression. Furthermore, the course itself, its goals and what is expected from the participant (home work) are brought up. The suitability of the course is then discussed. Reasons for exclusion are severe depression, current bipolar disorder, schizophrenia, acute substance disorder, cognitive impairment, recent bereavement, hearing impairment, and insufficient command of the Dutch language.

4. Outline

This study was designed to answer two major questions about the CWD course in the reality of the Dutch mental health care system. First, how effective is the course? Second, is the course more effective for some than for others? Moreover, we analyzed the criterion validity of the depression questionnaire CES-D and studied the autobiographical memory as a marker of cognitive vulnerability for depression.

In chapter 1, the criterion validity of the main outcome measure, CES-D (Radloff, 1977) was analyzed. The purpose was to determine the optimal cut-off point of the CES-D to identify individuals with either a major depressive disorder or with a clinically relevant depression. Furthermore, we analyzed to what extent sociodemographic characteristics, physical health, medication use, high anxiety levels, comorbid axis I disorders and previous depressive episodes predicted true and false positives.

In chapter 2, the immediate effectiveness of the course was studied using a randomised, controlled design. The control condition was a waiting list of the same duration as the course. For ethical reasons they were not kept waiting until the intervention group had completed the follow-up. Hence, the long term effectiveness of the course was studied in a naturalistic follow-up of 14 months. The data of the participants from the intervention group combined with those on the waiting list who had completed the course were used.

In chapter 3 we examined a wide variety of demographic, clinical, psychosocial and treatment factors of possible relevance for selective and indicated prevention at short- and long-term. Knowledge of prognostic factors can be helpful to provide matched care, which in turn can result in a higher level of treatment outcome.

In chapter 4, we shall describe an experiment that was conducted with participants who had finished the course and had indicated feeling only slightly depressed and a control group of elders who had never been depressed. This research was designed to study: (a) whether autobiographical memory specificity (AMS) in the two groups differed, and (b) if AMS had predictive validity in the course participants for the level of depression at follow-up.

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2

The criterion validity of the Center for Epidemiological Studies Depression Scale (CES-D) in a sample of self-referred elders with depressive symptomatology

Haringsma, R. , Engels, G.I., Beekman, A.T.F., & Spinhoven , Ph. (2004). The criterion validity of the Center for Epidemiological Studies Depression Scale (CES-D) in a sample of self-referred elders with depressive symptomatology. *International Journal of Geriatric Psychiatry*, 19: 558-563.

Abstract

Background

The criterion validity of the Center for Epidemiological Studies Depression scale (CES-D) was assessed in a group of elderly Dutch community-residents who were self-referred to a prevention program for depression.

Methods

Paper-and-pencil administration of the CES-D to 318 elders (55-85 years). Criterion validity was evaluated with the Mini International Neuropsychiatric Interview (M.I.N.I.), a clinical diagnostic interview based on DSM-IV. Sensitivity and specificity for various cut-off scores of CES-D were compared with the DSM-IV major depressive disorder (MDD) and with clinically relevant depression (CRD), a composite diagnosis of MDD, subthreshold depression or dysthymia. Furthermore, the characteristics of true versus false positives were analyzed.

Results

For MDD, the optimal cut-off score was 25, (sensitivity 85%, specificity 64%, and positive predicted value of 63%). For CRD, the optimal cut-off was 22 (sensitivity 84%, specificity 60%, and positive predicted value 77%). True positives, MDD and CRD, reported significantly more anxiety symptomatology and more co-morbid anxiety disorders, false positives reported more previous depressive episodes.

Conclusions

The criterion validity of the CES-D for MDD and CRD was satisfactory in this semi-clinical sample of elders. Subjects scoring ≥ 25 constitute a target group for further diagnostic assessment in order to determine appropriate treatment.

Introduction

Prevention of depression in the elderly has become a priority in Community Mental Health Care. For this purpose, 'outreach programs' have been developed (Cuijpers, 1998b; Cuijpers et al., 1995; Lewinsohn et al., 1984). Participants are recruited through announcements in the local media. Open recruitment probably attracts participants with a high base rate of depressive complaints, a history of previous depressive episodes, high levels of anxiety and co-morbid psychiatric disorders. This calls for a two stage screening procedure with a valid instrument like the Center for Epidemiological Studies Depression scale (CES-D) (Radloff, 1977). The CES-D is recommended to assess depressive symptomatology in the elderly (Beekman et al., 1994; Himmelfarb and Murrell, 1983; Lewinsohn et al., 1997; Radloff & Teri, 1986), but has not been investigated as yet for this target group.

Beekman et al. (1997a) studied the criterion validity of the CES-D in a community sample of Dutch elders; they advised to use ≥ 16 as cut-off. In clinical settings however, this cut-off yielded high false-positive rates. Depending on the setting, recommended cut scores varied from 20 to 27 (Himmelfarb and Murrell, 1983; Schulberg et al., 1985; Zich et al., 1990). Himmelfarb and Murrell (1983) used the CES-D to discriminate between a community sample and a clinical sample of elders; they recommended 20 as cut-off score.

In this study, the criterion validity of the CES-D was examined in a group of elderly community residents, self-referred to an outreach program for secondary prevention of depression provided by Dutch Community Mental Health Care Centers. In the elderly milder forms of depression are more prevalent than major depressive disorder (MDD), however they cause as much suffering (Beekman et al., 1995; Hybels et al., 2001; Lewinsohn et al., 2000). Therefore the power of the CES-D to screen for all the disorders in the depressive spectrum is also studied: major depressive disorder (MDD); subthreshold depression (SD) and dysthymia, taken together as clinically relevant depression (CRD).

Following Beekman et al. (1997a), we also studied the characteristics of true and false positives. They found that higher levels of anxiety symptoms were characteristic for true positives, but sociodemographic characteristics, medication and physical health did not predict classification. In addition to these variables, the predictive value of co-morbid anxiety disorders and the presence of previous depressive episodes will be studied here.

Method

Sampling and Procedures

This study was part of a field-study into the effectiveness of the Coping-with-Depression Course for elders (Cuijpers, 1998a; Lewinsohn et al., 1984). The program aims at secondary prevention of mild depressive symptoms and is provided by 60% of the prevention departments of Community Mental Health Care Centers (CMHCC) in

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the Netherlands. Using active recruitment methods, participants were recruited and accepted by the CMHCCs. Eligible for this study were all the participants aged 55 and older. The study was approved by the Medical Ethics Committee of the Leiden University Medical Centre. All subjects signed an informed consent. After joining the study, a booklet with baseline questionnaires was distributed to be completed at home. Within two weeks diagnostics by the researchers took place. The Mini International Neuropsychiatric Interview (M.I.N.I.; Overbeek et al., 1999; Sheehan et al., 1997, 1998) was used. All baseline questionnaires were checked for missing items and incorrect responses. These were discussed with the participant and remediated.

Measures

The M.I.N.I. (Sheehan et al., 1998) assesses the most prevalent axis 1 disorders according to the diagnostic and statistical manual of mental disorders (DSM-IV; American Psychiatric Association, 1994). Diagnoses are based on the dimensional scores obtained. Current MDD (score 5-9), subthreshold depression (SD, score 2-4), and dysthymia were used as criteria. These three diagnoses were combined into the diagnosis 'Clinically Relevant Depression (CRD)'. Interviews were conducted by trained interviewers at the CMHCCs; interrater reliabilities were .94 (MDD), .87 (SD), and 1.0 (Dysthymia).

Anxiety symptomatology was measured with the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A) (Zigmond & Snaith, 1983). The recommended cut-off of 8 was used as demarcation between high and low anxiety levels. Physical health was assessed with the scales for pain and physical functioning of the Medical Outcome Study Short Form General Health Survey (MOS-SF-20) (Kempen, 1992; Stewart et al., 1988), and with a checklist with chronic medical conditions Central Bureau for Statistics (CBS, 1989).

Statistics

The Statistical Package for Social Sciences (SPSS) 11.1 was used. Using Receiver Operating Characteristics (ROC), the association between CES-D scores and the different clinical diagnoses (MDD and CRD) was studied. χ^2 analyses and logistic regression analyses were used to compare characteristics of false and true positives.

Results

The mean age of the 318 participants was 65.5 years ($SD = 7.2$), range 55-85. Participants were predominantly female, frequently living alone, and educated to low or middle levels (see Table 1). The mean sum score on the CES-D was 25.9 ($SD = 9.7$); 85% had a sum score ≥ 16 . The mean score on the HADS anxiety scale was 10.2 ($SD = 4.2$); 75% had a score ≥ 8 .

Table 1. *Sample Characteristics (N = 318)*

Variable	N = 318	(%)	Mean (SD)
Age 55 – 85			65.5 (7.2)
55-64	160	(50.3%)	
65-74	110	(34.6%)	
75-85	48	(15.1%)	
Sex			
Female	231	(72.6%)	
Living situation ^a			
Alone	150	(47.3%)	
Level education ^a			
Low	104	(33.0%)	
Middle	127	(40.3%)	
High	84	(26.7%)	
Medication use: ^b			
Antidepressants and/or sedatives [#]	167	(52.7%)	
CES-D sum score			25.86 (9.74)
≥ 16	269	(84.3%)	
≥ 22	213	(67.0%)	
≥ 25	179	(56.3%)	
HADS anxiety score			10.23 (4.21)
≥8	238	(74.8%)	
MOS-SF 20			
MOS-pain			45.91 33.27)
MOS physical funct ^c			54.96 (33.2)
Chronic diseases (nbr) ^d			
None	96	(31.3%)	
One	106	(34.5%)	
More than one	105	(33.2%)	
Axis I Disorders:			
No axis I disorder	82	(25.8%)	
Axis 1, but not CRD	40	(12.6%)	
CRD	196	(61.6%)	
Depressive disorders CRD:			
MDD	133	(41.8%)	
SD	37	(11.6%)	
Dysthymia	26	(8.2%)	
Anxiety disorders	133	(41.8%)	
CRD with co-morbid anxiety disorder	97	(30.5%)	
MDD history			
Never MDD,	45	(14.2%)	
MDD in remission	140	(44.0%)	

^a 3 missing observations ; ^b 1 missing observation; ^c 2 missing observations; ^d 11 missing observations; [#] includes St John's Worth; CES-D = Center of Epidemiological Studies–Depression scale; HADS = Hospital Anxiety and Depression Scale; MOS-SF 20 = Medical Outcome Study Short Form General Health Survey; CRD = Clinically Relevant Depression. CRD can be either MDD or SD or Dysthymia; MDD = Major Depressive Disorder; SD = Subthreshold Depression.

Table 2. AUC, Sensitivity, Specificity and Positive Predicted Value (PPV) of the CES-D for different cut-off and different combinations of depressive disorders

Disorder	AUC	CES-D ≥ 16			CES-D ≥18			CES-D ≥20			CES-D ≥22			CES-D ≥25		
		Sens	Spec	PPV	Sens	Spec	PPV	Sens	Spec	PPV	Sens	Spec	PPV	Sens	Spec	PPV
MDD ^a	.833	96.2	23.8	47.6	94.7	31.9	50	93.2	43.2	54.1	91	50.3	56.8	85	64.3	63.1
MDD+SD ^b	.801	95.3	27.7	60.2	94.1	37.8	63.5	90	48.6	66.8	87.1	56.1	69.5	77.1	67.6	73.2
MDD+Dysthym	.800	93.1	23.9	55	90.6	32.1	57.1	88.1	44	61.1	86.2	52.2	64.3	78.6	66	69.8
CRD ^c	.79	92.9	28.7	67.7	90.8	39.3	70.6	86.2	50.8	73.8	83.7	59.8	77	73	70.5	79.9

^a MDD=Major Depressive Disorder; ^bSD = Subthreshold depression; ^c CRD= Clinically Relevant Depression. CRD can be either MDD or SD or Dysthymia.

Table 3. Characteristics of True and False positives for MDD and CRD

	MDD cut off 25 n = 179		CRD cut off 22, n = 213	
	True pos n = 113	False pos n = 66	True pos n = 164	False pos n = 49
HADS anxiety scale				
≥ 8	91%	76%	89%	78%
Anxiety disorders	56%	32%	51%	31%
Previous depressive episodes	54%	80%	62%	86%

The area under the curve (AUC) found with ROC analyses was 0.83 for MDD [$SE = 0.02$; 95% Confidence Intervals (CI) 0.79 - 0.88; $p < 0.001$] and 0.79 for CRD ($SE = 0.3$; CI 0.74 - 0.84; $p < 0.001$). Specificity, sensitivity and positive predicted values (PPV) were calculated using the cut scores 16, 18, 20, 22, 24, 25 and 26 (see Table 2). With MDD as the criterion, the cut score 25 showed optimal balance between sensitivity (85%) and specificity (64%), PPV 63%. For CRD, 22 was a better cut-off, with a sensitivity of 84%, specificity of 60% and PPV 77%.

Using the cut-off ≥ 25 as indication for MDD, the sample had 113 true positives (TPs) and 66 false positives (FPs). TP or FP showed no relationship with demographic characteristics, medication or physical health variables. However, TPs scored significantly higher on the HADS-A than FPs, $t(177, n = 179) = -4.4$; $p < 0.001$. Also significant was the association with anxiety disorders, $\chi^2(1, n = 179) = 8.6$, ($p < 0.01$), and with previous depressive episodes, $\chi^2(1, n = 179) = 11.4$, $p = 0.001$. Anxiety disorders were predominant in TPs, whereas previous depressive episodes were highest in FPs. Direct logistic regression with anxiety, co-morbid anxiety disorders and previous depressive episodes as predictors was statistically reliable, $\chi^2(3, n = 179) = 39.8$, $p < 0.001$. Controlling for confounding, anxiety [Odds Ratio (OR) 1.2], co-morbid anxiety disorders (OR 2.3) and previous depressive episodes (OR .21) reliably distinguished between TPs and FPs.

Using the cut-off ≥ 22 as an indication for the presence of CRD, the sample counted 164 TPs and 49 FPs. A similar pattern emerged. First, no relationship was found with demographic characteristics, medication or the physical health variables. Second, TPs scored significantly higher than FPs on the HADS the anxiety scale, $t(211, n = 213) = -4.9$; $p < 0.001$. Third, significant associations were found with anxiety disorders, $\chi^2(1, n = 213) = 5.6$, $p < 0.05$ and with previous depressive episodes, $\chi^2(1, n = 213) = 8.9$, $p < 0.01$. Anxiety disorders were more prevalent in TPs than in FP, whereas FPs had a higher proportion of previous depressive episodes. Direct logistic regression analysis with anxiety, co-morbid anxiety disorders and previous depressive episodes as predictors was statistically reliable, $\chi^2(3, n = 213) = 39.95$, $p < 0.001$. When controlling for confounding factors, anxiety (OR 1.3), and previous depressive episodes (OR .19) reliably distinguished between TPs and FPs. However,

the unique contribution of co-morbidity became statistically borderline significant. Table 3 summarizes the characteristics of TPs and FPs.

Discussion

Sociodemographic characteristics, physical and mental health status show that the elders in this study represent a vulnerable group in the community. They resembled a sample of psychiatric outpatients more than a community sample. Clinical diagnosis showed that the vast majority had a lifetime DSM-IV-diagnosis for MDD and that 42% met the criteria for a current MDD. The mean CES-D score was 25.9, a figure similar to that reported by Radloff (1977) for her psychiatric sample. SD (12%) and dysthymia (8%) were much less prevalent. However, co-morbid anxiety disorders were widely prevalent (30.5%)

In our sample with its high rate of psychiatric disorders, the CES-D is moderately accurate (Greiner, Pfeiffer and Smith, 2000) in detecting MDD. The optimal cut-off for the CES-D lies higher than in a community sample. The optimal cut scores of 25 for MDD and 22 for CRD are similar to those found in studies of clinical samples (Himmelfarb & Murrell, 1983; Schulberg et al., 1985; Zich et al., 1990). Studies in which the HADS or Geriatric Depression Scale (GDS) were used in psychiatric settings corroborate our findings: reported sensitivities were good, while the specificities were low (Silverstone, 1994 and Chattat et al., 2001).

Despite these higher cut scores the proportion of false positives (FP) was still substantial. TPs and FPs did not differ with regard to sociodemographic characteristics or physical health variables. This is consistent with other studies where no direct association was found between physical illness and MDD (Beekmann et al., 1997b; Williamson & Schulz, 1992; Zeiss et al., 1996).

However, TPs and FPs did differ in mental health status. In the TPs high levels of anxiety and co-morbid anxiety disorders were more prevalent than in the FPs. This is in line with the study results of Beekman et al., (1997a; 2000), Flint, (1994) and Schoevers et al., (2003). The FPs were characterized by more previous depressive episodes than TPs. This suggests that a high CES-D score, combined with a previous history of depression, falsely points to a current depressed state. However, such a score might indicate that either a new depression is developing or that the last depression is not completely in remission.

In our opinion, subjects scoring ≥ 25 on the CES-D should be followed up with a diagnostic interview to specify clinical diagnosis and appropriate treatment. In this group 63% will have a MDD and therefore should be treated in a curative program rather than a prevention program. The CES-D can also be used as an outcome measure, since it measures the current level of symptomatology and is sensitive to changes over time (Radloff, 1977; Radloff and Teri, 1986). In an outtake procedure a score ≥ 25 may indicate that more care is needed.

A feature of this study that might have an effect on the scores is the paper-and pencil mode of administration of the CES-D. Geerlings et al., (1999) found that scores

were 2 - 2.7 points higher in questionnaires that were mailed than in face-to-face interviews. Most of the studies referred to here used interviews to obtain CES-D scores. It cannot be excluded that the higher optimal cut-off found here, partly depends on mode of administration.

In conclusion, the CES-D has satisfactory criterion validity for use as a screenings instrument in a two stage screening procedure with self-referred elders in a prevention setting. A cut-off ≥ 25 for the screening of relevant clinical depression seems most advantageous in a setting where co-morbid psychopathology and a history of previous episodes of depression are likely. Subjects who score above the cut-off should be followed-up with a diagnostic interview to specify a clinical diagnosis and differentiate between those who deserve therapeutic attention from those for whom a prevention program is suitable. After attending the program, the CES-D can be used to indicate those elders who need further care.

Key Points

- This sample of self-referred elders with depressive complaints resembles a clinical sample
- CES-D is a valid screening instrument for diagnoses of MDD and clinical relevant depression for self-referred elders with depressive complaints
- Elders with a high score on the CES-D in combination with a previous MDD are possible candidates for secondary prevention programs clinical diagnostics should be performed on elders with a CES-D score ≥ 25 , to select those that fulfill criteria for MDD and need appropriate treatment

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Chapter 2

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3

Effectiveness of the Coping With Depression course for older adults provided by the community-based mental health care system in the Netherlands; a randomized controlled field trial

Haringsma, R., Engels, G. I., Cuijpers, P., & Spinhoven, Ph. (2006). Effectiveness of the Coping with Depression course for older adults provided by the community-based mental health care system in the Netherlands; a randomized controlled field trial. *International Psychogeriatrics*, 18, 307 - 325

Abstract

Background.

The Dutch version for older adults of the Coping With Depression (CWD) course has been implemented in the prevention arm of the community-based mental health care system in the Netherlands. The study group included older adults with sub-clinical depression as well as with a major depressive disorder; all were enrolled into the course by mental health care professionals. The effectiveness (immediate and long-term) of the course for this heterogeneous population was studied in an effectiveness trial.

Method.

Participants were self-referred, responding to media announcements. A total of 119 participants aged 55-85 (69% female), with sub-clinical depression and major depression were randomized to either the CWD course ($n = 61$) or waiting list ($n = 58$).

Results.

Nine participants dropped out of the course. According to a diagnostic interview based on the DSM-IV, 39% had a major depressive disorder (MDD), 69% had had a previous MDD, and 45% had an anxiety disorder. Older adults in the intervention group showed a significant decrease in depression symptoms. Gains were maintained over 14 months. In the intervention condition, 83% had a pretreatment score ≥ 16 on the Center for Epidemiologic Studies Depression scale (CES-D), at posttreatment 62% still scored ≥ 16 .

Conclusions.

The course was beneficial for participants with mild or severe depression, and treatment acceptability was high. It should be fitted into a stepped-care protocol that varies intervention intensity according to clinical needs, using the posttreatment level of functioning as an indication for the next step.

Introduction

Depression – major depression and subclinical depression - is a common psychiatric disturbance in late-life. Prevalence for major depression in elderly people is around 3%, and 8 – 15 % have subclinical or minor depression (Beekman et al., 1999; Karel and Hinrichsen, 2000). Extensive research has shown the efficacy of psychosocial interventions for late-life depression (Bartels et al., 2002; Engels and Vermey, 1997; McCusker et al., 1998; Scogin and McElreath, 1994). Various outreach programs have been developed to reach the community-living senior citizen with depression who may not seek treatment. In a meta-analysis of the effects of such programs carried out in controlled research settings, a mean effect size (ES) of 0.77 was found, which is comparable with effect sizes found in younger adults. Most effective were programs based on cognitive behavioral therapy (Cuijpers, 1998c). However, the extent to which results obtained in controlled research settings can and should be used to inform the treatment of patients in the community is still unknown (Stirman et al., 2003). There is a need to establish more firmly whether the efficacy of psychosocial interventions, as found in randomized controlled trials in research settings, can be generalized to the usual care setting, with the typical consumers of community mental health services and typical community staff (Street et al., 2000).

The Dutch version for older adults of the Coping With Depression Course (CWD) (Lewinsohn et al., 1984) was implemented in the prevention arm of the community mental health system in the Netherlands in the nineties. The CWD course has proved an efficacious group treatment for unipolar depression and has been adapted for different populations (Cuijpers, 1998a). At present, 60% of the Prevention departments of the Community Mental Health Centers (CMHCs) offer this course regularly to older adults with mild depressive complaints (Voordouw and Kramer, 2001). Because depression is often an episodic disorder, with periods of remission and exacerbation, the CMHCs accept both individuals who are self-described depressed and those who report minimal difficulties. In their study on the criterion validity of the Center for Epidemiologic Studies Depression scale (CES-D), Haringsma et al. (2004) found that participants of the course varied widely in their level of depression from exhibiting only slight symptoms to being severely depressed. The vast majority of the participants had a lifetime major depressive disorder (MDD), and 40% met the criteria for an MDD. This means that for the latter subgroup, the course can be considered treatment with remission as the goal; for the other 60% the prevention of a new major depressive episode is the objective. A decrease in depressive symptomatology is the desired outcome in both groups.

A randomized controlled field trial was carried out to analyze the immediate effectiveness of this program as it is provided by the Dutch mental health care system. The long-term effectiveness was explored in the experimental group only. As the study was embedded in the procedures employed by the CMHCs, the results will give an externally valid picture of the immediate and long-term effects of the program.

Method

Participants and Recruitment Procedures

Ten CMHCs, both urban and rural, and from all the regions in the Netherlands that provide the course, participated in this study with 13 courses. The individuals in the study were older adults taking part in the CWD courses during the years 2000 and 2001. Participants were self-referred, responding to media announcements. Accepted were older adults (minimum age around 55) with current or a history of depressive symptoms. Exclusion criteria were: cognitive impairment, current bipolar disorder, schizophrenia, acute substance disorder, recent bereavement, hearing impairment, and insufficient command of the Dutch language. These are the standard procedures used by the CMHCs.

Not all the individuals enrolled into the course by the CMHCs were accepted for the study. Study participants had to be at a minimum age 55 years and receiving no other form of psychotherapy. Use of psychotropic medication was accepted. All CWD participants were provided with a complete description of the study, and written informed consent was obtained before enrollment into the study. Participation in the study was voluntary; consequently not all the seniors attending the CWD course took part in the study. Those who joined the study and completed the posttreatment assessment were reimbursed for the small contribution (\$15 – 40) imposed by most of the CMHCs. The study was approved by the Medical Ethics Committee of the Leiden University Medical Centre.

Study Design

The present study was a randomized controlled field trial. Randomization was by block design to ensure that participants with and without a current MDD according to the criteria of the diagnostic and statistical manual of mental health - 4th edition (DSM-IV; American Psychiatric Association, 1994) were equally divided. Randomization to one of the two conditions took place after the diagnostic interview. Assessments of the effect of the course took place posttreatment; follow-up (FU) was at 2 and 14 months.

In a meta-analysis of the effects of outreach programs offered to depressed elders in the community a large mean *ES* of 0.77 was found (Cuijpers, 1998c). To be able to detect a large between-group difference in effectiveness of at least .75 with a power of 90% and an alpha (α) set at .05 (two-sided) at least 39 subjects in each condition are needed. With an expected drop-out rate of 25% (Cuijpers, 1998c) and including about 104 patients, around 78 subjects will complete the course or waiting list (39 in each condition). In an intention-to-treat analysis with 52 or more subjects in each condition and an α of .05 (two-sided) the power to detect a medium *ES* of at least 0.50 is 71% or higher.

Interventions

Intervention condition (IC)

The intervention consisted of 10 weekly sessions of two hours each in groups of six to 13 participants (not all of whom were participating in the study) following a protocol (the Dutch version of the CWD course for elders, an adaptation from Lewinsohn's CWD course (Cuijpers, 1998b; Lewinsohn et al., 1984). The contents are based on a social learning view of depression; the skills taught are relaxation, increasing pleasant activities, constructive thinking, improving social skills, and maintaining treatment gains. The instructors were two health professionals trained in conducting this course.

Waiting list condition (WLC)

The people in the WLC received the course directly after the intervention had finished. For ethical reasons, the participants in the control condition were not kept waiting until the intervention group had completed the 14 months FU. A reminder from the CMHC about the start of their course was the only attention they received; they did not receive any other forms of psychological treatment.

Treatment Integrity

All sessions were audio taped; two tapes of each course (one for each half of the course) were randomly selected for review of adherence to the therapy manual. One of the two tapes was randomly selected for listening. Adherence was judged on the basis of a checklist covering the topics that should be addressed. The second tape was assessed when (a) deviations from the manual were observed – this happened once, and (b) the quality of the tape was poor – this occurred three times. No deviations from the manual were found in the assessments of the four second tapes and we therefore concluded that all groups in the study adhered to the manual.

Assessment Procedures

All self-report questionnaires used at the various assessments were completed at home. Missing or incorrect items were treated as follows: (a) following submission, participants were contacted by telephone to discuss incorrect answers and missing items, which were then remediated and (b) if this failed, the values of the missing items were imputed, but only if the number of missing items did not exceed 15% of the items of a particular measure.

Pretreatment questionnaires were distributed in the two weeks prior to the start of the course. In this period, diagnoses by the researchers took place at the CMCH with a structured interview based on the DSM-IV (1994). Participants in both conditions received the posttreatment questionnaires in the week following the tenth session in the IC. If they were not returned within two weeks, participants were contacted once by telephone or mail to urge submission.

Measures

Clinical diagnoses

The Dutch translation (Overbeek et al., 1999) of the clinician-rated (CR) version of the Mini International Neuropsychiatric Interview (M.I.N.I.; Sheehan, et al., 1998a) was used. It assesses the most prevalent DSM-IV (1994) axis I disorders: (a) affective disorders - MDD, (current and lifetime), dysthymia (current), and manic disorder; (b) anxiety disorders - panic disorder, agoraphobia, social phobia, obsessive-compulsive disorder, posttraumatic stress disorder, and general anxiety disorder; (c) alcohol and drug dependency; (d) psychotic disorders; (e) eating disorders - anorexia and bulimia; and (f) somatization disorder. Validation of the M.I.N.I.-CR against the Structured Clinical Interview DSM-III-R - patient version (SCID-P) and the Composite International Diagnostic Interview for ICD-10 (CIDI) showed good to very good kappa values (Sheehan, et al., 1998b). In the present study, the interviews were conducted by trained interviewers at the CMHC where the course was scheduled. Interrater reliability (Kappa) between the interviewers and first author was .95 for MDD, and .61 for previous MDD.

Depression

Primary outcome measure was the Dutch version of Center for Epidemiologic Studies Depression scale (CES-D), a 20-item self-report questionnaire on depressive symptomatology experienced during the past week (Bouma et al., 1995; Radloff, 1977). The total scores range from 0-60. A score of ≥ 16 indicates the presence of clinically relevant depression (Beekman *et al.*, 1997; Radloff and Teri, 1986). The psychometric properties are generally good, with Cronbach's α 's ranging from .80-.90 in a sample of Dutch seniors (Beekman et al., 1994), and because of the absence of physical symptoms of depression, the questionnaire is considered very suitable for the elderly (Beekman, et al., 1994; Lewinsohn, et al., 1997; Radloff & Teri, 1986).

Depression and Anxiety

The Dutch version of the Hospital Anxiety and Depression Scale (HADS) was used. The HADS was developed as a brief self-assessment scale to detect states of depression and anxiety in medical outpatients (Zigmond & Snaith, 1983). The HADS consists of a sum scale and two subscales that differentiate between depression and anxiety. Both subscales consist of seven items with a score range of 0-21. Validation studies by Flint and Rifat (1996) and Spinhoven et al. (1997) confirmed the two-factor structure and showed α 's ranging from .71-.90 for the sum scale and both subscales.

Health related quality of life

The Dutch version of the Medical Outcome Study Short Form General Health Survey (MOS-SF-20) was used. This self-report questionnaire (20 items) consists of six scales covering mental health, perceived health (mental and physical), social and role functioning, physical functioning and pain. A high score means a high level of

functioning except for the pain scale, where a high score indicates a high level of pain. The α of the scales varied between .80 and .91 (Kempen, 1992; Stewart & Ware, 1988).

Data Analyses

Preliminary analyses

Because of the group format of the intervention, the participants in the IC could not be considered independent observations. To assess the amount of variance attributable to group differences a random coefficient regression model (RCRM) was used to estimate the intra-class correlation in the IC over the four assessment times. Preliminary analyses included checks for normality and the computation of descriptive statistics. All variables were distributed acceptably close to normal. They were described computing frequencies, means and standard deviations.

Analysis of variance (ANOVA) and χ^2 -tests were used to compare the following groups on baseline characteristics: (a) the randomized participants and those who refused to be randomized (but had no objections to being interviewed), (b) participants randomized to IC and to WLC, (c) those dropping out of the intervention and those who complied with the course, and (d) the participants who left the study after the posttreatment assessment and those who completed both FU assessments.

Pre- and posttreatment - controlled data

The effects of the intervention were assessed on the completers sample by using a 2 x 2 x 2 split-plot design, using the presence of MDD (Depression) and IC as between-subject variables and time as within-subject variable (Depression x Condition x Time). Main and interaction effects were tested using the multivariate criterion of Wilks' lambda (Λ). The analyses were repeated (a) with comorbid anxiety disorder as a third between-subjects factor and (b) with the CES-D on the intention-to-treat (ITT) sample, which included the subjects who dropped out of the IC. A last-value-carried-forward procedure was used to provide data for missing values that occurred because of dropout.

To assess the clinical significance of change on an outcome measure in a clinical population Jacobson and Truax (1991) proposed two criteria: (a) the change should move the individual outside the range of the dysfunctional population (referred to as change in status) and (b) the change should be statistically reliable and exceed the measurement error (referred to as reliable change). We did not assess clinical diagnoses at posttreatment, but used the score on the CES-D as an indication of functional status: those with a score ≥ 16 , the recommended cut point (Beekman et al., 1997; Radloff and Teri, 1986) were considered to be dysfunctional. A change in status was defined as a change from a pretreatment score on the CES-D of ≥ 16 (dysfunctional status) to a posttreatment score of < 16 (functional status) or vice versa. The significance of the changes in status within each condition was analyzed with McNemar tests. In our sample a reliable change (RC) was a change of more than |8.6|

on the CES-D, resulting in three RC categories: a reliable improvement, a change that is uncertain (falling within the boundaries of measurement error), and a reliable worsening; χ^2 -tests were used to compare the distribution of the RC categories over both conditions.

The between-group effect sizes for all the outcome variables were calculated with Cohen's d (Cohen, 1988). In the ITT sample this was done only for the CES-D, HADS and MOS-SF20.

Follow-up measurements – uncontrolled data

The maintenance effects of the intervention at the two follow-up measurements were assessed with a 2 x 3 splitplot design, using the presence of MDD at baseline as between-subject variable and posttreatment and the two follow-up measurements as within-subject variables (Depression x Time). Wilks' Λ was used as the multivariate criterion for significance. McNemar tests were performed to assess changes in functional status between posttreatment and 14 month FU. The within-group effect sizes (d_{impr}) were also calculated with Cohen's d .

RCRMs were fitted using the multilevel analysis software MLwiN 1.10 (Rasbach et al., 2000). For all data analyses the Statistical package for Social Sciences version 11.5 package (SPSS, Chicago, IL, U.S.A.) was used.

Results

The CMHCs accepted 246 persons into the program. Overall, 109 (44%) participants were excluded by the health care professionals because (a) they did not meet the inclusion criteria of the study (age and no concurrent therapy) or (b) refused to join the study; so altogether 137 participants were randomly allocated to either the IC or the WLC. We removed people from the analysis if they received psychotherapy during the course or waiting period (six in each), five others withdrew from the study, (two in the IC and three in the WLC). Pretreatment data of one participant were incomplete. In sum, pretreatment data of 119 participants (referred to as the ITT sample) were available for the analyses: 61 in the IC and 58 in the WLC. To analyze possible selection bias, we compared the pretreatment data of this sample with the data of 69 individuals who refused randomization, but consented to the administration and use of the pretreatment measures.

In the IC, nine participants (13%) dropped out of the course; the reasons were medical (two), course not suitable (two), improvement (one), deterioration (one), and unknown reasons (three). There were no drop-outs in the WLC. Participation rate for the completers was high with a mean number of nine sessions ($SD = 1.0$). The completer comprised 110 participants. Their mean age was 64.2 years ($SD = 7.2$; range 55-85), the majority was female (69%) and of Dutch origin (90%); 55% was married or cohabiting and 52% reported less than 11 years of formal education. The majority (72%) reported the presence of at least one chronic medical condition.

Table 1. *Mental health characteristics of completers sample*

Variable	Intervention (<i>n</i> = 52) <i>n</i> (%)	Waiting List (<i>n</i> = 58) <i>n</i> (%)
Antidepressants and/or sedatives ^a	26 (50)	27 (47)
Axis I Disorders:		
No axis I disorder	17 (33)	22 (38)
Anxiety disorders ^b	14 (27)	14 (24)
MDD	9 (17)	12 (21)
MDD + anxiety disorders	12 (23)	10 (17)
MDD history		
Never an MDD	6 (12)	6 (10)
Remission	25 (48)	30 (52)
First episode	2 (4)	4 (7)
Recurrent	11 (21)	10 (17)
Chronic	8 (15)	8 (14)

MDD= Major Depressive Disorder based on DSM-IV criteria.

^a includes St John's Wort; ^b can be more than one anxiety disorder: panic disorder, agoraphobia, social phobia, obsessive-compulsive disorder, post traumatic stress disorder or general anxiety disorder.

Preliminary Analyses

At pretreatment the mean CES-D score for the samples was 24.71 ($SD = 9.82$). Mental health characteristics are summarized in Table 1. In both IC and WLC approximately two-thirds of the participants met the criteria for at least one axis I disorder. The most prevalent disorders were MDD (39%) and anxiety disorders (45%). Previous MDD was reported by 69% of the participants. There were no significant differences (all $p > .10$) in sociodemographic characteristics, presence of MDD, or co-morbid anxiety disorders, or the use of psychotropic medication between (a) the those who refused randomization ($n = 69$) and those who participated in the study ($n = 119$), (b) participants randomized to IC ($n = 61$) and those randomized to WLC ($n = 58$), (c) individuals who completed the intervention ($n = 52$) and those who dropped out ($n = 9$), and (d) individuals who left the study after post-treatment ($n = 10$) and those who completed both follow-up assessments ($n = 42$).

The intraclass correlation of .055 was not significant, $F(13, 211) = 0.72$, $p > .10$. Hence we decided to ignore the amount of variance attributable to group differences¹.

¹ The IC sample with 13 groups is small, therefore restricted iterative generalized least square (RIGLS) algorithms were used (Kreft and de Leeuw, 1998).

Table 2. Outcome measures of completers sample and between-groups effect sizes for both the completers and intention-to-treat (ITT) samples

Variable	Intervention Condition (<i>n</i> = 52) (MDD <i>n</i> = 21)				Waiting List Condition (<i>n</i> = 58) (MDD <i>n</i> = 22)				Effect Size	
	Pre		Post		Pre		Post		Compl <i>n</i> =110	ITT <i>n</i> =119
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)		
CES-D^a										
Sum	25.84 (10.00)		18.77 (9.23)		23.69 (9.62)		23.63 (10.85)		0.49	0.37
MDD	31.95 (8.26)		21.50 (9.66)		30.91 (8.14)		29.91 (8.62)		0.92	0.77
No MDD	21.71 (9.00)		16.93 (8.60)		19.28 (7.63)		19.80 (10.36)		0.30	0.21
HADS-S^a										
Sum	19.88 (6.70)		16.04 (6.79)		20.31 (7.03)		19.30 (7.78)		0.45	
MDD	23.65 (6.27)		18.67 (7.58)		25.0 (6.16)		24.36 (5.71)		0.85	
No MDD	17.33 (5.78)		14.26 (5.66)		17.44 (5.96)		16.21 (7.27)		0.30	
HADS-D^a										
Sum	9.65 (3.81)		7.56 (4.08)		9.97 (4.32)		9.34 (4.30)		0.42	
MDD	11.43 (4.25)		9.05 (4.65)		12.45 (4.19)		11.59 (3.83)		0.60	
No MDD	8.44 (2.99)		6.55 (3.36)		8.44 (3.68)		7.97 (4.03)		0.38	
HADS-A^a										
Sum	10.22 (4.34)		8.48 (3.59)		10.34 (3.89)		9.95 (4.32)		0.37	
MDD	12.21 (4.27)		9.62 (3.93)		12.55 (3.88)		12.77 (2.94)		0.91	
No MDD	8.87 (3.90)		7.71 (3.19)		9.00 (3.28)		8.23 (4.15)		0.14	
MOS-MH^b										
Sum	45.77 (14.44)		54.38 (16.47)		46.55 (18.44)		46.76 (20.08)		- 0.41	
MDD	37.9 (11.77)		50.67 (18.60)		33.27 (14.63)		34.36 (13.5)		-1.00	
No MDD	51.1 (13.77)		56.9 (14.63)		54.67 (15.71)		54.33 (19.79)		- 0.15	
MOS-PH^b										
Sum	48.27 (24.59)		52.88 (24.68)		51.14 (23.18)		48.95 (24.92)		- 0.16	
MDD	38.57 (25.26)		46.67 (26.52)		42.95 (23.18)		41.14 (20.58)		- 0.23	
No MDD	54.84 (22.19)		57.1 (22.83)		56.29 (24.80)		53.86 (26.40)		- 0.13	
MOS-P^c										
Sum	50.0 (32.84)		49.52 (29.49)		42.67 (36.88)		48.28 (34.69)		- 0.04	
MOS-PF^b										
Sum	55.13 (32.51)		55.13 (32.6)		59.48 (33.97)		60.49 (31.20)		0.17	
MOS-SF^b										
Sum	66.15 (24.59)		68.46 (25.47)		66.90 (28.42)		63.45 (26.79)		- 0.19	
MOS-RF^b										
Sum	48.53 (43.99)		46.57 (46.91)		57.14 (46.15)		54.91 (45.58)		0.18	

MDD = Major Depressive Disorder (DSM-IV criteria.) CES-D = Center for Epidemiologic Studies Depression scale; HADS-S = HADS sum scale; HADS-D = HADS depression scale; HADS-A = HADS anxiety scale; MOS-MH = MOS mental health scale; MOS-PH = MOS perceived health scale; MOS-P = MOS pain scale; MOS-PF = MOS physical functioning scale; MOS-SF = MOS social functioning scale; MOS-RF = MOS role functioning scale. Pre = pre-treatment; Post = post-treatment. Compl = completed course; ITT = intention-to-treat.

^a high score = more symptoms; ^b high score = better health; ^c high score = more pain.

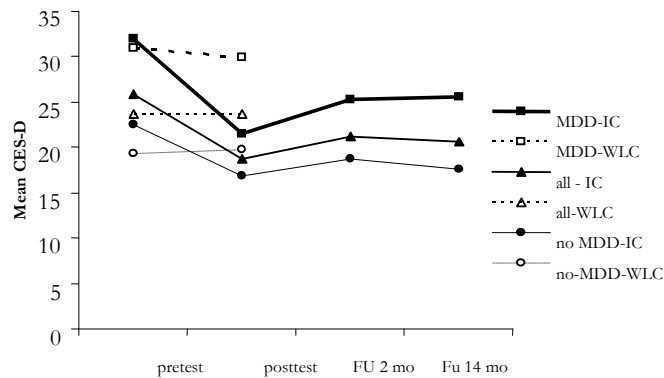


Figure 1. Development of depression over time on the CES-D in the intervention condition (IC) and the waiting list condition (WLC). Further breakdown of the IC and WLC into subgroups: with and without major depressive disorder (MDD, no-MDD).

Comparison of intervention and control subjects

All of the results on the outcome measures for both conditions and separately for those with and without MDD at pretreatment are presented in Table 2, the effect sizes for both the completers sample as the ITT sample are presented in the last column. Multivariate tests of the 2 x 2 x 2 repeated measures ANOVA indicated a significant main effect of Depression [$\Lambda=0.70$, $F(10, 97) = 4.12$; $p < .001$], but not of Condition [$\Lambda = 0.90$, $F(10, 97) = 1.11$, $p = .363$], or of Condition x Depression [$\Lambda = 0.94$, $F(10, 97)=0.63$, $p=.788$]. We found a significant main effect for Time [$\Lambda=0.75$, $F(10, 97) = 3.32$, $p = .001$], and a significant interaction effect for Time x Condition [$\Lambda = 0.81$, $F(10, 97) = 2.29$, $p = .019$]. The interaction effects Time x Depression [$\Lambda = 0.92$, $F(10, 97) = 0.85$, $p = .585$] or Time x Condition x Depression [$\Lambda = 0.93$, $F(10, 97) = 0.73$, $p = .691$] were not significant.

Further univariate tests indicated significant (all p values < 0.05) main effects of Time for CES-D [$F(1,106) = 22.95$], the HADS sum scale [$F(1,106) = 18.67$], the HADS depression scale [$F(1,106) = 16.25$], the HADS anxiety scale [$F(1,106) = 10.59$] and the MOS-mental health scale [$F(1,106) = 11.71$]. Significant (all p values < 0.05) interaction effects of Time x Condition for CES-D [$F(1,106) = 20.22$], the HADS sum scale [$F(1,106) = 7.23$], the HADS depression scale [$F(1,106) = 4.46$], the HADS anxiety scale [$F(1,106) = 5.92$], MOS-mental health scale [$F(1,106) = 9.95$], and the MOS-perceived health scale [$F(1,106) = 5.67$]. A significant Time x Depression interaction effect was found only for the CES-D [$F(1,106) = 4.80$], the primary outcome measure. The results suggest that with regard to depression and anxiety symptomatology, the IC subjects who completed the course improved

significantly compared with the WLC subjects, regardless of their diagnostic status at pre-treatment. In the IC, those with an MDD at pre-treatment showed the greatest decrease in the score of the CES-D; however, the three-way interaction effect was not significant, this could be a result of low power. Repeating the analyses with comorbid anxiety disorder as a third between-subject factor, which had a significant main effect too, yielded similar results. For the ITT sample the results with the CES-D were also similar. Figure 1 shows the pre- and post treatment changes in both groups.

Clinical significant change

Table 3 shows, for both the IC and the WLC, the changes in functional status from pre- to posttreatment and the RC categories (improvement, uncertain change and worsening). The changes in functional status were significant in the IC [McNemar $\chi^2(1, n = 52) = 8.64, p = .002$], but not in the WLC [McNemar $\chi^2(1, n = 58) = 0.17, p = .10$]. The IC differed significantly from the WLC with regard to the proportion of RC categories, with a higher proportion of improvement in the IC [$\chi^2(2, n = 110) = 10.29, p = .006$].

Table 3. *Assessment of clinical relevance of change – completers sample*

	Intervention Condition <i>n</i> = 52	Waitlist Condition <i>n</i> = 58
CES-D \geq 16		
Pre-treatment	44 (83%)	45 (78%)
Post-treatment	32 (62%)	45 (78%)
Change functional status *		
Stayed <16	7 (13%)	6 (10%)
Stayed \geq 16	31 (60%)	38 (66%)
Became functional	13 (25%)	7 (12%)
Became dysfunctional	1 (2%)	7 (12%)
Reliable Change **		
Improvement (RC \geq 8.6)	22 (42%)	11 (19%)
No reliable change	29 (56%)	39 (67%)
Worsening (RC \leq 8.6)	1 (2%)	8 (14%)

CES-D = Center for Epidemiologic Studies Depression scale; Functional status = CES-D <16; Dysfunctional status = CES-D \geq 16.

* McNemars test for significance of change in IC $p = .002$; ** χ^2 test for significance of RC between conditions $p = .006$.

Maintenance of intervention effect over 2 months and 14-month FU

Complete datasets of 42 participants were available for assessment of the maintenance of the effects. The changes over time on the CES-D are presented in Table 5. Multivariate tests of the 2 x 3 repeated measures ANOVA (posttreatment, and two

follow-ups) showed that neither the main effect of Depression [$\Lambda = 0.86$, $F(5, 36) = 1.15$, $p = .353$], nor the main effect of Time [$\Lambda = 0.75$, $F(10, 31) = 1.02$, $p = .447$], nor the interaction effect of Depression x Time [$\Lambda = 0.78$, $F(10, 31) = 0.87$, $p = .569$] were significant. Furthermore, post-treatment classification of functional status was maintained at 14 months FU by 86% [McNemars $\chi^2(1, n = 42) = 0.17$, $p = .10$]. In sum, there was no significant change over time between post-treatment and 14-month FU.

Effect Sizes

In completers, the overall between-group *ES* was 0.49 with the CES-D ($ES_{MDD}=0.92$; ES_{no-MDD} was 0.30) (see Table 2 for the between-group effect sizes and the secondary outcome measures). Compared with pre-treatment, the within-group *ES* (d_{impr}) for the total group was 0.70 at post-treatment and 0.54 at 14-month FU (Table 4).

Discussion

The main finding is that the CWD course for older adults is effective for older people with subclinical depression as well as for those with a current MDD. The results showed significant improvement for the participants in the IC compared to those in the WLC on the primary outcome measure (CES-D) and on the secondary outcome measures related to mental health (HADS anxiety and depression scales and MOS mental health and perceived health scales). The control group showed no evidence of spontaneous improvement on any of the outcome measures during the 10-week waiting period, a finding also reported in community-based studies on the course of depression in older adults (Beekman et al., 1995).

There were no differences in the use of psychotropic medication between the two groups, and we excluded all participants who followed concurrent psychotherapy. Therefore, the differences in outcome between conditions can not be attributed to differences in the use of psychotropic medication or concurrent psychotherapy.

Our follow-up measurements were restricted to the subjects of the IC and limited to 14 months after post-measurement. The treatment benefits were maintained over this period of time. This is in line with the literature on efficacy studies of psychotherapy for late-life depression (Cuijpers, 1998c; Gallagher-Thompson et al., 1990; Karel and Hinrichsen, 2000).

The between-group effect sizes were consistent with the effect sizes reported in other studies. The *ES* of 0.30 for the non-MDD subgroup is in keeping with the weighted mean *ES* of 0.24 reported by Jané-Llopis et al. (2003) in their meta-analyses of prevention studies in elder subjects at risk for the development of depression. The *ES* of 0.92 for the MDD subgroup is comparable with effect sizes reported in studies in older subjects with clinically relevant levels of depression (Cuijpers, 1998c; Engels and Verwey, 1997; Scogin and McElreath, 1994).

Table 4. Course of depression with CES-D, caseness ($CES-D \geq 16$) and within-group effect size (d_{impr})

Group	Pretreatment			Posttreatment			FU 2 months			FU 14 months		
	<i>M</i> (<i>SD</i>)	≥ 16		<i>M</i> (<i>SD</i>)	≥ 16	d_{impr}	<i>M</i> (<i>SD</i>)	≥ 16	d_{impr}	<i>M</i> (<i>SD</i>)	≥ 16	d_{impr}
Total group $n=42$	26.55 (10.42)	83%		19.57 (9.62)	64%	0.70	21.2 (10.03)	69%	0.52	20.62 (11.41)	64%	0.54
MDD $n=16$	33.06 (8.36)	94%		22.25 (10.56)	75%	1.14	25.20 (11.63)	75%	0.80	25.56 (11.74)	81%	0.74
No MDD $n=26$	22.54 (9.60)	77%		17.92 (8.79)	58%	0.50	18.73 (8.20)	65%	0.43	17.58 (10.28)	54%	0.50

Data of cases that completed four measurements; CES-D = Center for Epidemiologic Studies Depression scale;
MDD = Major Depressive Disorder based on DSM-IV criteria.

The dropout rate of 15% in the present study was fairly low, compared with the mean dropout rate of 23%, found by Cuijpers (1998c), and the participation rate in the course was high, indicating that the course is an acceptable intervention for this group.

Stepped-care models have been propagated recently with the aim to maximize efficiency of treatment by stepping up the intensity of the intervention according to individual need. Interventions of mild intensity are tried first and, depending on the effect, treatment is continued or stopped (Davison, 2000; Haaga, 2000; Sobell and Sobell, 2000). The CWD course studied here could be fitted into such a stepped-care framework as an intervention of mild intensity. Taking the posttreatment level of functioning as the criterion to determine whether depression was likely, we found that 38% (20 participants) had a CES-D score < 16, and for these individuals the course was probably adequate. However, 62% of the participants scored above the cutoff on the CES-D. The high prevalence of previous episodes of depression, together with the high score on the CES-D, indicates that either they were likely to relapse or they still had an MDD (Haringsma et al., 2004). This conclusion is underscored by the finding that the posttreatment level of functioning had not changed a year later. In this group 13 participants can be classified as improved but not recovered, the course may have been too brief and more sessions may be needed to reach the functional status. Nineteen participants can be classified as unchanged or deteriorated. This can be seen as an indication that a different type of treatment is needed for these participants, which focuses on their specific problems. For instance, a great many participants reported anxiety disorders (46%). For these participants the anxiety symptomatology might be the first treatment target.

We recognize a number of limitations in this study. First, the large proportion of elders not willing to participate in the study could have resulted in selection bias threatening the external validity of the present study results. However, comparison of the elders that joined the study with the 69 elders who refused randomization showed that there were no significant differences between these two groups in socio-demographic characteristics or mental health. Second, because we did not measure the incidence of MDD using a structured psychiatric interview at all the assessments, our results pertain mainly to the level of depressive symptoms experienced by the participants. In order to classify the clinical level of depression we used the cut-off score of the CES-D to describe the individual course of depression over time, a method also described in other studies (Beekman et al., 1995). A third limitation is the lack of a control condition for the follow-up part of the study. This naturalistic follow-up does not allow a definitive conclusion that the course of depression during the follow-up period may be related to the intervention. In addition, the sample size for the follow-up assessment was small. Replication in larger sample sizes is necessary to validate our preliminary conclusion, that in general, treatment gains were maintained over time. Fourth, follow-up was only conducted in the first year following the course. Longer follow-up periods of the subjects are needed to determine how long the protection holds. Fifth, our sample of 13 intervention groups is relatively small for the

use of random coefficient regression modeling (Kreft & de Leeuw; 1998). Replication in a larger sample is needed to confirm our conclusion that the variance due to group differences can be ignored.

The strengths of this study are, first, that this empirically supported depression intervention program, which is provided by the mental health care system on a national scale, was studied in its natural setting. Second, the study incorporated desirable features of both efficacy and effectiveness research, as it is prospective, randomized and focused on a replicable intervention. Third, the study included enough participants to detect a large between-group difference in effectiveness.

Since its introduction in 1995, the CWD course is well embedded in the mental health care system in the Netherlands. This study highlights the fact that it is a valuable intervention, well accepted by the target group. The CWD course was beneficial for all, regardless of clinical diagnosis. However, the post-treatment level of functioning indicated that for 62% of the participants treatment should be continued. The modest effectiveness is not surprising, considering the short duration and the broad character of the program. We recommend that the course is fitted into a stepped-care protocol that varies intervention intensity according to clinical needs; the post-treatment level of functioning can be used to indicate the next step. The course format makes it an attractive, low threshold intervention for a cohort known to be shy of psychological treatment and mental health institutions.

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4

Predictors of response to the Coping with Depression course for Older Adults. A field study

Haringsma, R., Engels, G.I., Leeden, R. van der & Spinhoven, Ph. (2006). Predictors of response to the Coping With Depression course for older adults. A field study. *Aging and Mental Health, 10*, 424-434.

Abstract

Background

This field study explored the prognostic factors of the immediate and long-term effects of the Coping with Depression course for older adults (CWD). With the aim of both indicated as well as secondary prevention, the course is provided by the prevention departments of the community mental health care in the Netherlands.

Method

A total of 317 course participants (age 55 - 85 years; 69% female) took part in this study; 41% had a major depressive disorder (MDD). A variety of demographic, clinical, psychosocial and treatment factors of possible relevance for secondary and indicated prevention at short- and long-term were investigated. Random coefficient regression models and logistic regression models were used to examine their contribution to the immediate and maintenance effect.

Results

The course was beneficial for all participants, and the level of depression reached at the end of the course was maintained over the next 14 months. Current MDD, high levels of anxiety, less previous depressive episodes, and more education predicted a larger benefit.

Conclusion

However, the clinical significance of these predictors was too small to justify further triage. Further treatment should be considered for the participants with a post-treatment score ≥ 16 . Group-membership was not a significant predictor of the variation in effect.

Introduction

Depression is a common psychiatric disturbance in late life, with a prevalence rate between 8 and 15 % for sub-threshold depressive disorder and around 3% for major depressive disorder (MDD) (Beekman et al., 1999; Blazer, 1998; Karel & Hinrichsen, 2000). To reach the depressed older community-living adult effective low threshold outreach programs have been developed (Cuijpers, 1998a). Lewinsohn's 'Coping with Depression' course (CWD) (Lewinsohn & Clarke, 1984) was adapted for the Dutch seniors and broadly implemented in the prevention arm of the community mental health care system of the Netherlands (Voordouw and Kramer, 2001). The threshold set by the community mental health centres (CMHCs) for enrolment is low, and the course participants vary widely in their level of depression between only slight symptoms to being severely depressed. The majority of the course participants had a lifetime MDD, and 40% met the criteria of the diagnostic and statistical manual for mental health (DSM-IV; American Psychiatric Association, 1994) for a current MDD (Haringsma, Engels, Beekman, & Spinhoven, 2004). The course, as it is used by the Dutch CMHCs, can be classified as either indicated prevention for those at risk for a new MDD or treatment for those with a current MDD. In the original public health classification system the latter would be classified as secondary prevention (Institute of Medicine; Mrazek & Haggerty, 1994).

A randomized clinical trial (RCT) in a sub-sample of participants of the CWD course showed that compared to a waiting list condition the course was effective for participants with mild-to-severe depression (Haringsma, Engels, Cuijpers, & Spinhoven, 2006). However, for a large proportion (62%) of the elderly participants, the level of depression at post-treatment measured with the Centre for Epidemiologic Studies Depression scale (CES-D; Radloff, 1977) was still above the recommended cut point of 16. This variation in outcome in this heterogeneous sample merits the examination of client factors that could predict course effectiveness. Knowledge of prognostic factors can be helpful to ensure better triage of the depressed elders into the most suitable intervention which can result in a higher level of treatment outcome.

Extensive research has focussed on prognostic factors of the development of MDD, and a wide range of socio-demographic, illness-related and psychosocial variables have been identified as related to the incidence, severity, course and remittance of depression. However, in a recent review (Hamilton & Dobson, 2002), only a few of these factors have also been identified as predictors of response to cognitive-behavioural treatment of current depression. A high chronicity, a higher number of previous episodes, a younger age of onset, higher dysfunctional attitudes and marital status (unmarried/divorced) proved to be associated with an unfavourable outcome. Moreover, evidence is accumulating that predictors of poor response to cognitive therapy of current depression may be partly different from those of relapse in recurrently depressed patients when in remission (Bockting et al., 2004). Although fewer previous episodes predict better recovery in the secondary treatment of an acute major depressive episode, the outcome of interventions to prevent relapse in euthymic

patients with a history of previous depressions was significantly better in patients with a higher number of previous depressive episodes (Bockting et al., 2004; Ma & Teasdale, 2004; Segal, Pearson & Thase, 2003). Consequently, it seems worthwhile to investigate predictors of indicated prevention (development of MDD) separately from those of secondary prevention (remission from MDD).

Although a substantial amount of treatment is delivered in a group format, the specific characteristics of group processes as a factor affecting outcome are rarely studied (Burlingame, MacKenzie & Strauss, 2003). The group format of the CWD course is not emphasized as an important factor by Steinmetz, Lewinsohn and Antonuccio (1983), and its impact on outcome has never been studied.

The present field study is part of a multi-centre effectiveness research program set up to investigate how the CWD course works out in the Dutch mental health care system. The following questions will be addressed: (a) which client characteristics predict initial severity of depression and reduction of depression immediately after the conclusion of the course and at 2 and 14 months follow-up; (b) is there a differential effect for client factors predicting indicated prevention or secondary prevention at 14 months following the end of the course; and (c) is treatment effect predicted by group membership?

Given the lack of knowledge of factors predicting outcome on the short- and long-term we included a wide variety of psychosocial, demographic, treatment and clinical factors of possible relevance for secondary and indicated prevention.

Method

Participants

Eligible for this study were older adults participating in 46 CWD courses provided by 13 CMHCs in the Netherlands. Recruitment by the CMHCs occurred via announcements in the local media; no referral was needed. Acceptance criteria were: the presence or a history of depressive symptomatology, and a minimum age around 55. Reasons for exclusion from the course were: cognitive impairment, current bipolar disorder, schizophrenia, current substance disorder, recent bereavement, hearing impairment, and insufficient command of the Dutch language. To be included in the study an additional research criterion was used: no concurrent other form of psychological treatment. Hence, not all the participants taking the course could participate in the study. The use of psychotropic medication was permitted. After a complete description of the study, written informed consent was obtained before enrolment into the study. The Medical Ethics Committee of the Leiden University Medical Centre approved the study.

Procedures

A full description of the diagnostic assessment and the treatment conditions have been reported (Haringsma et al., 2006). Clinical diagnoses were determined with the Mini International Neuropsychiatric Interview (M.I.N.I.: Sheehan, et al., 1998a; Overbeek,

Schruers & Griez, 1999) by trained interviewers (recently graduated psychologists). With this structured interview the most prevalent axis I disorders according to the diagnostic and statistical manual of mental health (DSM-IV; American Psychiatric association [APA], 1994) were assessed (Sheehan, et al., 1998b). All face-to-face interviews were recorded on audiotape, a random selection of 45 tapes were rated by the first author. Inter-rater reliability (Kappa) was .95 for MDD, 1.00 for Dysthymia, and .61 for previous MDD. The interviewers also inquired after the number of previous major depressive episodes and the duration of the current MDD; chronic MDD was defined as a major depressive episode lasting more than two years (DSM-IV criterion). This information resulted in a dichotomous variable for previous episodes/chronicity ($1 \geq$ two episodes or chronically depressed).

The treatment was the the CWD course for older adults – the Dutch version (Cuijpers, 1998b; Lewinsohn & Clarke, 1984), a skills-training based on a social learning view of depression. It consists of 10 weekly two-hour group sessions, followed two months later by a reunion session. Self-report measures, all completed at home, were collected in the two weeks prior to the start of the course, two weeks after its conclusion, and at two and 14 months follow-up (FU). The 14 months FU was concluded with a telephone administration of the depression section of the diagnostic interview (the MINI), a mode of interviewing considered reliable in two studies (Rohde, Lewinsohn & Seeley, 1997; Wells, Burham, Leake & Robbins, 1988).

Depressive symptoms

Primary outcome measure (administered at every assessment) was the Dutch version of the CES-D, a 20-item self-report questionnaire on depressive symptoms experienced during the past week (Radloff, 1977). The total scores range from 0-60. A score of ≥ 16 indicates the presence of clinically relevant depression. In the present sample the alpha coefficients (α) ranged from .86 - .92.

Predictor variables

The self-report questionnaires covered anxiety, physical health, personality pathology, negative life events, post-traumatic stress, social support, self-efficacy, and coping style. The level of anxiety was measured with the subscale of the Dutch version of the Hospital Anxiety and Depression Scale (HADS-A; Zigmund & Snaith, 1983). A cut-off of 8 is recommended to distinguish between high and low anxiety levels. The α in this sample was .80.

As an indication of physical health the presence of chronic medical conditions was assessed at pre-treatment and at the 14-month FU; this was done with a checklist of nine chronic medical conditions covering cardiovascular diseases, pulmonary conditions, brain damage, diabetes, rheumatism, arthrosis, dysplasia (Central Bureau of Statistics, 1989). Furthermore, the scales for pain and physical functioning of the Medical Outcome Study Short Form General Health Survey (MOS-SF-20; Kempen, 1992; Stewart & Ware, 1988) were used as indications of physical health.

Personality pathology was assessed with the Questionnaire of Personality Traits - VKP (in Dutch: Vragenlijst voor Kenmerken van de Persoonlijkheid), an inventory with items based on the DSM-IV and ICD-10 definitions and criteria of personality disorders (Duijsens, Eurelings-Bontekoe, & Diekstra, 1996; Duijsens, Haringsma, & Eurelings-Bontekoe, 1999). At pretreatment the DSM-IV section which consisted of 149 items (including the passive-aggressive and the depressed personality disorders) was administered. The VKP yields a diagnosis and a dimensional score for each specific personality disorder (PD). The latter can be summed into a dimensional score for each cluster and into a total sumscore (PD-NOS). The cluster scores and the sum score were used as predictor variables.

The experience of negative life events at pretreatment was measured with a checklist based on the Negative Life Events Questionnaire used by Kraaij and de Wilde (2001). It covers different developmental periods, such as childhood, adulthood, and events in the past year. A sumscore was calculated for the whole life span.

Current posttraumatic stress was assessed with the Dutch version of the Impact of Event Scale (IES; Brom, Kleber, & Defares, 1986; Horowitz, Wilner, & Alvarez, 1979). It has 15 items; in this sample the α was .94. Social support was assessed with the abbreviated version of the Social Support List-Interaction (SSL112-I), which is intended for use with elderly adults (Kempen & van Eijk, 1995). The sum scale in this sample had an α of .86. Self-efficacy was measured with the Dutch version of the General Self-Efficacy Scale (GSES; Schwartz, 1997, 1998), a 10-item questionnaire. In our sample α was .89. The habitual coping style, one of the targets in the course was measured with the Utrechtse Coping List (UCL; Schreurs, Willige, & Brosschot, 1993). It has 47 items and measures seven coping strategies: active-problem-solving ($\alpha = .79$), palliative-responses ($\alpha = .71$), avoidance-strategies ($\alpha = .74$), seeking-social-support ($\alpha = .79$), depressive-reaction-pattern ($\alpha = .74$), expression-of-emotions (particular anger) ($\alpha = .55$), and comforting-cognitions ($\alpha = .60$).

New negative life events were checked at every assessment; these were summed to get an estimate of adverse events experienced since the conclusion of the course. The 14-month FU assessment also contained a checklist for newly developed medical conditions. Stress-buffering effects of positive life events and improved physical health that may protect against depression were similarly checked.

Statistical Analysis

Preliminary analyses included checks for normality and the computation of descriptive statistics. All variables except those considering personality pathology (cluster A, cluster B, Cluster C, and PD-NOS) appeared to be distributed acceptably close to normal. Distributions of personality pathology variables were improved by applying square root transformations, which were used in the analyses. Only variables that showed significant ($p < .05$) effects will be reported.

Prediction of decrease in depression symptoms

Random coefficient regression models (RCRMs) were used to examine the contribution of the various predictor variables to the immediate and maintenance effect. Repeated measures were considered to be nested within individuals, nested within CWD-groups.

Because this research focuses on: (1) the immediate effect; and (2) the maintenance effect, it was decided to study the two corresponding trajectories in two different linear models, instead of fitting a less adequate non-linear trend over four time points. The model for the immediate effect covered the first three measurements (pre-, post- and two-month FU). The maintenance effect was modelled using the post-treatment, two-month FU and 14-month FU measurements. Hence, data on two time points – post-treatment and 2-month FU measurements – were used twice. In the model for the first trajectory, intercept and slope can be referred to as average pretreatment score and average improvement rate, respectively. In the second trajectory they can be referred to as average post-treatment score and average change rate, respectively. Both models contained variance components estimating the amount of variation of individual (linear) trends around these average lines.

Predictor variables for both models were selected in a three-step approach. The first step was testing each predictor variable separately by adding it to the model with Time as the only predictor (referred to as the baseline model). Time was measured in weeks; pre-, post-, two-month FU and 14-month FU had the values of 1, 10, 20 and 72 respectively. The variables showing a significant weight ($p < .05$) were retained for the final model. The final model was simplified using likelihood-ratio tests (χ^2 derived from deviance values) and tests for separate fixed effects. Finally the most appropriate model was selected. Fixed effects were tested using one-tailed t -tests. Variance components were tested using likelihood-ratio tests as well.

Potential predictors for the immediate effect were socio-demographic, mental health, and physical health variables, the sum of adverse life events, and coping variables; all variables were assessed at pre-treatment. Stable characteristics unlikely to have changed during the time of the course, for instance socio-demographic variables and the variables pertaining to mental health history and to coping resources, were selected as predictors for the maintenance effect. The effects of unpredictable events that might have influenced the level of depression at 14-month FU, such as new chronic illness, new stressful life events, improved physical health and positive life events were also analyzed.

The possible contribution of CWD-group differences to the variance of the response variable was examined by estimating the intra-class correlation.

Prediction of diagnostic status at 14-month's FU

Hierarchical logistic regression models were used to predict diagnostic status at the 14-month FU. Two subgroups were formed to study the different prevention goals. First, the participants who were at risk for developing a MDD (indicated prevention)

were selected. Risk factors were the report of at least one previous major depressive episode or a CES-D score ≥ 16 . After the removal of ten participants, who did not fulfil these criteria, this subgroup counted 180 persons. Second, participants with a MDD at pre-treatment were selected ($n = 128$) to predict remission of MDD at the 14-month FU (secondary prevention). In both groups the response variable was absence of MDD at the 14-month FU (remission MDD) was regressed on predictor variables that showed (borderline) significant relationship ($p \leq .10$) in bivariate analyses. The regression was built up by entering in the first step socio-demographic variables and mental health indices. In the second step the remaining predictor variables were entered using the forward conditional procedure.

The RCRMs were fitted using the multilevel analysis software package MLwiN 1.10 (Rasbach et al, 2000). For all other data analyses the SPSS 11.1 package was used.

Results

The CMHCs accepted 414 persons into the program, 55 (13%) refused to join the study or were not eligible for the study (age < 55 , or concurrent psychological treatment). Another 41 were excluded by the researchers because of concurrent mental health treatment (35 at the interview and 6 at the post-treatment assessment). Pre-treatment data of one participant were incomplete.

Our final intention-to-treat (ITT) sample included 317 participants, of whom 53 (17%) dropped out of the course (reasons: medical [9], course not suitable [3], improvement [3], deterioration [2], and unknown [36]). Thirty participants left the study (not the course): 5 before post-treatment, 16 before 2-month FU and nine more before 14-month FU (reasons: [3], death [3], depression [2], and unknown [16]). At the 14-month FU 234 participants had returned the questionnaires, of which 232 were reached for the telephone interview. Dropouts ($n=53$) differed significantly from completers ($n=264$) on the level of education, but not on any of the other demographic, psychiatric history or pre-treatment dependent variables. In the dropout group 24.5% reported a higher level of education (i.e., ≥ 11 years), compared to 46% in the completers group ($\chi^2(1, n = 314) = 8.30, p = .004$). Participation rate for the completers was high, with a mean number of attended sessions of 9.27 ($SD = 0.95$). The 30 participants who left the study reported a significantly lower level of physical functioning than those who stayed ($t(262) = 2.75, p = .006$). They did not differ on any of the demographic, psychiatric history or other pre-treatment variables.

The mean age in the intention-to-treat sample (ITT) ($N=317$) was 65.78 years ($SD = 7.2$; range 55-85). The majority was female (73%) and of Dutch origin (91%), 47% were cohabiting with a partner or children. Just over half (58%) had less than 11 years of education. The four levels of income per month were evenly distributed: 21% less than € 900, 31% from € 900 - € 1350 euro, 23% from € 1350 - € 1800, and 25% more than € 1800. The majority (70%) reported the presence of at least one chronic medical condition.

Preliminary analyses

The mental health characteristics are summarized in Table 1. Table 2 gives an

Table 1. Mental Health Characteristics and Physical Health Indices

Variable	N	(%)	Mean (SD)
Axis I Disorders:			
No axis 1 disorder	129	(40.7)	
Axis 1 ^a , but not MDD	61	(19.2)	
MDD	60	(18.9)	
MDD + anxiety disorder ^b	67	(21.1)	
Depressive disorders			
MDD	127	(40.1)	
Anxiety disorders ^b	128	(40.4)	
MDD history			
Never an MDD	50	(15.8)	
Remission	140	(44.2)	
First episode	54	(17)	
Recurrent	73	(23)	
≥ 2 prior episodes or chronic MDD	189	(59.6)	
Personality Pathology			
Cluster A			10.10 (7.47)
Cluster B			10.58 (7.34)
Cluster C			13.78 (9.11)
PD-NOS			36.45 (22.98)
Antidepressants ^c and/or sedatives	169	(53.5)	
HADS-anxiety	317		9.92 (4.19)
Physical health			
≥ 1 chronic disease	222	(70)	
MOS-pain	317		46.85 (32.16)
MOS-phys funct			55.68 (33.31)

MDD_{pre} MDD = major depressive disorder at pre-treatment; Cluster A = Paranoid + Schizoid + Schizotypal personality disorders; Cluster B = Anti-social + Borderline + Histrionic personality disorders; Cluster C = Avoidant + Dependent + Obsessive-Compulsive personality disorders; PD-NOS = Cluster A + Cluster B + Cluster C + Depressive + Passive-Aggressive personality disorders; HADS anxiety = Hospital Anxiety and Depression Scale anxiety scale; MOS-pain = Medical Outcome Study Short Form General Health Survey pain scale; MOS-phys funct = Medical Outcome Study Short Form General Health Survey physical functioning scale.^a can be more than one axis 1 disorder, such as dysthymia, anxiety disorders, manic episode, substance dependency, psychotic disorder, eating disorder; ^b can be more than one anxiety disorder. ^c includes St John's Wort

overview of changes in depression symptoms, clinical diagnosis and medication use between pre-treatment and the 14 month FU. The scores on the CES-D decreased from pre- to post-treatment (Mean difference = 7, $SD = 9.5$; effect size [ES] 0.72), and then leveled out over the FU assessments. The difference between pre-treatment and the 14 month FU had a moderately large ES of 0.61. Computed according to Jacobson and Truax (1991), the reliable change on the CES-D was a change $\geq \pm 8.6$. Based on this

Table 2. Changes over time in CES-D scores, clinical diagnosis and medication use

	<i>N</i>	Pre-treatment	Post-treatment	2-month FU	14-month FU
CES-D	228				
Mean (<i>SD</i>)		24.56 (9.79)	17.70 (9.35)	18.96 (10.62)	18.27 (10.88)
CES-D ≥ 16		188 (83%)	127 (56%) ^a	130 (57.5%) ^b	131 (58%)
MDD	232	94			32
Medication	227	114	98 ^b		76 ^b

MDD, major depressive disorder; medication use, antidepressants and/or sedatives ^c including St John's Wort.

^a McNemars test for significance of change $p < .001$; ^b McNemars test for significance of change $p > 0.05$

index: at the conclusion of the course 116 (37%) of the 318 participants achieved a reliable improvement and 15 (5%) had worsened. At 14-month FU, 32 of the 232 participants who were reached for the clinical interview fulfilled the criteria for a MDD; 24 of these participants had a MDD at pre-treatment, the other eight reported a recurrence; of the 94 participants with a MDD at pre-treatment, 70 were in remission. These changes in clinical diagnosis between pre-treatment and the 14 month FU were significant (McNemar $\chi^2(1, n = 232) = 47.71, p < .001$). The change in the use of psychotropic medication between pre- and post-treatment reached borderline significance (McNemar $\chi^2(1, n = 225) = 3.56, p < .059$). The change between post-treatment and the 14 month FU was not significant (McNemar $\chi^2(1, n = 219) = 0.20, p < .66$).

Prediction of decrease in depression symptoms; results from the RCRM

Results for the unconditional (empty) model three level model revealed a non-significant intra-class correlation ($ICC = 0.02, F(45, 267) = 0.99, p > .10$), that is no significant effect of the CWD group. Hence, all succeeding models were simplified considering only two levels of variation: repeated measures nested within participants.

The unconditional three level model:

$$CES_{ijk} = \beta_0 + \nu_{00k} + u_{0jk} + e_{ijk}$$

$$\beta_0 = 21.30 (SE = 0.53)$$

$$\sigma^2_{\nu_0} = 2.46 (SE = 4.83), \sigma^2_{u_0} = 65.64 (SE = 7.94).$$

$$\sigma^2_e = 53.34 (SE = 2.66).$$

Deviance (-2*loglikelihood): 8159.58 (1119 of 1272 cases in use)

Immediate Effect – improvement rate

Due to dropout from the course or from the study, 831 responses (87%) of the possible 954 assessment points (318 participants on each of three occasions) were present in the data and used for analyses. The baseline model for immediate effect showed that the mean trajectory can be described by an average initial severity (β_0) of 24.48 ($SE=0.54$) and a highly significant average decrease of CES-D over time ($\beta_1 = -0.31 [SE=0.03]$). The individual variation in initial severity ($\sigma^2_{0j} = 44.66 (SE = 8.61)$) is large. The individual variation in the improvement rate is small ($\sigma^2_{1j} = 0.003 (SE = 0.04)$). This model's deviance is 6049.54.

Incorporation of predictor variables and subsequent model refinement resulted in the final model described in Table 3, which showed that the mean trend of the CES-D scores over the three time points was explained by 11 predictor variables and four two-way interactions: living alone, education, current MDD, previous episodes/chronicity, anxiety, personality disorder symptoms, physical functioning, two coping styles (palliative-responses and depressive-reaction-pattern), post-traumatic distress, self-efficacy, and the two-way interactions education with time, current MDD with time, previous episodes/chronicity with time, and anxiety with time.

This model had significantly better fit than the baseline model ($\chi^2(15) = 528.47, p < .001$). All predictors, except education, contributed significantly to the average initial severity. The variables education, current MDD, previous episodes/chronicity and anxiety contributed significantly to the average improvement rate. Result showed that no individual variation was left in either the initial severity or the improvement rate (σ^2_{0j} and σ^2_{1j} can be considered zero; see note in Table 3).

Using the final model, the average contribution for each predictor variable to the average CES-D scores at the three assessment times, and the mean change on the CES-D (Δ CES-D, i.e., the improvement) were estimated (see Table 4). High anxiety and current MDD had the largest effects on the initial CES-D scores, whereas the effect of previous episodes/chronicity was negligible. Comparison of the estimated Δ CES-D's with the reliable change index showed that none of the variables by themselves exceeded the limit of 8.6. The estimated effect of previous episodes was the smallest.

Table 3. Two-level RCRM for immediate effect (pre- and post-treatment, and 2-month FU)

Fixed Effect	Estimate (β)	SE	T -ratio	p^a
Intercept (β_0)	18.53	3.26	5.68	<.001
Weeks (β_1)	-0.14	0.10	-0.40	ns
LivSit	1.59	0.70	2.27	.015
EDU	1.03	0.79	1.30	ns
MDD _{pre}	5.87	0.87	6.75	<.001
Hist _{MDD}	-1.61	0.82	-1.96	.03
HADS _{anx}	0.52	0.11	4.72	<.001
PD _{NOS}	0.71	0.21	3.38	<.001
MOS _{phys}	-0.03	0.01	-3.00	.002
PALL	-0.31	0.11	-3.00	.002
DRP	0.24	0.13	1.85	.05
IES	0.07	0.02	3.50	<.001
SE	-0.19	0.06	-3.17	.001
Weeks* Education	-0.21	0.07	-3.00	.002
Weeks*MDD _{pre}	-0.12	0.07	-1.71	.05
Weeks* Hist _{MDD}	0.23	0.07	3.29	<.001
Weeks* HADS _{anx}	-0.02	0.01	-2.00	.02
Variance component				
Level 1: weeks (σ^2_e)	52.85	4.72		
Level 2: intercept (σ^2_{u0})	-6.69 ^b	5.71		
Level 2: slope (σ^2_{u1})	-0.04 ^b	0.04		
Level 2: covariance (σ_{u10})	1.38	0.36		
Deviance (2*loglikelihood)	5521.07			

Weeks = time in weeks: pre =1, post = 10, 2 mo FU = 20; LivSit = living alone; 14 mo FU = 72; EDU \geq 11 years of education; MDD_{pre} = major depressive disorder at pre-treatment; Hist_{MDD} = \geq 2 previous episodes or chronic MDD; HADS_{anx} = anxiety scale; PD_{NOS} = personality disorder score; MOS_{phys} = physical functioning; PALL = palliative-responses; DRP = Depressive-reaction-pattern; IES = posttraumatic stress; SE = self-efficacy.

^a Based on one-tailed t -tests

^b These negative values are due to a computational option in MLWIN. Variances are bounded below by zero, so a negative variance estimate is usually considered equal to zero

Level 1 = repeated measures, time in weeks; level 2 = individual participant.

Base line model: $CES_{ij} = \beta_0 + \beta_1 weeks_{ij} + u_{0j} + u_{1j} weeks_{ij} + e_{ij}$

$\beta_0 = 24.47$ ($SE = 0.54$); $\beta_1 = -0.31$ ($SE = 0.03$);

$\sigma^2_{u0} = 44.66$ ($SE = 8,61$); $\sigma^2_{u1} = 0.003$ ($SE=0,036$); $\sigma_{u10} = 0.64$ ($SE=0.44$)

$$\sigma_e^2 = 51.39 \text{ (SE = 4.52)}$$

Deviance: 6049.54 (831 of 954 cases in use)

$$\begin{aligned} \text{Final model: } CES_{ij} = & \beta_0 + \beta_1 \text{weeks}_{ij} + \beta_2 \text{LivSit}_{ij} + \beta_3 \text{EDU}_{ij} + \beta_4 \text{MDD}_{ij} + \beta_5 \text{Hist}_{\text{MDD}_{ij}} + \beta_6 \\ & \text{HADS}_{\text{anx}_{ij}} + \beta_7 \text{PD}_{\text{NOS}_{ij}} + \beta_8 \text{MOS}_{\text{phys}_{ij}} + \beta_9 \text{IES}_{ij} + \beta_{10} \text{PALL}_{ij} + \beta_{11} \text{DRP}_{ij} + \beta_{12} \text{SE}_{ij} + \beta_{13} \\ & \text{weeks} * \text{EDU}_{ij} + \beta_{14} \text{weeks} * \text{MDD}_{ij} + \beta_{15} \text{weeks} * \text{Hist}_{ij} + \beta_{16} \text{weeks} * \text{HADS}_{\text{anx}_{ij}} + u_{0j} + u_{1j} \text{weeks}_{ij} \\ & + e_{ij} \end{aligned}$$

Deviance: 5521.07 (795 of 954 cases in use)

Table 4. Immediate effect: estimated scores and estimated improvement on CES-D, separately for each significant variable

	Pre-treatment	Post-treatment	2-month FU	Δ CES-D
None of characteristics	18,39	17,13	15,73	1.96
HADS anx score 21	28,93	24,27	19,09	7.224
HADS anx score 8	22,41	19,85	21.13	1.92
MDD _{pre}	24,14	19,85	19.30	4.57
Hist _{MDD}	17,01	17,80	18.68	- 1.23
EDU	19,21	16,06	12.17	5.10

Δ CES-D is the mean change on CES-D from pre- to 2 –month FU. Three assessment points were needed to calculate the mean improvement rate. On the line representing the mean trajectory through these three points, the estimated mean score at post-treatment will be higher and the estimated mean at 2-month FU will be lower than the observed mean score. Hence Δ CES-D will lie in between those two estimations. MDD_{pre} major depressive disorder at pre-treatment; HADS anx , Hospital Anxiety and Depression scale, highest score of 21 on anxiety scale; HADS anx score 8, Hospital Anxiety and Depression scale, cut-off score 8 on anxiety scale; Hist_{MDD}, ≥ 2 previous episodes or chronic MDD; EDU, ≥ 11 years of education.

Maintenance Effect

Of the possible 954 assessment points 705 (74%) responses were present in the data and used for analyses. The baseline model for the maintenance effect showed that the average depression severity at post-treatment (β_0) was 18.72 (SE=0.62) and that the average change on the CES-D could be considered zero ($\beta_1 = -0.001$ [SE=0.009]), the model’s deviance was 5415.05. Results showed that, on average, there was no change between post-treatment and the 14-month FU. The individual variation of the intercept was large; the variation in the slope (β_1) was small, indicating large variation in the CES-D scores reached at post-treatment, while on average this score remained unchanged over the next 14 months.

The final model contained the predictors living alone, current MDD, previous episodes/chronicity, comorbid anxiety disorder, the confounder variable health improvement, and the two-way interaction variable health improvement with time.

Table 5. Two-level RCRM for Maintenance Effect (post-treatment, 2- and 14-month FU)

Fixed Effect	Estimate (β)	SE	T-ratio	p^a
Intercept (β_0)	10.74	1.10	9.76	<.001
Weeks (β_1)	0.01	0.01	1.30	ns
LivSit	3.06	1.00	3.05	.002
MDD _{pre}	6.44	1.04	6.19	<.001
Hist _{MDD}	3.41	1.03	3.32	<.001
CoAnx	3.16	1.02	3.11	.002
PosPhys	2.21	1.62	1.36	ns
Weeks*PosPhys	-0.08	0.03	-2.92	.002
Variance component				
Level 1: weeks (σ^2_e)	35.39	3.32		
Level 2: intercept (σ^2_{u0})	45.76	7.59		
Level 2: slope (σ^2_{u1})	0.005	0.002		
Level 2: covariance (σ_{u10})	-0.08	0.11		
Deviance ($2^* \log$ likelihood)	4952.67			

Weeks = time in weeks: post = 10, 2 mo FU = 20, 14 mo FU = 72; LivSit = living alone; MDD_{pre} = major depressive disorder at pre-treatment; Hist_{MDD} = ≥ 2 previous episodes or chronic MDD; CoAnx = comorbid anxiety disorder present; PosPhys = improved health. ^a Based on one-tailed t -tests.

Level 1 = repeated measures, time in weeks; level 2: individual participant.

Base line model: $CES_{ij} = \beta_0 + \beta_1 Weeks_{ij} + u_{0j} + u_{1j} Weeks_{ij} + e_{ij}$

$\beta_0 = 18.72$ ($SE = 0.62$); $\beta_1 = -0.001$ ($SE = 0.009$)

$\sigma^2_{u0} = 69.08$ ($SE = 9.40$); $\sigma^2_{u1} = 0.005$ ($SE = 0.003$); $\sigma_{u10} = -0.04$ ($SE = 0.12$)

$\sigma^2_e = 37.71$ ($SE = 3.40$)

Deviance: 5415.05 (753 of 954 cases in use)

Final model: $CES_{ij} = \beta_0 + \beta_1 Weeks_{ij} + \beta_2 LivSit_j + \beta_3 MDD_{pre_j} + \beta_4 Hist_{MDD_j} + \beta_5 CoAnx_j + \beta_6 PosPhys_j + \beta_7 Weeks * PosPhys_{ij} + u_{0j} + u_{1j} Weeks_{ij} + e_{ij}$

Deviance: 4952.67 (705 of 954 cases in use)

This model had a significantly better fit than the baseline model ($\chi^2[6] = 462.38$, $p < .001$). Results (see Table 5), showed that the mean trend of the CES-D scores over the

period from post-treatment to the 14-month FU was explained by five variables. All of which, except health improvement contributed significantly to the average CES-D score at post treatment. The variable health improvement showed a significant interaction with the average change rate, indicating that improved health resulted in a decrease on the CES-D at the 14-month FU.

The final model showed a reduction in individual variation (σ^2_{0j}) of the post-treatment level from 69.08 to 45.76, but not of the post-treatment change rate (σ^2_{1j} remained 0.005). The estimated contribution of health improvement, based on the final model is a decrease of 3.9 points at the 14-month FU. The baseline model for the maintenance effect predicted an average score of 18 at post-treatment and no change between the assessments at post-treatment and the 14-month FU.

Prediction of remission of MDD; results from the hierarchical logistic regression

At the 14-month FU the data of 129 participants in the subgroup at risk for a recurrence of MDD were available for analyses. Only eight of these individuals had a MDD, not enough for further prediction analyses.

In the subgroup of participants with a MDD at pre-treatment 94 (73%) of the 128 participants were interviewed at the 14-month FU, of these 70 (74%) were in remission at that time. Based on the bivariate analyses 12 predictors for remission were retained for the logistic regression model: living alone, antidepressants and/or sedatives at pre-treatment, previous episodes/chronicity, comorbid anxiety disorder, anxiety, personality disorder symptoms, sum negative life events, three coping styles (depressive-reaction-pattern, palliative-responses and seeking-social-support), self-efficacy, and perceived social support.

Direct logistic regression of the variable remission MDD on living alone, medication, previous episodes/chronicity, comorbid anxiety disorder in the first and the remaining variables in the second (explorative) step was statistically reliable, $\chi^2(5, n = 92) = 38.18, p \leq .001$. The contributions of living alone (OR 0.11), medication (OR 0.14), comorbid anxiety disorder (OR 0.23), seeking social support (OR 1.39) and self-efficacy (OR 1.10) were significant. Previous episodes/chronicity was borderline significant (OR 0.21, $p = .78$). Table 6 shows the hierarchal logistic model built up by entering sets of predictors one by one. These results indicate that living with somebody, taking no psychotropic medication, the absence of a comorbid anxiety disorder, the ability to seek social support, and having a good sense of self-efficacy all increased the chances of remission. A further look at medication use showed that 61% of all the participants using antidepressants had a comorbid anxiety disorder and 90% reported previous episodes; the associations between medication and comorbid anxiety disorder as well as between medication and previous episodes were borderline significant ($\chi^2(1, n = 94) = 3.39, p = .07$ and $\chi^2(1, n = 94) = 3.36, p = .007$).

Table 6. *Logistic Regression Subgroup MDD at pre-treatment (N = 128)*

Variable	χ^2 (df)	B	SEB	p	OR
Step 1	21.50 (5)			<.001	
Living alone		-1.25	0.60	.04	
Prior Episodes		-1.24	0.74	.09	
Medication		-1.20	0.60	.05	
CoAnx		-1.25	0.63	.05	
Anxiety		-0.08	0.08	.31	
Constant		4.07	1.28	.002	
Step 2	38.17(7)			<.001	
Living alone		-2.23	0.80	.01	0.11
Prior episodes		-1.56	0.86	.08	
Medication		-1.20	0.83	.02	0.14
CoAnx		-1.47	0.74	.05	0.23
Anxiety		-0.05	0.10	.61	
SSS		0.32	0.12	.01	1.38
S-E		0.10	0.05	.05	1.10
Constant		-1.64	2.21	.46	

Included in the analyses are 92 cases. Prior episodes ≥ 2 previous episodes/chronicity; Medication = antidepressants and/or sedatives; CoAnx = comorbid anxiety disorder; anxiety = score on Hospital anxiety and Depression Scal – anxiety scale; SSS = seeking-social-support; SE = self-efficacy.

Discussion

The CES-D scores over the 16 months showed two distinct courses: a sharp and highly significant decrease in symptomatology from pre to post-treatment and an almost horizontal levelling out during the 14-month follow-up period, indicating that the effect was maintained. These findings corroborate the results of the RCT study (Haringsma, et al., 2006) and are in agreement with the literature on efficacy studies of psychotherapy for late life depression (Cuijpers, 1998a; Engels & Vermey, 1997; Karel & Hinrichsen, 2000).

The large variation of initial depression severity was fully predicted by 10 prognostic factors. In general the influence of these factors was in the expected direction. The individual variation in the immediate effect was predicted by only three of these factors plus level of education. Higher initial depression levels and greater improvement was predicted by current MDD, less than two previous episodes and a high level of anxiety. However, when evaluating the separate predictors one should bear in mind that in general those with the highest level of symptom distress will show

the greatest reduction (Garfield, 1994). The differential effect of current MDD probably reflects this tendency. Hamilton and Dobson (2002) concluded that in patients suffering from acute MDD, treatment response is negatively affected by prior depressive episodes or chronicity. In our sample this influence was clinically meaningless. This difference may be due to heterogeneity of our sample.

The effect of anxiety on treatment response reflects the entwinement of depression and anxiety, which in our sample was apparent by the high comorbidity of MDD with anxiety disorder and the high correlations between the CES-D and the HADS anxiety (0.56 and 0.63, respectively, both with a $p < 0.001$). Consequently, reduction of the depression symptoms will also result in a reduction of anxiety symptoms and vice versa. Our RCT study of the sample showed that the course had a significant effect on the anxiety score (Haringsma et al., 2006). The literature of the effects of education on treatment outcome are inconclusive (Garfield, 1994), although Steinmetz et al. (1983) found that reading ability predicted a better treatment outcome of the CWD course for adults. They hypothesized that reading ability is important because the course uses a lot of written material. In the same vein of thinking we postulate that for those with more years of formal schooling the course's educational format is a familiar way of learning.

Medication use was not a predictor of response, this corroborates with our conclusion in the RCT study that since the experimental and the control group did not differ in the use of psychotropic medication, the differences in outcome between the conditions could not be attributed to medication (Haringsma et al., 2006). This result may be explained by the fact that the use of antidepressants at pre-treatment was not related to diagnostic status. Furthermore, the improvement may have led to the decrease at post-treatment. Non-differential effects of medication were also reported by Bockting et al. (2005) in their study of preventive cognitive therapy in remitted patients.

Participants retained the level of depression symptoms they had achieved at post-treatment for at least the next 14 months, and there was hardly any variation in this course over time. However, the variable improvement of health showed a small effect on the score on the CES-D on the last assessment. Improvement of physical health was measured with a single question, so no firm conclusions can be drawn. Nonetheless, this finding is in agreement with research showing that the functional impairment and not the medical condition *per se* is associated with the development of depression (Beekman et al., 1996; Zeiss, Lewinsohn, Rohde & Seeley, 1996).

The incidence of MDD 14 months after the conclusion of the course was an indication of successful indicated or secondary prevention. We had no data on the incidence of MDD during that period, which limits our conclusions. However, the small number of cases in the subgroup of participants who were at risk for developing a MDD can be considered as an indication of successfully preventing recurrence. With regard to secondary prevention, we found that 74.5% were in remission 14 months later. From the factors that predicted this state a less vulnerable and mentally healthier

participant emerged: a participant, who was cohabiting, did not use psychotropic medication, did not have a comorbid anxiety disorder, sought social support when there were problems, and had a high sense of self-efficacy. Apart from the use of medication, all these factors are known from other studies to be related to recovery. The associations of antidepressants with either comorbid anxiety disorder or previous episodes were nearly significant. Because all variables were predictive of a worse outcome at the 14-month FU, this might be seen as an indication that medication non-use is a characteristic of the subgroup of healthier individuals for whom secondary prevention is especially successful. The group format of the intervention warranted examination of group membership as a prognostic factor. The analyses showed that group membership was irrelevant for the variation in treatment outcome, that is, there were no CWD groups that produced significantly higher or lower outcomes than other groups. The standardized format of the course seems to ensure that the benefits of attending do not depend on individual differences between group leaders or differences in group interactions. To our knowledge this is the first study that analyzed the effect of group membership.

This study counted several limitations. It was not a controlled treatment outcome study; therefore we can not be certain that the improvements were the result of the course and not due to spontaneous improvement or remission. However, we found a similar rate of improvement in our controlled evaluation of the course, where course participants had a significantly better outcome than non-treated controls (Haringsma et al., 2006). The most important limitation is our lack of data on the incidence of MDD at post-treatment and 2 month FU. Therefore, we could not predict the effect of the program in preventing a MDD for those at risk both immediately after the course as well as during the follow up period.

The merit of this study is in the first place the fact that it is a large field study. The CWD course has been widely accepted, not only in the USA, but also in Western Europe for instance in Germany, and in the Netherlands. To our knowledge this is the first study that examines prognostic factors of outcome of this type of group intervention in the way it is utilised by the mental health care system. The sample studied was heterogeneous; participants differed in level of depression symptomatology, unipolar depression diagnoses, history of depression, and in comorbid anxiety disorders. The size of the population studied was large and a wide range of variables was examined for their prognostic value. The long follow up period allowed us examination of the clinical status (presence of MDD) a good year after enrolment into the course. Also our sample of 46 intervention groups was large enough for the use of random coefficient regression modelling (Kreft & de Leeuw; 1998), and justified our conclusion that the variance due to group differences can be ignored. Furthermore, the use of RCRM as analyses method has the advantage that in one model the initial depression severity as well as the change over time can be analyzed. This allows for a more comprehensive understanding of the effects that the

different predicting factors have on the initial level of depression symptoms, response to the CWD course and the maintenance of the achieved improvement.

To summarize our results: the course was well accepted by the target group. It is an attractive low threshold intervention of light intensity, which in general was beneficial for all. Close inspection of a range of participant variables explained some of the individual variation in change. However, the magnitude of the contribution of each prediction variable tot treatment outcome was smaller that the reliable change, which leads tot the conclusion that the clinical significance of the four predictor variables on treatment outcome does not justify triage beyond the criteria that are presently used to select the participants for the CWD course. The level of depression symptomatology reached at post-treatment was maintained over the next 14 months, indicating that the course was enough for those with an end score below 16. However, for the participants with a post-treatment score ≥ 16 , further treatment should be considered. Finally, an adaptation of the course to the less educated should be considered.

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Chapter 4

- Teasdale, J. D., Segal, Z. V., Williams, J. M., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention and relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*.
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5

Effects of depressed mood on autobiographical memory in older adults with and without lifetime depression.

Haringsma, R., Spinhoven, Ph., Engels, G.I. & Leeden, R. van der (submitted). Effects of depressed mood on autobiographical memory in older adults with and without lifetime depression.

Abstract

Objectives

First, to investigate if reduced autobiographical memory specificity (AMS), is a marker for depression in older adults. Second, the separate effect of an induced sad mood on AMS was studied.

Design

Between groups design.

Method

The Autobiographical Memory Task (AMT) was administered twice in a single session to 63 remitted (RD) participants and 58 never depressed controls aged 55 – 85 years. A negative mood was induced in all RD individuals. The controls were randomly assigned to a neutral ($n = 26$) or a sad mood condition ($n = 32$). The course of depressive symptoms was assessed in RD individuals over a 14 months follow-up period.

Results

All individuals retrieved fewer specific memories than the norm for middle aged individuals. RD and controls did not differ in AMT scores or in their reaction to the mood induction. The mood induction did not affect the AMT. There were no practice effects. Changes in the level of depressive symptoms at the 14-month FU were not predicted by baseline AMT, changes in AMT or mood after mood induction.

Conclusion

Performance on the AMT is not a marker for vulnerability for clinical depression in older adults.

Introduction

The interest in and recognition of late-life depression as a serious mental health problem is relatively recent compared to depression in midlife adults. Also the search for markers for relapse or recurrence of depression has focused mainly on younger adults with remitted depression. However, reviewing studies that compared prognosis of depression in late life to mid life, Mitchell and Subramaniam (2005) concluded that remission rates hardly differ, but that relapse rates appear to be higher in older persons. The prevalence of major depression in older adults is about 3%, and 8 -15% have subclinical or minor depression (Beekman, Copeland, & Prince, 1999). For many individuals, this will be a relapse or recurrence, since the occurrence of geriatric depression was significantly associated with a personal history of depression (Schoevers et al., 2003). The question arises whether markers for depression in younger adults also apply to older adults.

In younger adults, impaired autobiographical memory specificity (AMS) is considered a possible cognitive marker for vulnerability for depression (Williams, 1996). Autobiographical memory is part of the episodic memory system (Tulving, 2002), involving the recollection of personally experienced events; it often entails remembering contextual details of the event e.g. time and place of the occurrence. Autobiographical memory specificity can be measured with the autobiographical memory task (AMT; Williams & Broadbent, 1986). The average retrieval of specific memories by depressed or remitted patients is 40%, compared to 70% in control subjects (Williams, 1996). Autobiographical memory specificity has been put forward as a possible marker of vulnerability to depression, because it is associated with depression and trauma, but not with anxiety disorders. In clinical samples, comparable retrieval patterns were found in both current (van Vreeswijk & de Wilde, 2004; Williams, 1996) and remitted or recovered depressed individuals (Mackinger, Pachinger, Leibetseder, & Fartacek, 2000; Nandrino, Pezard, Poste, Reveillere, & Beaune, 2002; Park, Goodyer, & Teasdale, 2002; Spinhoven et al., 2006; Williams, 1996). These findings suggest that autobiographical memory specificity is not dependent on mood state but an enduring memory style. However, the assumption of stability has been challenged by Kuyken and Dalgleish (1995), who found no difference between never depressed individuals and remitted/recovered depressed individuals.

Also in more studies (Brittlebank, Scott, Williams, & Ferrier, 1993; Dalgleish, Spinks, Yiend, & Kuyken, 2001; Peeters, Wessel, Merckelbach, H., & Boon-Vermeeren, 2002), but not in all (Brewin, Reynolds, & Tata, 1999), autobiographical memory specificity showed prognostic properties by predicting the persistence of an acute depression. However, it did not predict relapse/recurrence in a sample of remitted mid life adults (Raes, et al., 2006; Spinhoven et al., 2006).

To separate the effects of mood from the effects of the depressed syndrome, two recent studies have investigated the influence of an experimentally induced mood in non-clinical samples. The AMT was administered twice and the changes in specificity

were analyzed. Svaldi and Mackinger (2003) found that a musically induced sad mood resulted in a decrease of specificity, especially of negative memories. Yeung, Dalgleish, Golden and Schartrau (2006) induced a happy, sad or neutral mood in never depressed volunteers. Compared to the neutral condition, those in the sad condition showed a decrease of specific memories. It seems worthwhile to compare the direct effect of a sad mood on recall between remitted depressed (RD) and never depressed (ND) individuals, since there are strong indications that the results of a negative mood induction in normal samples might not replicate in clinical samples (Matt, Vazquez, & Campbell, 1992).

To summarize: a substantial number of studies (see van Vreeswijk & de Wilde, 2004 for a meta-analysis) have confirmed the relationship between depression and impaired autobiographic memory specificity in adults of middle age. Furthermore, in young non-clinical samples an induced sad mood led to a decrease of specific memories.

Age is known to affect episodic memory more than semantic memory (e.g. Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002; Siedlecki, Salthouse, & Berish, 2005; Winthorpe & Rabbitt, 1988) and was associated with performance on the AMT in younger adults (see van Vreeswijk & de Wilde, 2004). However the AMT has hardly been studied in older adults. We know of only one study with older adults (aged 55 – 68) (Wessel, Merckelbach & Dekkers, 2002) not suffering from organic brain damage or mental decline. The present study was designed to investigate reduced autobiographical memory specificity as a possible marker for vulnerability of depression in late life by comparing the mean scores on the AMT of remitted depressed (RD) with never depressed (ND) adults of 55 and older. Since episodic memory is vulnerable to normal aging, we expected that ND elderly would retrieve fewer specific memories compared to healthy younger adults. Furthermore, we expected that RD elderly would retrieve fewer specific memories compared to ND elderly. Besides, we set out to investigate the influence of dysphoric mood on the AMT in older adults by exposing both RD and ND elderly to a MI experiment and analyze the changes in AMT. The effects of a neutral and a sad MI were compared in a sample of ND controls. We expected that the sad MI would lead to a decrease of specificity (Svaldi & Mackinger, 2003), whereas the neutral MI would have no effect. Furthermore, we explored whether depression history moderated the effect of the MI on AMT by comparing the RD with the ND individuals. We had no particular outcome expectations with regard to the valence of the cue words since findings across studies have been inconsistent on the effects of cue valence (van Vreeswijk & de Wilde, 2004).

In the second part of the study, which consisted only of the RD individuals, we investigated to what extent the AMT score could predict changes in depression symptomatology 14 months after the completion of a group treatment for the prevention of depression.

Method

Participants

Participants were 63 elderly with a history of depression and 58 healthy older adults. Clinical participants were recruited among the older adults participating in an effectiveness study of the Coping with Depression Course for older adults (CWD; Lewinsohn & Clarke, 1984). These participants were community living seniors who followed the course, provided by the prevention departments of the Dutch community mental health system. Participants for the course and hence for the study were recruited through the local media by the course leaders of the prevention departments. The experiment took place between one and 11 months after the conclusion of the course.

The healthy control group was recruited among relatives and acquaintances of university students and staff. Potential healthy participants were excluded if they met the the diagnostic and statistical manual of mental health (DSM-IV; American Psychiatric association [APA], 1994) criteria of for a current or lifetime major depressive episode, current anxiety disorder or alcohol dependency. Clinical diagnoses for all participants in the study were determined with the Mini International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998a). All participants taking part in the experiment received a complete description of the study and written informed consent was obtained. The protocol has been approved by the institutional ethics review committee of Leiden University.

Measures

Clinical diagnoses

We used the Dutch version of the M.I.N.I. (Overbeek, Schruers, & Griez 1999; Sheehan et al., 1998a), a structured interview with which the most prevalent DSM-IV (1994) axis I disorders can be assessed (Sheehan, et al., 1998b). Validation of the M.I.N.I.-CR against the Structured Clinical Interview DSM-III-R- patient version (SCID-P) and the Composite International Diagnostic Interview for ICD-10 (CIDI) showed good to very good kappa values (Sheehan, et al., 1998b). In the present study, the interviews were conducted by trained interviewers. Interrater reliability (Kappa) between the interviewers and first author was 0.95 for MDD, and 0.61 for previous MDD. Fourteen months after the completion of the course the depression section of the M.I.N.I. was administered again.

Depression

The level of depression symptomatology experienced during the past week of the clinical sample was assessed with the Dutch version of Center for Epidemiologic Studies Depression scale (CES-D) (Bouma, Ranchor, Sanderman, & van Sonderen, 1995; Radloff, 1977) before the MI and at 14 months after the completion of the course. In this sample Cronbach's alpha (α) was .90.

Autobiographical memory test – AMT

This test has been developed by Williams and Broadbent (1986) to measure memory specificity, and has later been modified by McNally and colleagues (McNally et al., 1995). Two versions were used, each with five negative and five positive cue words. In version 1, the cue words were: friendly (+), guilty (-), honest (+), impolite (-), helpful (+), jealous (-), clever (+), selfish (-), humorous (+), and hostile (-), and in version 2: happy (+), clumsy (-), loyal (+), mean (-), tolerant (+), cowardly (-), disciplined (+), distrusting (-), kind (+), and lazy (-).

Participants were asked to recall an event at which they had shown the trait displayed on a flashcard and simultaneously read aloud by the experimenter. The response was considered a specific memory if it referred to a particular event lasting not longer than a day. Three practice items were administered and direct feedback was given about the correctness of the response. Participants were allowed 60s to come up with a memory; expiration was scored as no memory. The specificity was checked by asking details such as dates, seasons, time of the day, dress etc. The number of specific answers formed the response variable AMT specific. All interviews were recorded on audiotape and scored by the first author as well as by trained student psychologists. The level of agreement was good ($\kappa = .89$; $p < .001$). For disagreements, a third rater broke the tie without knowledge of the previous ratings. The change in autobiographical memory specificity (Δ AMT) was defined as baseline AMT score minus AMT score after the MI.

Visual analogue mood scale (VAMS)

VAMS for mood are a quick and simple means for measuring mood state (Killgore, 1999) with good reliability and validity (Ahearn, 1997). Participants were repeatedly asked during the experiment to rate their mood on VAMS measuring 100 mm by crossing the line ranging from 'not at all gloomy' (zero) to 'very gloomy' (100 mm). The scales were scored measuring the length (in mm) from 'zero' to this mark. The change in mood (Δ mood) was defined as the baseline VAMS minus VAMS after the MI.

Procedure

All participants received the CES-D beforehand to fill in at home. For all participants, MI took place at a research setting. The healthy controls were invited at the university, whereas for the clinical participants the procedure took place at their community mental health center.

The neutral control condition was a series of six geometric puzzles of increasing difficulty. It was administered to the healthy controls only. To induce a mild transient dysphoric mood, the musical MI procedure, described by Clark and Teasdale (1985), was used. Participants were asked to listen to a piece of sad music entitled "Russia under the Mongolian yoke" by Prokofiev for the film Alexander Nevsky (1934); the

segment was remastered at half speed and lasted 7 minutes. They were specifically instructed to recall a time in their life that they felt sad or dejected and to try to evoke that mood. This combination of music plus the instruction has been found to be effective in bringing on a transient dysphoric mood (Westermann, Spies, Stahl, & Hesse, 1996). It is also efficacious in older adults (Fox, Knight, & Zekinski, 1998).

Momentary mood was rated (VAMS) at entry, pre and post MI and before leaving. The healthy controls were randomized to either the puzzle or the sad music condition. The MI, the AMT interviews (the order of presentation was counterbalanced across participants) and pre and post mood VAMS ratings took place in a separate test room. The experimenter was not present during the MI, she re-entered when the MI was finished to administer the second AMT and the post MI mood VAMS. Next, participants returned to the first office and were debriefed by the experimenter. A final mood VAMS was rated before leaving.

Results

In the control group nine VAMS were missing: five in the puzzle condition and four in the music condition. Because of non-normal distribution, square root transformations were conducted on the VASMs and the Δ VAMS data. The similarity of the two AMT versions was checked at pre- induction in the total group and no significant differences were found [$F(1, 120) = 0.00, p = .983$].

Participant characteristics

Table 1 summarizes the descriptive data on socio-demographic characteristics and depression variables. There were statistically significant differences between the two groups in age, gender and level of education (6-10 vs. ≥ 11 years of formal education). Healthy participants were slightly older ($F(1, 120) = 3.66, p = .058$), counted a higher proportion of males ($\chi^2(1) = 15.67, p < .001$) and were higher educated ($\chi^2(1) = 21.54, p < .001$). All analyses comparing these two groups were corrected for age, gender and education.

There were no significant differences in age or gender between the puzzle and music groups in the ND group; subsequently these variables were ignored in the analyses in this group. Although the mean CES-D found in the clinical group was below the cut point of 16, it was much higher than the mean reported in Beekman et al. (1994), who found in a sample of the normal population of Dutch elders [$M = 8.8, SD = 6.9, t(62) = 5.44, p < .001$]. In the clinical group, the correlation between the AMT and the CES-D ($r = -.021, p = .87$) and the association between the AMT and the use of antidepressants/tranquilizers ($t = -0.31, p = .76$) were non-significant. Hence, the analyses of AMT scores were not corrected for depression severity or use of antidepressants or tranquilizers.

Table 1. *Socio-demographic and mental health characteristics*

	Remitted Depressed N=63	Never Depressed N=58	Test statistic	<i>p</i>
Age 55-86			$F(1) = 3.41$.067
Mean (SD)	64.92 (6.84)	67.5 (8.5)		
55 – 59	16	11		
60 - 64	20	11		
65 – 69	10	12		
70 - 75	9	12		
75 – 85	8	11		
Gender M	15 (24%)	34 (58.6%)	$\chi^2(1) = 15.19$	<.001
Cohabiting	38 (60.3%)	39 (67.6%)	$\chi^2(1) = 0.63$.429
EDU \geq 11 yrs	30 (47.6%)	51 (88%)	$\chi^2(1) = 22.18$	<.001
Mental Health Characteristics				
Previous MDD	54 (85.7%)			
\geq 2 episodes	37 (59.7%)			
CES-D				
Mean (SD)	15.07 (9.14)			
Range	0 – 43			
\geq 16	29 (46%)			
\geq 22	12 (19%)			
Antidepressants or Tranquilliser ^a	13 (22%)			

^a five missing

Comparison healthy and clinical elderly on AMT performance

Group differences on the AMT were analyzed with a multivariate ANOVA with group, gender and education level as BS variables and age as covariate. Only age had a significant main effect [$\Lambda = 0.82$, $F(2, 111) = 12.15$, $p < .001$]. Univariate tests showed that age affected the positive but not the negative cue words ($F = 24.50$, $p < .001$).

Effects of mood induction in healthy controls

Mood changes and the test-retest effect of the AMT were analyzed with a 2 (induction type: puzzle or music) x 2 (word valence: negative, positive) ANOVA repeated measures on the second factor. No different response pattern to positive and negative cue words was found. Hence, the data were collapsed across word valence and analyzed with multivariate General Linear Model (GLM) for repeated measures with Time as within-subject (WS) variable, and Induction type (puzzle or music) as

between-subject (BS) variable. The main effect Time [$\Lambda = 0.73$, $F(2, 46) = 8.33$, $p = .001$] and the interaction effect Time x Induction [$\Lambda = 0.77$, $F(2, 46) = 6.70$, $p = .003$] were significant. Univariate tests showed that both effects were significant for the VAMS [Time: $F = 12.71$, $p = .001$; Time x Induction: $F = 3.62$, $p = .001$]. The main effect of repeated administration showed a trend for the AMT [Time: $F = 3.75$, $p = .059$], with lower scores on the second administration. The results revealed that (a) participants in the puzzle condition did not show a change in mood, but those in the music condition felt more sad, (b) performance on the AMT was not subject to test-retest effects or to mood changes, but (c) there was a trend suggesting that fatigue affected the AMT performance.

Differential effects of musical MI on mood and AMT in healthy and clinical participants

The sad music MI was administered to 28 healthy controls and 63 clinical participants. Differences between the two groups in mood or AMT specific before the music MI were analyzed with GLM for multivariate ANOVA with group, gender and education level as BS variables and age as covariate. Results indicated a significant main effect for age ($\Lambda = 0.93$, $F(2, 81) = 3.27$, $p = .043$) only; no significant interaction effects were found. Univariate tests showed that the AMT was only affected by age ($F = 6.24$, $p = .014$). Memory specificity decreased ($r = -.31$, $p = .001$) with increasing age.

Differential effects of the MI on mood and AMT were analyzed with a multivariate GLM for repeated measures analysis with group, gender and education level as BS variables and age as covariate. Main effects were significant for age [$\Lambda = 0.92$, $F(2, 81) = 3.61$, $p = .032$], and education [$\Lambda = 0.87$, $F(2, 81) = 6.03$, $p = .004$]. Univariate tests showed that the main effect for age ($F = 5.57$, $p = .021$) and education ($F = 6.77$, $p = .011$) affected memory specificity, but not mood. Table 2 gives the means and standard deviations of the AMT and VAMS during the experiment.

Summarizing the results, we found that in healthy older adults the musical MI worked well in inducing a sadder mood, and that performance on the AMT was not affected by repetition or by mood state. After controlling for the differences in age, gender and education, there were no significant differences between the healthy and the clinical group in mood or memory specificity before the start of the experiment. Looking for differential effects, the results revealed that age and education affected the performance on the AMT in both groups: higher age and lower education were associated with lower specificity on the AMT. There were no significant differences in effect between the two groups in changes on the AMT.

Predictors of depressive complaints during follow-up in the RD group

Two participants in the experiment could not be reached at FU. At 14 months FU, only three participants met the criteria for a new major depressive episode. As another categorical threshold for severity, we then took the cut point of 22 on the CES-D as a

Table 2. Mood^a and AMT score before and after the neutral or sad mood inductions

VAMS	Never Depressed <i>N</i> = 49 ^b				Remitted Depressed <i>N</i> = 63			
	Pre-MI		Post-MI		Pre-MI		Post-MI	
	<i>M</i> (<i>SD</i>)	range	<i>M</i> (<i>SD</i>)	range	<i>M</i> (<i>SD</i>)	range	<i>M</i> (<i>SD</i>)	range
Neutral (n = 21)	9.86 (10.13)	0-36	9.52 (9.83)	0-37	-	-	-	-
Sad (n = 28)	7.82 (8.79)	0-33	25.18 (22.72)	0-75	16.56 (17.82)	0-62	34.62 (26.19)	0-92

AMT	Never Depressed <i>N</i> = 58				Remitted Depressed <i>N</i> = 63			
	Pre-MI		Post-MI		Pre-MI		Post-MI	
	<i>M</i> (<i>SD</i>)	range	<i>M</i> (<i>SD</i>)	range	<i>M</i> (<i>SD</i>)	range	<i>M</i> (<i>SD</i>)	range
Neutral (n = 26)	4.54 (2.23)	0-9	3.96 (1.84)	1-8	-	-	-	-
Sad (n = 32)	5.13 (2.49)	0-9	4.61 (2.30)	0-8	4.74 (2.33)	0-9	4.47 (2.43)	0-10

threshold of severity. The cut point of 22 was found as the optimal cut point to detect those with subthreshold depression, dysthymia and major depression (Haringsma Engels, Spinhoven & Cuijpers, 2004).

Analyses showed that the change in status, from below to above 22 or vice versa, was not significant (McNemar (1, $n = 60$), $p = .388$). Hence, the level of depressive symptomatology as measured with the CES-D was chosen as measure of severity and the CES-D score at 14 month FU was chosen as dependent variable. Mean CES-D ($n = 60$) before the experiment was 15.10 ($SD = 9.12$), range 0–43. At FU it was 15.78 ($SD = 9.78$); range 3–41. To analyze which variables were associated with the change in depression symptomatology, the residual change score was correlated with the number of previous depressive episodes (these illness-related variables are strongly predictive of the course of depression, e.g. see Judd et al., 1998), baseline AMT, Δ AMT and Δ mood. Only the correlation with the number of previous episodes (0-1 vs. ≥ 2 previous episodes) was significant ($r = .36$, $p = .004$). The positive sign indicates that those with ≥ 2 previous episodes had higher scores on the CES-D at FU. Change on the CES-D at FU was not predicted by baseline AMT score, or the changes in AMT scores or mood ratings that follow the MI.

Discussion

The aim of this study was to examine if autobiographical memory specificity was a possible cognitive marker for depression in older adults. As expected from the literature about the effects of aging on memory, older adults retrieved less specific memories than younger; 48% in our sample compared to 70% in younger adults (Williams, 1966). However, our hypothesis that older remitted depressed individuals (RD) would recall fewer specific autobiographical memories than never depressed elders (ND) was not confirmed. This was even more surprising since 19% of the RD group had a CES-D score above 22, which indicates that a number of participants suffered from subthreshold depression.

Age was the only predictor of specificity in the two groups. Means in both groups were similar ($M = 4.86$, $SD = 2.37$ in the ND and $M = 4.70$, $SD = 2.33$ in the RD group) and significantly lower than the means of middle aged euthymic RD patients ($M = 5.3$, $SD = 2.8$) (Spinhoven et al., 2005), middle aged depressed patients ($M = 5.2$, $SD = 2.2$) (Hermans et al., 2004), and adolescent psychiatric patients ($M = 5.8$, $SD = 2.4$) (Swales, Williams & Wood, 2001).

These results can be explained in several ways. The first one with regard to the effect of age is that a floor-effect is reached. With only ten observations the AMT may not be sensitive enough to differentiate between the decline in specificity which is part of normal aging of the episodic memory and additional decline due to depression. A suggestion for future work is to adapt the AMT for the use with elderly by increasing the number of cue words. Another possibility is increasing the stress under which participants have to perform by allowing less time to come up with a memory. This is

a based on the assumption that the performance on the AMT may be accounted for by executive functioning (Dalglish et al., 2007). However, alternative measures such as the Autobiographical Interview (Levine et al., 2002) might prove to be a more valid instrument for the use with seniors. A second interpretation is that our results support Williams's theory (1996) that emotional factors may affect retrieval in the same way as structural changes caused by aging do. Hence, in late life, normal aging effects on the episodic memory system cannot be differentiated from the detrimental effects of depression. These changes in functioning could happen as early as adolescence (Park et al., 2002) and remain stable over time. In schizophrenia research, a similar conclusion has been drawn. After the onset of schizophrenia, cognitive deficits were found to be stable over time (Rund, 1998). Whether or not the impairment caused at an earlier age is reversible is not yet clear. Teasdale et al. (2000) reported an increase of specificity after a Mindfulness-based Cognitive Therapy for depressed patients in remission. In another study, older depressed patients became more specific after practice in autobiographical memorizing (Serrano, Latorre & Gatz, 2004). Results of both studies indicate that at least better use of the remaining faculties is possible.

Lastly, finding no difference between ND and RD adults is also in accordance with the results of Kuyken and Dalglish (1995), who found no differences in autobiographical memory specificity between ND and RD individuals. They suggested that overgenerality might normalize on recovery. Yet, their sample was small ($N = 33$), and their results have not been replicated by other researchers.

Our second question concerned the effect of an induced mood on the AMT in RD and ND older adults. To study the possible practice effects we compared the effects of a neutral with a sad MI in the ND controls. First, we found no effect of repeated administration of the AMT in a single test session. Neither did we find a differential effect of the two conditions on the AMT. Next, we compared the effects of a sad MI on the AMT and mood between ND and RD individuals. There were no differences in the effects of the MI on the AMT or on mood between the two groups. Furthermore, the MI did not affect the AMT in either group, indicating that, contrary to the results of MI experiments in younger samples (Yeung et al., 2006; Svaldi & Mackinger, 2003), memory specificity in older adults, regardless of their clinical history, is not affected by a change in mood state. In the light of our first result, this is not surprising.

The second part of our study was directed to investigate the power of the AMT in predicting changes in depression symptomatology in RD individuals. As expected (Judd et al., 1998), the experience of previous depressive episodes was a strong predictor of change in depression severity. Baseline AMT score, changes in AMT and mood after a negative MI were not prognostic.

We conclude that in adults aged 55 and older, performance on the AMT is not a marker for vulnerability for depression, nor can it predict changes in depression symptomatology. Finding no difference in AMT between the ND and the RD individuals, the latter result stands to reason. Besides, two other studies also concluded

that AMT scores were not predictive of either the course of depression (Raes et al., 2006) or of relapse/recurrence of depression (Spinhoven et al., 2006).

This study had a number of limitations. With regard to the first part of the study, the control group was recruited among acquaintances of university staff and students, and was therefore much higher educated. However, this selection should have maximized the difference between the two groups. On the other hand the control group was slightly older which could have minimized the difference. No other memory tasks were administered; hence the two groups could not be compared on other correlates known to be related to aging. Executive control and some memory functions such as episodic memory deteriorate with age (Levine et al., 2002; Siedlecki et al., 2005; Winthorpe & Rabbitt, 1988), but are also consistently found to be impaired in depressed and RD individuals (e.g. Burt, Zembor, & Niederehe, 1995; Ilsey, Moffoot, & O'Carroll, 1995; Fossati, Coyette, Ergis, & Allilaire, 2002; Raes, et al., 2006; Spinhoven et al., 2006). A limitation of the second part of our study is the lack of data on the incidence of MDD between MI and the 14 months FU and the lack of assessments of depressive symptomatology during the FU period. More individuals may have suffered a relapse than the three at 14 months FU. Consequently our results pertain only to the level of depressive symptoms experienced by the participants at MI and 14 months FU.

Our study had the following merits. First, the AMT is much less studied in older than in younger adults. Second, performance on the AMT was compared between clinical and healthy older adults. Third, none of the individuals was currently depressed, which allowed us to examine if performance on the AMT could be a function of current mood state. Fourth, administration of the AMT twice within a single test session enabled us to examine test-retest effects. And finally, the second part of our study had a longitudinal design allowing us to conclude that performance on the AMT is not a predictor of changes in the level of depressive complaints in older adults who responded to the CWD course. In fact, our study results indicate that it is unwarranted to conceptualize performance on the AMT as a marker for vulnerability for clinical depression in older adults.

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6

General discussion

General Discussion

In this thesis the effectiveness of the Coping with Depression (CWD) course for depressed older adults living in the community was investigated. The course was developed by Lewinsohn and Clarke (1984) in the United States of America as a curative outreach program for adults with unipolar depression. Adaptations followed for other populations with unipolar depression known to be hard to reach (Cuipers 1998a). In the mid nineties of the previous century, the course was adapted for the Dutch community living senior and implemented in the prevention arm of the mental health care system. Most of the prevention departments offer the course regularly to seniors with mild depression.

Efficacy studies in which the course was carried out in controlled research settings showed medium effect sizes (Cuipers, 1998b). The main objective of this research was to study whether the course was also effective in the usual care setting when carried out by the typical community staff to consumers of community mental health services. To ensure this end the study was embedded in the procedures used by the prevention departments of 13 community mental health centers (CMHCs) throughout the Netherlands. A total of 318 participants in 43 courses took part in the study.

In the first section of this chapter, the main results will be reviewed starting with the characteristics of the participants that were accepted for the course, followed by a summary of the four different studies. In the second section, the results will be discussed in the perspective of the existing literature, followed by a discussion on possible improvements of the course. The limitations and strengths of this study will be considered in section 4. In section 5, the clinical implications of these findings for the practice of the current community mental health care system in the Netherlands will be discussed. This chapter will conclude with suggestions for future research (section 6).

1. Results

1.1 Characteristics of the participants

The course participants were non-demented community-living individuals aged between 55 – 85. About half of the participants were so called ‘young elderly’, aged 55 – 64, the oldest old (75 – 85 years of age) formed a minority of 15%. Two third of the sample was female, which is in keeping with figures reported in other studies and reflects the fact that depression occurs twice as often in females than in males (Blazer et al., 1994; Weissman & Olfson, 1995), a pattern that persists in old age (Sonnenberg, Beekman, Deeg & van Tilburg, 2000). About half was living alone, 43% of whom was widowed. In this sample, a third had a low level of education: primary school only or lower vocational training. A medium high level of education was achieved by 40%, and 27% had taken tertiary education (college or university). Compared to the cohort this sample belongs to (Central Bureau of Statistics, 2007), the course attracted higher educated participants. Two thirds of the sample reported to suffer from at least one chronic medical condition. The features of this sample are characteristic for

individuals vulnerable for depression (Beekman, et al., 1997b; Cole & Dendukuri, 2003).

The course is considered to be an outreach program and it is prevention policy to set a low threshold for enrollment. Consequently, the course participants varied widely in their level of depression between only slight symptoms to being severely depressed. The level of depressive symptoms was high, the mean sum score on the CES-D was 25.9 (*SD* 9.7), and 85% had a CES-D score ≥ 16 which indicated the presence of a clinically relevant depression. At the time they were enrolled, 42% met the criteria for a DSM diagnosis of major depression (MDD), and 42% had an anxiety disorder. The double diagnosis MDD-Anxiety disorder was given in 20%, which reflects that anxiety and depression often occur together. Only 14% had never experienced a major depression. Late onset depression (first episode after the age of 55) was rare and reported by 17 (5%) participants, which is similar to the proportion found in the Amsterdam Study of the Elderly (AMSTEL) study (Schoevers et al., 2000). Fifty percent of the participants were treated for their depression with antidepressants or tranquilizers. These percentages demonstrated that the individuals selected by the course leaders did form part of the target group. It also indicates that the level of suffering in this group was high. The mental health status of this sample meant that the elders in this study resembled a sample of psychiatric outpatients more than a community sample. Interestingly, only 15% of the participants had never sought help for their depressive complaints before.

1.2 Study 1: Criterion validity of the CES-D

In most but not all community mental health centers (CMHCs), the level of depression of the applicants is assessed in an interview based on a questionnaire for current symptoms of depression like the CES-D (Radloff, 1977) or the Geriatric Depression Scale (GDS; Yesavage et al., 1983) and a checklist covering depression history and treatment - current and in the past. At the time this research project started, the CMHCs were advised by the Trimbos institute to use the CES-D (Radloff, 1977). It was therefore of practical interest to analyze the validity of the CES-D as a screening instrument. The Mini International Neuropsychiatric Interview (M.I.N.I.; (Overbeek, Schruers & Griez, 1999; Sheehan et al., 1998) was used to establish "gold standard" diagnoses including MDD and minor depressive disorders. Receiver operating curve (ROC) analysis showed that the scale's operating characteristics were satisfactory. The CES-D was moderately accurate in detecting MDD and minor depression in this group of self-referred elderly with (a history of) depression. For the detection of MDD, the cut off score of 25 showed the optimal balance between sensitivity (85%) and specificity (64%) and positive predictive value (63%) for the prediction of MDD. Participants with a CES-D ≥ 25 and the diagnosis MDD (true positives - TP) were likely to have higher anxiety levels and more comorbid anxiety disorders than the elders that did not meet the criteria for a major depression. These so called false positives (FP) were characterized by more previous depressive episodes than TPs.

1.3 Study 2: Results of the effectiveness study

The immediate effect was analyzed with a randomized controlled block design to ensure that participants with and without a MDD were divided equally over the course (intervention group) and the waitlist. For ethical reasons, the participants in the control condition ($n = 58$) were not kept waiting for treatment until the intervention group ($n = 52$) had completed the follow-up 14 months later. Therefore, to study the long-term effect a naturalistic design was used and it was limited to the first 14 months after the conclusion of the course. Complete datasets of 42 subjects in the intervention group were present for analyses of the long-term effect.

The two main findings were that (a) the course was effective for older adults with and without a current MDD and (b) the level of depressive symptoms reached at post-treatment was maintained during the following year. Compared to the individuals in the waitlist condition, the course participants improved significantly on the CES-D. The overall between effect size (ES) was 0.49; for the non-MDD ES was 0.30, and for the MDD ES was 0.92. No spontaneous improvement during the ten week waiting period on any of the outcome measures was found. The two groups did not differ in the use of antidepressants and all participants who followed concurrent psychotherapy had been excluded from the study. Therefore, the observed changes can be attributed to following the course.

A third important result was the level of depression that was reached at post-treatment. Originally 85% scored above 16 on the CES-D, at the conclusion of the course this percentage had dropped to 62%. Although a positive result, a high proportion of elderly remained with a clinical relevant amount of depressive symptoms.

Satisfaction with the course was high. Participants rated the course with a 7.4 ($SD = 1.2$) on a scale from 1 to 10 ("good"). On the question if they would recommend the course to someone else, 78% replied 'Yes' and 20% said 'Maybe'. Dropout in the sample studied here was a mere 15% and the mean number of sessions attended was 9 ($SD = 1.0$). These results indicate that the course is fulfilling its aim of being an acceptable, low-threshold intervention. At the conclusion of the course one third (33%) had the opinion that the course had helped a lot, 56% said it helped a bit and 11% did not find the course beneficial. The need of a continuation of the course, which was expressed by nearly 44% of the participants, was unrelated to the diagnosis at pre-treatment or to the decrease on the CES-D during treatment.

In sum, the study showed that it is a valuable intervention, well accepted by the target group. The course was beneficial for all, regardless of clinical diagnosis. However, the post-treatment level of functioning indicated that for 62% of the participants treatment should be continued.

1.4 Study 3: Predictors of outcome

The second major question of this field study concerned the prognostic characteristics of the participants of the course for immediate as well as long-term effects. A total of 232 participants returned the questionnaires of the last measurement (14 months FU) and were reached for the diagnostic interview. A wide variety of demographic, clinical, psychosocial and treatment factors that may have been relevant for indicated prevention and treatment of major depression were used to examine their contribution to the immediate and maintenance effect.

Random coefficient regression models were used to examine in one model the initial depression severity as well as the change over time. Group membership was also examined as a prognostic factor. First, the analyses showed that group membership was irrelevant for the variation in treatment outcome, i.e., there were no CWD groups that produced significantly higher or lower outcomes than other groups. The standardized format of the course seemed to ensure that the benefits of attending do not depend on individual differences between group leaders or differences in group interactions. Second, greater immediate improvement was predicted by four variables: (a) current MDD, (b) a high level of anxiety, (c) less previous episodes, and (d) a higher level of education. Third, the level of depression reached at post-treatment was maintained over the next 14 months and there was hardly any variation in this mean trajectory. No baseline variables predicted the change between post-treatment and 14 months FU.

To analyze the long-term effectiveness of the CWD course in preventing a new depressive episode, a subgroup of 180 non-MDD participants at risk for developing a new episode (indicated prevention) at pre-treatment was selected. At risk were those with a CES-D score ≥ 16 or at least one previous major depressive episode. At 14 months FU 129 complete datasets were available. The incidence of a MDD in this group was small ($n = 8$).

To summarize the results of this study: First, the course was beneficial for both non-MDD as well as MDD participants. Three clinical variables were found to be statistically significant predictors of immediate outcome. Second, the level of depression symptomatology reached at post-treatment was maintained over the next 14 months, indicating that the course was enough treatment for those with a post-treatment score below 16.

1.5 Study 4: Specificity of Autobiographical Memory in older adults

Autobiographical memory specificity is considered a possible marker for depression. It is often measured with the autobiographical memory task (AMT; Williams & Broadbent, 1986). The studies are predominantly carried out with middle aged samples, but hardly in older adults without brain damage or cognitive dysfunction (see for a review van Vreeswijk & de Wilde, 2002). Our study had two parts. In the first part, scores on the AMT of never depressed and remitted seniors were compared with

each other. A second question in this part of the study was the separate effect of mood itself on the AMT. This question was addressed with a mood induction (MI) experiment. Both the never depressed (ND) seniors and the remitted depressed (RD) were subjected to this experiment. The AMT was administered before and after the MI, which raised the question about the existence of practice effects.

The ND group consisted of 58 individuals and the RD group was formed by 63 participants who responded to the CWD course (i.e., at the conclusion of the course they did not feel depressed nor did they meet the criteria of MDD). To examine possible practice effects 26 of the participants of the ND control group were randomly assigned to a neutral mood condition, the other 32 ND individuals were exposed to a sad music condition. Comparison of the two groups showed that there were significant differences in mood ratings between the two groups, but the changes in the AMT scores did not differ significantly. Hence, there were no practice effects.

All 63 RD participants were subjected to the sad MI. Likewise the changes in the AMT scores and in mood of the RD group ($n = 63$) and the ND group ($n = 32$) were compared to examine differential effects of an induced sad mood between the remitted and never depressed individuals. The research question of the second part of the study concerned the qualities of the AMT as a prognostic variable for relapse. The course of depressive symptoms was assessed in 60 RD seniors over a 14 months follow up period.

As expected, all individuals retrieved fewer specific memories than the norm for middle aged individuals. However, contrary to our expectations, no differences in AMT were found between course participants and ND controls. The results of the MI experiment showed that a despondent mood was induced in both groups. However, AMT scores were not affected by the MI in either group. Changes in the level of depressive symptoms at the 14-month FU were not predicted by baseline AMT score, or the changes in AMT scores or mood ratings that followed the MI. Our findings suggest that in late life effects of normal aging on episodic memory, as measured by the AMT, cannot be differentiated from the possible detrimental effects of depression on AMT.

2. Discussion of the results in the perspective of the literature

The CWD course we studied was the version available for non-demented community living seniors. The individuals who enrolled were the younger old; 50% of the participants were between 55 and 64 years old, another 35% between 65 and 74. The older old of 75 and older formed a minority of 15 %. Furthermore, the participants were mostly white, born and bred in the Netherlands, and relatively highly educated. Also the majority had sought help in the past for their depression and had received some form of treatment. The recruitment strategies failed in attracting the therapy shy, non-white, less educated and the older-old depressed individuals. This is a problem Karel and Hinrichsen (2000) have identified in their article on the treatment of depression in late life. In most of the studies showing psychotherapies to be effective

in the treatment of depression in older people, the participants in were relatively healthy, white, well-educated community living adults in their 60s and 70s.

With regard to depressive symptomatology, we found a mean score on the CES-D of 25 (9.6), which is well over the recommended cutoff score of 16. In a non-clinical sample a score ≥ 16 is an indication of a clinically relevant depression. In our sample a score ≥ 16 not necessarily meant a clinical diagnosis of a minor or major depression. A cutoff score of 25 yielded a better balance between sensitivity and specificity. The older adults with a CES-D score ≥ 25 , but without a major depression (false positives) were characterized by more previous depressive episodes than the true positives. This suggested that the combination of a high score on the CES-D with a history of depressive episodes falsely points to a current depression. However, it can also be understood as an indication that either a new depression is developing or that the last depression is not fully in remission.

Although 25 was the optimal cutoff score for detecting the presence of a major depression, one should not ignore the observation that a CES-D score ≥ 16 is still a sign of serious distress. Or differently stated: when the CES-D decreases below 16 the participant is probably recovered. A score ≥ 16 could be a warning that either a new depression is developing or that the last depression is not fully in remission. A score ≥ 25 is an indication that a minor or major depression could be present.

Because the aim of the course was prevention as well as treatment, its effectiveness in preventing a major depression will be discussed separately from the effectiveness of the course as treatment of major depression.

2.1. Prevention

In the non-MDD subgroup lowering the level of depressive symptoms implies a better chance to stay in remission or to avoid a first depression developing. The effect size (*ES*) of 0.30 for the non-MDD group was comparable to the mean *ES* (0.24) of prevention programs for older subjects at risk for the development of depression (Jané-Llopis et al., 2003). A recent meta-analysis of psychological treatments of subthreshold depression by Cuijpers, Smit and van Straten (submitted), concluded that psychological interventions combined with care as usual can effectively reduce the incidence of a major depression 12 months later. In agreement with this conclusion, we found that 14-months after the conclusion of the course the symptom level reached was maintained during that time and only eight of the 129 persons who were at risk when they started the course, had a MDD 14 months after the conclusion of the course. Although our study lacked a control group to compare the long-term effects with, it seems justified to see these results as an indication of a successful prevention of recurrence or incidence for the year following the course. The long-term protective effect of cognitive therapy with younger adults with residual symptoms was shown in a series of studies (Fava, Grandi, Zielesny, Rafanelli & Canestrari, 1996; Fava et al., 1994; Fava, Rafanelli, Grandi, Canestrari & Morphy, 1998). They found a decrease in residual symptoms and a lower rate of relapse in the CBT intervention group. In the

first two years after the intervention, the difference was small but at four years follow up the effect was significant, after which it tapered off.

So in general, the results of our study fit in with other studies that found that group treatment for older adults can have a protective effect, just as it can have for younger adults. However, prevention should be an ongoing effort because its effect may wear off as Fava et al. (1998) showed in younger adults. Becoming older also means an increasing chance of bereavement, physical disability, and sleep disturbance. These are all significant risk factors for the incidence of depression (Cole & Dendukuri, 2003). Just like patients with chronic medical conditions, those with a past of major depressive episodes should receive regular check ups regarding their level of depression symptomatology.

2.2. Treatment

As in the non-MDD group, the level of depressive symptoms in the MDD group decreased significantly as well. The effect size in the MDD group was large (0.92), and comparable with effect sizes reported in studies with older subjects with clinically relevant levels of depression (Cuijpers, 1998c; Cuijpers, van Straten & Smit, 2006; Engels and Verwey, 1997; Scogin and McElreath, 1994). In this subgroup 94 (73%) of the 128 participants were interviewed at 14-months FU, of these 70 (74%) were in remission. A probably flattered result, because the 36 individuals not reached may still have been depressed and avoided being interviewed. Taking these individuals into account, remission ranged between 26% - 54%. Losing track of these participants certainly also pleads for continuing care for the participants with a MDD. One of the participants that met current criteria for MDD during the FU interview expressed that she was not aware that she could contact her CMHC again when she was still feeling depressed. She seemed to be under the impression that the CWD course was all the psychological treatment that could be offered

2.3. Characteristics that predicted outcome

In our prognostic study we found four variables that predicted greater immediate improvement: (a) current MDD, (b) a high level of anxiety, (c) less previous episodes, and (d) a higher level of education. The first two predictors reflect the finding that in general those individuals with the highest levels of symptom distress will show the greatest reduction (Garfield, 1994). Our finding that treatment response was negatively affected by the number of previous episodes is in line with the conclusion of Hamilton and Dobson (2002), who reported in their review that in patients suffering from acute MDD, treatment response is negatively affected by prior depressive episodes or chronicity. However, in our study the size of the effect of this variable on the outcome was clinically meaningless and doesn't warrant selection.

In the literature, findings on the relation of education level to treatment outcome are inconclusive (Garfield, 1994). Interestingly, Steinmetz et al. (1983), who looked for client characteristics that predicted the outcome of the CWD course in adults with

unipolar depression, found that reading ability predicted a significantly better treatment outcome. They hypothesized that reading ability is important because the program uses a lot of written material. In the same vein of thinking, we postulate that for those with more years of formal schooling the educational format of the course is a familiar way of learning. However, this explanation does not fit in with our finding that the dropouts were also higher educated in comparison to the participants who completed the course.

2.4 Is performance on the AMT a marker for depression in older adults?

Our findings suggest that in late life, normal aging effects on episodic memory as measured with the AMT cannot be differentiated from the possible detrimental effects of depression on AMT. There are several ways to explain these results. The first one with regard to the effect of age is that a floor-effect is reached. With only 10 observations the AMT may not be sensitive enough to differentiate between the decline in specificity which is part of normal aging of the episodic memory and possible larger decrease due to the cumulative effect of aging and depression. A suggestion for future work is to adapt the AMT for the use with elderly by increasing the number of cue words, or increasing the stress under which to perform by allowing less time to come up with a memory. The latter is based on the assumption that the performance on the AMT may be accounted for by executive functioning (Dalgleish et al., 2007). Moreover, alternative measures such as the Autobiographical Interview (Levine, Svoboda, Hay, Winocur, & Moscovitch, 2002) might prove to be a more valid instrument for the use with seniors. A second interpretation is that our results support Williams's theory (1996) that emotional factors may affect retrieval in the same way as structural changes caused by aging do. Hence, in late life, normal aging-effects on the episodic memory system cannot be differentiated from the detrimental effects of depression. These cognitive changes in functioning due to depression could happen as early as adolescence (Park, Goodyear & Teasdale, 2002) and remain stable over time. In schizophrenia research, a similar conclusion has been drawn. After the onset of schizophrenia, cognitive deficits were found to be stable over time (Rund, 1998). Whether the impairment caused at an earlier age is reversible or not, is not yet clear. Teasdale et al. (2000) reported an increase of specificity after a Mindfulness-based Cognitive Therapy for depressed patients in remission. In another study, older depressed patients became more specific after practice in autobiographical memorizing (Serrano, Latorre, Gatz & Montanes, 2004). The results of both studies indicate that at least better use of the remaining faculties is possible.

In our study, there were no effects of the MI on the AMT scores in either the ND or the RD group. This indicates that, contrary to the results of MI experiments in younger samples (Yeung, Dalgleish, Golden & Shartrau, 2006; Svaldi & Mackinger, 2003), memory specificity in older adults, regardless of their clinical history, is not affected by a change in mood state. In the light of our first result, this is not surprising.

The second part of our study was directed to investigate the power of the AMT in predicting changes in depression symptomatology in RD individuals. Not surprisingly (Judd et al., 1998), previous depressive episodes proved to be a strong predictor of change in depression severity. Whereas, AMT scores, changes in AMT scores and mood ratings after a negative MI were not prognostic.

We conclude that in adults aged 55 and older, AMT scores are not a marker for vulnerability for depression, nor can they predict changes in depression symptomatology. Finding no difference in AMT between the ND and the RD individuals, the latter result stands to reason. Besides, two other studies also concluded that AMT scores were not predictive of either the course of depression (Raes et al., 2006) or of relapse/recurrence of depression (Spinhoven et al., 2006).

To summarize the results:

Although not all had a MDD when enrolling into the course, the vast majority had a lifetime major depressive disorder and a high level of depressive symptomatology. The mean score on the CESD in both groups was ≥ 16 level. Thus, in both subgroups, a decrease in depressive symptomatology was the desired outcome, and we can conclude that the course succeeded in reaching this goal. However, the clinical relevance of the course turned out to be modest. The proportion of individuals with a CES-D score below cut point had increased with a mere 23%. Other large studies both American and European in which community living seniors with minor and major depression were targeted have found similar results (Ciechanowski et al., 2004; Unützer et al., 2002).

The clinical significance of the four characteristics that predicted immediate outcome was small. Also no specific characteristics were found that predicted outcome at the long-term. For current clinical practice this means that there is no reason to change the present way of selecting participants. However, the large proportions of participants ($\pm 60\%$) with a post-treatment score ≥ 16 at the end of the course, forms an indication that the course may not have been sufficient for a substantial part of the course participants.

3. Could the course be more effective for the participants reached in our study?

The course is a brief, broad multi ingredient intervention. The question arises if this format forms its strength or that the course would be more effective with fewer ingredients. In a recent meta-analysis of psychological treatment of late-life depression (Cuijpers, et al., 2006) no differences in effectiveness were found between the multi-ingredient CBT and other types of psychological treatment. Included in the meta-analysis were behaviour therapy, CBT, goal-focused group therapy, interpersonal therapy, life review, problem solving therapy, and reminiscence. Some of these treatments focus more on the acquisition of one skill or technique. So, in terms of effectiveness, the CWD course it is not likely to improve by reducing the number of ingredients or changing the contents.

A second important finding was that evaluation of the course by its participants is good. The course was designed as a low threshold intervention that would be attractive for people who are shy of psychological treatment. The value of non specific factors such as belonging to a group whose members have similar problems could play an important role in achieving this.

The conclusion is that for this group of relatively young, healthy and highly educated participants the course needs no major changes. The many different components make the course a low threshold and widely applicable intervention as there is something in it for everybody. The course could be a first experience of what psychological treatment has to offer and how individual problems could be targeted. The familiarity with different skills and techniques can help in selecting an intervention or treatment either the next time a person shows signs of becoming more depressed or when further treatment is advisable. The above sketches the use of the CWD course in a stepped care model. It would be interesting to study the role of education to gain a better understanding how it is related to dropout as well as better outcome. At the present, a recommendation to adapt the course for the less educated participant cannot be made on the basis of our contradicting results.

4. Limitations and Strengths

4.1 Limitations

We did not administer the M.I.N.I. at either post-treatment or at the two months FU measurement. Neither did we use a structured retrospective interview to establish relapse or recurrence during 14 months since the course finished. This was a drawback in all studies except the one on the criterion validity of the CES-D (chapter 2). We could not predict the effect of the course in preventing a MDD for those at risk at post-treatment or during the follow up period. Hence, our results pertain mainly to the level of depressive symptoms experienced by the participants. In order to classify the clinical level of depression, we used the cutoff score of the CES-D to describe the individual course of depression over time, a method also described in other studies (Beekman et al., 1995).

In the controlled study, a large proportion of elders were not willing to be randomized and insisted to participate in the course of their choice. This could have resulted in selection bias threatening the external validity of the results of the effectiveness study (chapter 3). However, comparison of the elders that were randomized with those who refused randomization showed that there were no significant differences between these two groups in socio-demographic characteristics or mental health.

Another limitation is the lack of a control condition for the follow-up part of the study. This naturalistic follow-up does not allow a definitive conclusion that the course of depression during the follow-up period may be related to the intervention. Also, follow-up was only conducted in the first year following the course. Longer FU periods of the treated elders are needed to know how long the protection holds.

The study on autobiographical memory also had some limitations. First, the control group was recruited among acquaintances of university staff and students, and was therefore much higher educated than the experimental group. However, this selection should have maximized the difference between the two groups. On the other hand the control group was slightly older which could have minimized the difference. Second, no other memory tasks were administered; hence the two groups could not be compared on other correlates known to be related to aging and depression. Executive control and some memory functions such as episodic memory deteriorate with age (e.g. Levine et al., 2002; Siedlecki, Salthouse, & Berish, 2005; Winthorpe & Rabbitt, 1988), but are also consistently found to be impaired in depressed and RD individuals (e.g. Burt, Zembar, & Niederehe, 1995; Ilsey, Moffoot, & O'Carroll, 1995; Fossati, Coyette, Ergis, & Allilaire, 2002; Raes, et al., 2006; Spinhoven et al., 2006). In a recent study Dalgleish et al. (2007) concluded that the AMT can be seen as a measure of executive functioning.

Because of the lack of data on the incidence of MDD between the mood induction and the 14 months FU and the lack of assessments of depressive symptomatology during the FU period, we could not be certain that not more individuals had suffered a relapse than the three individuals at 14 months FU. And our results pertained only to the level of depressive symptoms experienced by the participants at the MI and 14 months FU.

4.2 Strengths

The strength of the study in general is that this empirically supported depression intervention program which is provided by the mental health care system on a national scale was studied in its natural setting. The effectiveness was studied with a randomized block design. By doing so the desirable features of both efficacy and effectiveness research were incorporated, since it was prospective, randomized, and focused on a replicable intervention. Besides, enough participants were included to detect a medium to large between-group difference in effectiveness.

To our knowledge, this is the first study that examines prognostic factors of outcome of this type of group intervention in the way it is utilized by the mental health care system. The sample studied was heterogeneous. Participants differed in level of depression symptomatology, unipolar depression diagnoses, history of depression, and in comorbid anxiety disorders. Most of the participants of the course who fulfilled the inclusion criteria participated in the study and stayed in the study until the last measurement was administered. The size of the sample studied was large and a wide range of variables was examined for their prognostic value. The long follow up period allowed us examination of the clinical status (presence of MDD) a good year after enrolment into the course. Also, our sample of 46 intervention groups was large enough for the use of random coefficient regression modeling (RCRM) (Kreft & Leeuw de; 1998), and justified our conclusion that the variance due to group differences can be ignored. Furthermore, the use of RCRM as method of analyses had

the advantage that in one model, the influence of predictors on the initial depression severity as well as the change over time could have been analyzed. This allowed for a more comprehensive understanding of the effects that the different predicting factors have on the initial level of depression symptoms, response to the CWD course and the maintenance of the achieved improvement.

The study on autobiographical memory in older adults had the following merits. First, the AMT is much less studied in older than in younger adults. Second, performance on the AMT was compared between clinical and healthy older adults. Third, none of the individuals was currently depressed, which allowed us to examine if performance on the AMT could be a function of induced mood state irrespective of depression symptomatology. Fourth, administration of the AMT twice within a single test session enabled us to examine test-retest effects. And finally, the second part of our study had a longitudinal design allowing us to conclude that performance on the AMT is not a predictor of changes in the level of depressive complaints in older adults who responded to the CWD course. In fact results of our study indicate that it is unwarranted to conceptualize performance on the AMT as a marker for vulnerability for clinical depression in older adults.

5. Implications for the community mental health services in the Netherlands that provide the CWD course

The high proportion of elders with an acute MDD or anxiety disorder was a surprise for the prevention workers. Firstly, this meant that by accepting elderly who meet the criteria for a psychiatric disorder, the prevention departments crossed the line between treatment and prevention. In itself this is not a problem: after all, the course was developed as a group treatment for unipolar depression. However, when offering the course embedded in the official mental health care system and knowing that such a high proportion of the participants will have a psychiatric disorder, proper clinical diagnostics should be part of the intake. To investigate whether the course provided sufficient treatment, the mental status of the participants should be known exactly beforehand as well as at the conclusion of the course. At the present performing clinical diagnostics are reserved for the treatment departments. There are good reasons to make these distinctions, but bearing the results of this study in mind, this policy should be reconsidered.

Secondly, the high number of participants with a DSM-IV disorder implied that many participants did not seek treatment unless they were greatly distressed. Although information about the availability of the course is regularly sent to primary care centers and 86% had sought treatment currently or in the past, only 15% of the participants reported that their GP had suggested that the course might be helpful. Because the GP is the first health professional depressed elders will turn to, efforts to increase information about the course should be a priority for mental health care, since the course is indeed low threshold and has been accepted well by the participants.

A related issue is that many seniors with mild depressive symptoms, for whom this course seem so well suited, have not been reached. At the Trimbos institute, where the Dutch adaptation of the course was developed, it was estimated that a mere 700 elders enroll per year (oral/ unpublished information). Considering the great numbers of seniors at risk for a major depression (see Chapter 1), more effort is needed to reach them and to do so repeatedly.

For people seeking help for their depression, the CWD course in this form could also be fitted in a stepped care framework as an intervention of mild intensity. Stepped care models have been propagated recently as a way to maximize efficiency of treatment by stepping up the intensity of the intervention according to individual need. Interventions of mild intensity are tried first and depending on the effect, treatment is continued or stopped (Davison, 2000; Haaga, 2000; Sobell & Sobell, 2000). In such a framework, the CWD course could have been preceded by a minimal contact intervention (Willemse, Smit, Cuijpers & Tiemens, 2005) to alleviate the depressive symptoms. After further diagnostics in persons for whom the course may not have been sufficient, further treatment can be started. A model such as this would involve a less rigid separation between prevention and treatment departments. At the present, a trial is conducted testing the feasibility of a generic stepped care program for elderly living in the community who are at risk for developing anxiety or depression (van 't Veer-Tazelaar et al., 2006). Stepped care programs with problem solving treatment have successfully been carried out with elders with major depression or dysthymia (Unützer et al., 2001).

The results of this study and possible changes in the current protocol were discussed with the professionals involved. The feed-back consisted of the following points:

1. This study provided scientific evidence that the course was beneficial for non-MDD and MDD participants.
2. There is no need for further selection beyond what is done now.
3. The endpoint reached depends on the severity at the beginning.
4. Clinical diagnosis showed that 60% met the criteria of one of the following DSM-IV disorders: a major depressive episode, an anxiety disorder or both.
5. The mean sum score on the CES-D, which measures the level of depressive symptoms in the past week, resembled the mean found in samples of psychiatric outpatients.
6. A standardized measure such as the CES-D should always be administered before and at the conclusion of the course.
7. A cut off score of 16 is an indication of a high level of depressive symptomatology and indicates that the participant is at risk for a (new) episode. Further diagnostics are strongly recommended.
8. A participant with a CES-D score ≥ 25 definitely needs further diagnostics as the possibility that he/she suffers from a major depression is 63%.

9. Furthermore, for the group suffering a MDD at pre-treatment, the magnitude of the change can also be an indication whether the course was the right intervention. Changes smaller than 4 points are not reliable, but can be due to fluctuations in the CES-D.
10. What can be expected from the course should be clearly communicated both to the potential participant as well as to referring health professionals (GP's, social workers and other primary care professionals). Especially the expectations for those with a major depression should be realistic.
11. The broad inclusion criteria and low threshold set by the prevention department result in a very heterogeneous group of elders. Although nearly all had a lifetime diagnosis of major depression at the time of enrollment, the level of depression symptoms varied widely. A consequence of this policy is that the prevention departments engage in prevention as well as in treatment. This has consequences for responsibilities of the course leaders.

6. Future directions

What about the older adults that do not fit the profile of our sample?

It has taken a long time to shake off Freud's legacy, i.e., the thought that older people lack the mental plasticity to change or benefit from psychotherapy, or that depression is a natural consequence of the increasing number of losses experienced as we age. In the last twenty years it has been shown many times that treatments effective for younger adults with depression were also effective for seniors (see Cuijpers et al., 2006), at least for the younger, white, well educated senior. But what about the very old, or not so well educated or non-white depressed seniors? In the next section I will reflect on these issues.

6.1 Age

Karel and Hinrichsen (2000) have emphasized that studies of effective treatment for the frail elderly have been few, and stressed that these are much needed: the mean age of the Dutch population is increasing and the group of very old will grow accordingly (Central Bureau for Statistics, 2007). It is conceivable that some components of the course are more essential for the oldest old than for the younger old; DeBerry 1989 (in Wetherall, 1998), for instance, concluded that in the treatment for anxiety relaxation techniques were more beneficial than cognitive skills. They may also be gender-specific. In men, for instance, chronicity was associated more with lack of social support, instrumental support, functional disability and cognitive decline than in women (Schoevers et al., 2003). Jané-Llopis et al. (2003) have found in their meta-analysis that programs including competence enhancement had the highest effect sizes regardless of age group; however, for older adults social support proved to be an important component, while programs with behavioral techniques were detrimental for this age group. They have concluded that research is needed to establish which

components of existing interventions are suitable for the oldest old. In a meta-analysis of the effects of outreach programs for late-life depression, one of the predictors for dropout was participation in a cognitive behavioural program (Cuijpers, 1998c). Other predictors for dropout were the percentage of female participants and the number of sessions. The question whether these predictors were age-related was not answered in this meta-analysis.

Currently, internet versions of the CWD course are available. These may well do for the younger old, but may not suit the older old for whom the weekly get-together may be an important factor in decreasing the depressive feelings. Besides, the older old are likely to have to cope with loss of functional ability. Enhancing competence in solving immediate problems is important in enabling people to cope with feelings of loss of control and independence.

Age-related conditions associated with depression are dementia, myocardial infarction and stroke. The Leiden 85-Plus study has shown that dementia precedes depression, but does not accelerate it (Vinkers, Gussekloo, Stek, Westendorp & van der Mast, 2004). The overlap between depression and apathy, possibly an early sign of dementia, is large, and more research is needed to understand the underlying mechanisms. Dementia is an exclusion criterion for the CWD course. Steps have been taken to design or adjust treatment appropriate for this group of older persons and their caregivers. For instance, Teri, Logsdon, Uomoto and McCurry (1997) carried out a controlled clinical trial including behavioral therapy for older patients with dementia and their caregivers, and Miller and Reynolds III (2006) are currently exploring ways in which Interpersonal Psychotherapy, which is also known as an effective therapy for late-life depression, could be modified to better serve the older person suffering from cognitive decline and their caregivers.

The chance to get a myocardial infarction, a heart disease related to depression, is more likely in later life. On the one hand, depression is an independent predictor of cardiovascular diseases such as myocardial infarction, on the other hand major depression often follows myocardial infarction (Frasure-Smith & Lesperance, 2005). Post-myocardial infarction (post-MI) depression increases the risk by 2-2.5 (Melle et al., 2004). Recent studies designed to examine the effects of the treatment of post-MI depression have shown that neither treatment with CBT (Beekman et al., 2003) nor medication with antidepressants (SSRI's) (Melle et al., 2007) improved long-term depression status or cardiac prognosis. Although both major depression and post-MI depression are characterised by sadness and apathy, post-MI depression shows mostly somatic symptoms of tiredness and poor sleep but no feelings of guilt, shame or being worthless. This form of depression is called somatic depression. A similarly disappointing result was found regarding the treatment of depression after a stroke. In about 25% of cases mood disorders occur in the first year after the stroke. These can be treated with either antidepressant medication or psychotherapy. In a Cochrane review of 2004, the authors found insufficient evidence for the advantages or

disadvantages of treatment with antidepressants or psychotherapy (Hackett, Anderson & House, 2004).

6.2 Education and lower social economic status

In our sample, a relatively high proportion of participants, taking into account the age cohort they belong to, were highly educated. This may indicate that the less educated are not reached by the recruitment strategies to the same extent. A reason might be that the idea of taking a course is not appealing because it is too intellectual. A possible alternative in the management of depression could be physical exercise programs. In their meta-analysis, Lawlor and Hopker (2001) concluded that although the studies analysed had important methodological weaknesses, physical exercise did have a positive effect on depression equal to the effect of CBT. For the less educated and individuals with lower social economic status (SES), exercise programs may be more acceptable and attractive. Currently the mental health care institutions in The Hague and Maastricht are offering exercise programs to women with mild depression (indicated depression) from lower-SES. How effective such programs are for this target group has not yet been studied (Meyer, Smit, Schoemaker & Cuijpers, 2006). There is no reason why older depressed people should not be engaged in exercise with the aim of reducing their depression.

Another aspect to consider is the venue of the CWD course. Taking the intervention program to the communities of the target groups may be important in order to avoid the stigma that may be connected with mental health care. Examples are the interventions described below, which were developed for Turkish and Moroccan labour immigrants.

6.3 Ethnicity

The large wave of Turkish and Moroccan labor immigrants in the '60s and '70s of the past century are now becoming part of the senior population. Depression as measured with the CES-D was much higher amongst these groups than in the Dutch seniors (van der Wurff et al., 2004). Economic status of these first generation migrants is poor; their income is low, housing is poor, and they do not speak Dutch. Many suffer health and psychological problems (de Vries & Smits, 2005). They are known to visit their GP, but hardly use the mental health care system. In our sample none enrolled.

As a form of universal prevention the Trimbos institute has developed 'living room' meetings for older women of Turkish or Moroccan background to prepare for old age (de Vries & Smits, 2005). The target groups were reached through Turkish and Moroccan women organizations. The hostess - of the same background- played a key role in the success. The strength of this approach is its low threshold. It can also pave the way to the mental health care system. For younger Turkish or Moroccan women the CWD course was adapted. In a pilot study the course was found to reduce depressive symptoms (Meyer et al., 2006). May be the course could be further adapted for older Turkish or Moroccan women.

A program based on reminiscence or life review was developed for both Turkish and Moroccan elderly with mild depression (indicated prevention). This program was not conducted at a private home but at a local community centre. There were separate groups for men and women. Both the 'living room' program and the reminiscence program are new and their effectiveness has not been studied yet. A characteristic of both programs is that they are carried out in the immediate environment of the participants instead of in one of the mental health care centers. This might be a good approach to reach low-SES groups from Dutch or other ethnic origin (for instance the Hindu-Dutch also form a large ethnic group) as well. This approach of bringing the intervention to the target group, avoids the stigma attached to mental health care centers.

And maybe a more physical approach works here better too. In Amsterdam a fitness program for women of different ethnic background was recently hailed. How effective these are in reaching these populations that are usually difficult to recruit for interventions and how effective they are in reducing depressive symptoms is a matter for future research.

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Summary - Samenvatting

Summary

It has taken a long time to shake off Freud's legacy, i.e., the thought that older people lack the mental plasticity to change or benefit from psychotherapy or that depression is a natural consequence of the increasing number of losses experienced as we age. In the last twenty years it has been shown many times that treatments effective for younger adults with depression were also effective for seniors (see Cuijpers et al., 2006). In this thesis, the effectiveness of the Coping with Depression (CWD) course for depressed older adults living in the community is investigated. The course was developed in the United States of America by Lewinsohn and Clarke (1984) as a curative outreach program for adults with unipolar depression. Adaptations followed for other populations with unipolar depression known to be hard to reach (Cuijpers, 1998a). In the mid nineties of the previous century the course was adapted for the Dutch community living senior and implemented in the prevention arm of the community-based mental health care system. The prevention departments offer the course regularly to seniors with mild depression.

Efficacy studies in which the course was carried out in controlled research settings showed medium size effects (Cuijpers, 1998b). The main objective of this research was to study whether the course was also effective in the usual care setting when given by the typical community staff to consumers of community mental health services. To ensure this objective the study was embedded in the procedures used by the prevention departments of 13 community mental health centers (CMHCs) throughout the Netherlands. A total of 318 participants in 43 courses took part in the study.

First, we studied the criterion validity of the Center for Epidemiologic Studies Depression scale (CES-D; Radloff, 1977), a widely used self-report questionnaire measuring the level of depressive complaints. We looked at the immediate effects and the effects after one year. A second question concerned the prognostic characteristics of the participants of the course for immediate as well as long-term effects. A wide variety of demographic, clinical, psychosocial and treatment factors that may have been relevant for indicated prevention and treatment of major depression were used to examine their contribution to the immediate and maintenance effect. We also investigated whether the specificity of the autobiographical memory was a marker of vulnerability for depression or a factor predicting relapse a year after the conclusion of the course.

Main findings

Characteristics of the participants

The age of the individuals enrolling ranged from 55 – 85. About half of the participants were so called young elderly aged 55 – 64, the oldest old (75 – 85 years of age) formed a minority of 15%. Two thirds were female, 50% was living alone, of which 43% was widowed. In this sample a third had a low level of education: primary school only or lower vocational training. A medium high level of education was achieved by 40%, and 27% had taken tertiary education (college or university).

Summary

Compared to the cohort this sample belongs to (Central Bureau of Statistics, 2007), the course attracted higher educated participants. Two thirds reported to suffer from at least one chronic medical condition. The features of this sample are characteristic for individuals vulnerable for depression (Beekman, et al., 1997; Cole & Dendukuri, 2003).

The level of depressive symptoms was high, the mean sum score on the CES-D was 25.9 (SD 9.7), and 85% had a CES-D score ≥ 16 which indicated the presence of a clinically relevant depression. At the time they were enrolled 42% met the criteria for a DSM diagnosis of major depression (MDD), also 42% had an anxiety disorder. The double diagnosis MDD-Anxiety disorder was given in 20%. Only 14% had never experienced a major depression. Half of the participants were treated with antidepressants or tranquilizers for their depression. The mental health status showed that the elders in this study resembled a sample of psychiatric outpatients more than a community sample.

Criterion validity of the CES-D

The Mini International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998) was used to establish 'gold standard' diagnoses including major and minor depressive disorders. Receiver operating curve (ROC) analysis showed that the scale's operating characteristics were satisfactory. The optimal cut-off score for MDD was 25 (sensitivity 85%, specificity 64%, and positive predicted value 63%). For minor depression (or clinically relevant depression; CRD), the optimal cut-off score was 22 (sensitivity 84%, specificity 60%, and positive predicted value 77%). True positives reported significantly more anxiety symptomatology and more co-morbid anxiety disorders, false positives reported more previous depressive episodes. Subjects scoring ≥ 25 constitute a target group for further diagnostic assessment in order to determine appropriate treatment.

Immediate and long term effectiveness

The immediate effect was analyzed with a randomized controlled block design to ensure that participants with and without MDD were divided equally over the course (intervention group; $n = 52$) and the waitlist ($n = 58$). To study the long-term effect (limited to the first 14 months after the conclusion of the course) a naturalistic design was used.

Older adults in the intervention group showed a significant decrease in depression symptoms. The overall between effect size (ES) was medium (0.49). For people with MDD it was large ($ES_{MDD} = 0.92$) and for those without a MDD it was small ($ES_{no-MDD} = 0.30$). Gains were maintained over 14 months. In the intervention condition 83% had a pretreatment score ≥ 16 on the CES-D, at post treatment 62% still scored ≥ 16 . We concluded that the course was beneficial for participants with mild or severe depression. Also treatment acceptability was high. It should be fitted into a stepped

care protocol that varies intervention intensity according to clinical needs, using the post treatment level of functioning as an indication for the next step.

Predictors of immediate and long-term effect

Of the 317 participants (age 55 - 85 years; 69% female) that took part in this study, 232 were reached at the 14-month FU. A variety of demographic, clinical, psychosocial and treatment factors of possible relevance for indicated prevention and treatment was investigated. Random coefficient regression models and logistic regression models were used to examine their contribution to the immediate and maintenance effect.

The course was beneficial for non-MDD and MDD participants, and the level of depression reached at the end of the course was maintained over the next 14-months. Current MDD, high levels of anxiety, less previous depressive episodes and more education predicted a larger benefit. However, the clinical significance of these predictors was too small to justify further triage. Further treatment should be considered for the participants with a post-treatment score ≥ 16 . Group-membership was not a significant predictor of the variation in effect.

Autobiographical memory

The first aim of this study was to investigate if reduced autobiographical memory specificity (AMS), is a marker for depression in older adults. Secondly, the separate effect of an induced sad mood on AMS was studied. The Autobiographical Memory Task (AMT; Williams & Broadbent, 1986) was administered twice in a single session to 63 remitted (RD) participants and 58 never depressed controls aged 55 – 85 years. A negative mood was induced in all RD individuals. The controls were randomly assigned to a neutral ($n = 26$) or a sad mood condition ($n = 32$). The course of depressive symptoms was assessed in RD individuals over a 14 months follow up period.

All individuals retrieved fewer specific memories than the norm for middle aged individuals. RD and controls did not differ in AMT scores or in their reaction to the mood induction. The mood induction did not affect the AMT. There were no practice effects. Changes in the level of depressive symptoms at the 14-month FU were not predicted by baseline AMT score, changes in AMT scores or mood ratings after mood induction. Our conclusion is that performance on the AMT is not a marker for vulnerability for clinical depression in older adults.

In the general discussion we discussed the findings of the four studies and their clinical implications. We found that, although the CWD course is beneficial for non-MDD and MDD participants and well accepted by them, it is not enough sufficient for the elderly who are having high levels of depression symptomatology. We strongly recommended that before and at the conclusion of the course, the CES-D is administered and that participants scoring ≥ 25 on the CES-D, should be followed up

Summary

with a diagnostic interview to specify clinical diagnosis and appropriate treatment. It should be fitted into a stepped care protocol that varies intervention intensity according to clinical needs, using the post-treatment level of functioning as an indication for the next step.

The recruitment strategies failed in attracting the therapy shy, non-white, less educated and the older-old depressed individuals. This is a problem Karel and Hinrichsen (2000) have identified in their article on the treatment of depression in late life. In most of the studies that showed that psychotherapies were effective in the treatment of depression in older people, the participants in were relatively healthy, white, well-educated community living adults in their 60's and 70's. However, studies of effective treatment for the frail elderly have been few, and in the future studies should focus on effective treatment for the frail older-old, or the elderly with mild dementia. Moreover, it is of great necessity to study how the less well educated or the large group of ethnic elderly can be reached and which interventions are effective for these elderly.

Samenvatting

Het heeft lang geduurd voordat we Freud's erfenis, namelijk dat ouderen de mentale plasticiteit ontbeerden om te kunnen veranderen of te kunnen profiteren van psychotherapie van ons hebben afgeschud. Ook is het idee dat depressie een natuurlijk gevolg is van de toename van de verlieservaringen die horen bij het ouder worden onjuist gebleken. In de afgelopen twintig jaar is het veelvuldig aangetoond dat behandelvormen die effectief bleken voor depressieve volwassenen jonger dan 55 jaar, net zo effectief waren voor ouderen met een depressie (zie Cuijpers et al., 2006). In dit proefschrift is de effectiviteit van de cursus 'Omgaan met depressie' voor zelfstandig wonende ouderen onderzocht. De cursus is in 1984 in de Verenigde Staten ontwikkeld door Lewinsohn en Clarke als een laagdrempelig 'outreach-programma' voor moeilijk te bereiken volwassenen met een unipolaire depressie. De cursus werd aangepast voor andere doelgroepen met depressie, waarvan bekend is dat ze moeilijk toegankelijk zijn (Cuijpers, 1998a). Halverwege de jaren '90 van de vorige eeuw werd de cursus aangepast voor zelfstandig wonende Nederlandse senioren en geïmplementeerd in de preventie-arm van de geestelijke gezondheid zorg (GGZ). Sindsdien wordt de cursus door de meeste preventie afdelingen regelmatig aangeboden aan ouderen met mild depressieve klachten, vaak onder de naam 'In de put, uit de put'.

Met effectstudies waarbij de cursus onder gecontroleerde omstandigheden werd aangeboden, waren middelgrote effecten aangetoond (Cuijpers, 1998b). Het voornaamste doel van dit onderzoek was om te onderzoeken of de cursus ook effectief zou blijken te zijn in de gebruikelijke praktijk van de geestelijke gezondheidszorg (GGZ), waar de cursus wordt gegeven door typische GGZ medewerkers aan de typische gebruikers van de diensten van de GGZ. Om dit doel te bereiken was het onderzoek ingebed in de procedures die de preventie afdelingen van 13 GGZ instellingen in Nederland gebruikten. In principe gold: geschikt voor de cursus, is geschikt voor deelname aan het onderzoek. In het totaal hebben 318 ouderen verdeeld over 43 cursussen deelgenomen aan dit onderzoek.

Eerst hebben we de criteriumvaliditeit van de Center for Epidemiologic Studies Depression scale (CES-D; Radloff, 1977) voor deze steekproef onderzocht; de CES- is een veelgebruikte zelfrapportage vragenlijst waarmee het depressieve klachten niveau van de afgelopen week gemeten wordt. Met deze vragenlijst zijn de directe effecten van de cursus en de effecten na een jaar onderzocht – eerste hoofdvraag. De tweede hoofdvraag van dit onderzoek betrof de prognostische kenmerken van de deelnemers, zowel voor het onmiddellijke als het lange termijn effect. Om dit te kunnen bestuderen zijn een breed scala aan demografische, klinische, psychosociale en behandelactoren die mogelijk relevant zouden kunnen zijn voor indicatieve preventie en behandeling gemeten. We hebben ook onderzocht of de specificiteit van het autobiografische geheugen een kenmerk voor bestaande kwetsbaarheid voor depressie kon zijn of een recidive een jaar na de cursus kon voorspellen.

Belangrijkste bevindingen

Kenmerken van de deelnemers

De leeftijd van de deelnemers varieerde van 55 – 85 jaar. Ongeveer de helft van de deelnemers behoorden tot de zogenaamde jonge ouderen, leeftijd 55 – 64, de oude ouderen (75 – 85 jaar) vormden een minderheid van 15%. Tweederde was vrouw, de helft van de deelnemers woonde alleen en van hen had 43% zijn/haar partner verloren. In deze steekproef was eenderde laagopgeleid, d.w.z. alleen lagere school, lagere ambachtschool of huishoudschool. Een middelhoge opleiding was bereikt door 40% en 27% was hoog opgeleid (hoger beroeps onderwijs of universitair). Vergeleken met de cohort waar deze steekproef toe behoorde (Central Bureau voor Statistiek, 2007), bleek de cursus vooral hoger opgeleide ouderen te trekken. Tweederde van de deelnemers rapporteerde ten minste één medische aandoening. De kenmerken van deze steekproef zijn karakteristiek voor mensen kwetsbaar voor depressie (Beekman, et al., 1997; Cole & Dendukuri, 2003).

Het klachtenniveau lag hoog, de gemiddelde somscore op de CES-D was 25,9 ($SD = 9,7$), en 85% had een CES-D score ≥ 16 , dit is een indicatie voor de aanwezigheid van een klinisch relevante depressie. Bij de aanmelding bleek 42% te voldoen aan de criteria voor de DSM diagnose major depressieve episode (MDE), ook had 42% een angststoornis. De dubbele diagnose MDE-angststoornis kwam voor bij 20%. Slechts 14% had nooit eerder een MDE gehad. De helft van de deelnemers werd voor hun depressie behandeld met antidepressiva of kalmerende middelen. De geestelijke gezondheid van de ouderen in dit onderzoek komt meer overeen met die van een steekproef van psychiatrische poliklinische patiënten dan met een steekproef uit de algemene bevolking.

Criteriumvaliditeit van de CES-D

De Mini International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al., 1998) is gebruikt om diagnoses waaronder major en minor depressie te stellen, die als “gouden standaard” zouden dienen. Analyse van de receiver operating curve (ROC) liet zien dat de kenmerken van de schaal bevredigend waren. Het optimale afkappunt voor MDE was 25 (sensitiviteit 84%, specificiteit 64%, en positief voorspellende waarde 63%). Voor minor depressie was het optimale afkappunt 22 (sensitiviteit 84%, specificiteit 60%, en positief voorspellende waarde 77%). Echte positieven rapporteerden meer angst symptomen en meer co-morbide angst stoornissen, vals positieven rapporteerden meer eerdere depressieve episodes. Deelnemers met een score ≥ 25 vormen een doelgroep voor verder diagnostisch onderzoek met als doel passende behandeling vast te stellen.

Effectiviteit op de korte en lange termijn

Het directe effect is geanalyseerd met behulp van een gerandomiseerd blok ontwerp om er zeker van te zijn dat deelnemers met en zonder MDE gelijk verdeeld zouden zijn over de cursus (interventiegroep; $n = 52$) en de wachtlijstgroep ($n = 58$). Een

naturalistisch ontwerp is gebruikt om het lange termijn effect (beperkt tot de eerste 14 maanden na afloop van de cursus) te onderzoeken.

De oudere deelnemers in de interventiegroep vertoonden een significante afname in depressie symptomen. De effect size (*ES*) was 0,49 (middelgroot). Voor de cursisten met MDE was de *ES* groot (0,92); voor de cursisten zonder MDE klein (0,30). De verbeteringen werden behouden gedurende de daaropvolgende 14 maanden. In de interventiegroep had 83% voor de cursus een score ≥ 16 , na afloop van de cursus scoorde 62% nog steeds ≥ 16 . Onze conclusie was dat de cursus heilzaam is voor deelnemers met zowel milde als ernstige depressie. Ook is de acceptatie van de behandeling hoog. De cursus zou in een stepped care protocol moeten worden ingepast, waarbij de intensiteit van de behandeling past bij de klinische nood. De score na afloop van de cursus kan gebruikt worden als een indicatie voor de volgende stap.

Voorspellers van directe en lange termijn effect korte

Van de 317 deelnemers (leeftijd 55-85 jaar; 69% vrouw) die aan de studie deelnamen konden 232 na 14 maanden bereikt worden. Er is naar een breed scala van demografische, klinische, psychologische en behandel factoren gevraagd die mogelijk relevant zijn voor geïndiceerde preventie of behandeling,.

De cursus bleek heilzaam voor deelnemers met en zonder een MDE en het klachten niveau dat behaald was aan het einde van de cursus werd behouden over de daarna volgende 14 maanden. Een acute MDE, hoog niveau van angstklachten, niet meer dan één eerdere episode en meer opleiding voorspelden een groter effect. De klinische relevantie van deze voorspellers was echter zo gering dat deze verdere selectie van deelnemers niet wettigen. Wel zou verdere behandeling moeten worden overwogen bij die deelnemers die na de cursus nog een CES-D score ≥ 16 hebben. Het bleek dat het er niet toe deed in welke cursusgroep de cursus was gevolgd.

Autobiografisch geheugen

Deze studie had als eerste doel om te onderzoeken of een verminderde specificiteit van autobiografisch geheugen (AG) in ouderen een kenmerk is voor depressie. Ten tweede werd het afzonderlijke effect onderzocht van een geïnduceerde sombere stemming op de specificiteit van het AG. Om dit te onderzoeken werd in een sessie de Autobiografische Geheugen Taak (AMT) tweemaal afgenomen bij 63 deelnemers in remissie (remitted depression: RD) en een controle groep van 58 ouderen die nooit depressief waren geweest. Allen in de leeftijd van 55-85 jaar. Bij alle RD ouderen werd een sombere stemming opgeroepen. De controle groep werd random toegewezen aan een neutrale ($n = 26$) of de sombere stemmingsinductie ($n = 32$). Het verloop van de depressieve symptomen bij de RD ouderen werd over de 14 maanden follow-up beoordeeld.

Alle deelnemers haalden minder specifieke herinneringen op dan de gemiddeld jongere volwassene. RD ouderen verschilden niet van de gezonde controlegroep op de AMT scores evenmin verschilden zij in hun reactie op de stemmingsinductie. De

Samenvatting

stemmingsinductie had geen invloed op de prestaties op de AMT. Er werd geen oefeneffect gevonden. Noch de pre-inductie score op de AMT, noch veranderingen op de AMT of stemming na de stemmingsinductie voorspelden veranderingen in het niveau van depressieve symptomen op de meting 14 maanden na afloop van de cursus. Onze conclusie is dat bij ouderen de AMT geen kenmerk is voor kwetsbaarheid voor een klinische depressie.

In de algemene discussie zijn de resultaten en de klinische implicaties van de vier studies besproken. We vonden dat hoewel de cursus 'Omgaan met depressie' heilzaam was voor deelnemers met en zonder een MDE en ook goed geaccepteerd werd, deze niet voldoende is voor ouderen met een hoog niveau van depressieve symptomen. We adviseren daarom met nadruk dat vooraf en na afloop van de cursus de CES-D wordt afgenomen en dat bij deelnemers met een score ≥ 25 een diagnostisch interview wordt afgenomen om daarmee een klinische diagnose vast te stellen en een passende behandeling te bepalen. De cursus zou ingepast moeten worden in een stepped care programma waarbij de intensiteit van de aangeboden behandeling varieert al naar gelang de klinische behoeften en waarbij het niveau van functioneren na afloop van de behandeling een indicatie is voor de volgende stap.

Uit de demografische kenmerken van de steekproef bleek dat de ouderen die bereikt worden vooral de jongere, relatief hoger opgeleide, autochtone Nederlandse vrouwen zijn. Effectstudies zijn vooral uitgevoerd met ouderen met deze demografische kenmerken (Karel & Hinrichsen, 2000); men kan dan ook stellen dat de positieve effecten van de interventies voor deze ouderen gelden. In de toekomst zou onderzocht moeten worden welke interventies werkzaam zijn voor de veel brozere oudere ouderen, of de dementerende ouderen. Ook moet dringend onderzocht worden hoe de niet zo goed opgeleide of de grote groep allochtone ouderen bereikt kunnen worden en welke interventies voor deze groepen ouderen effectief zijn.

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Dankwoord - Curriculum vitae

Dankwoord

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Curriculum Vitae

Rimke Haringsma was born on November 23, 1951 in Djakarta, Indonesia. She completed secondary education (HBS-B) at Rijnlands Lyceum in Oegstgeest, the Netherlands in 1969. She stayed in the USA for one year on an exchange program. She graduated in the Hague as a physiotherapist in 1974, worked as a children's physiotherapist from 1978 till 1988 in the Juliana Kinderziekenhuis in the Hague. In 1980 she started a 6 year course in Haptonomic psychotherapy, a mind-body approach to cope with stress. She had her own private practice between 1984 and 2001. In 1989 she enrolled at the Leiden University as a part time psychology student. She graduated cum laude in Clinical and Health Psychology in 1996. In September 1999 she started working on the present thesis as a PhD student at the department of Clinical and Health Psychology. Since March 2005 she has held a teaching position at this department. Besides, she trains professionals in conducting the International Personality Disorder Examination, a diagnostic tool for personality disorders developed by the World Health Organisation.