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Disruptive behaviour in nursing home residents: A study of some predisposing factors

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USE OF THESIS

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by

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Abstract

Behaviour disorders are common among nursing home residents and the management of these problems is difficult and emotionally taxing for caregivers. Although widespread acknowledgment of the problem exists amongst those caring for the elderly, there has, until recently, been little formal investigation of these disorders in any systematic degree. This study investigated 63 nursing home residents (22 males and 41 females) in two primary diagnostic categories; those with vascular dementia and those with dementia due to other causes, primarily Alzheimer's disease. A review of the literature suggested that the nature and frequency of disruptive behaviour differed across these two prevalent forms of dementia. The level of cognitive impairment for each resident was assessed using the Mini Mental State Exam (MMSE). A two-week record of individual behaviours was recorded by nursing staff on a 24-hour shift basis, using the Cohen - Mansfield Agitation Index (CMAI). The results are generally consistent with earlier research demonstrating a negative correlation between cognitive impairment and aggression. However, no significant difference in behaviour was demonstrated between the two groups. Finally, a number of mediating variables is discussed in terms of their influence on the results.

Declaration

I certify that this thesis does not incorporate without acknowledgement any material previously

submitted for a degree or diploma in any institution of higher education; and that to the best of

my knowledge and belief it does not contain any material previously published or written by

another person except where due reference is made in the text.

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At this stage it is appropriate to pay particular thanks to the fellow Clinical Geropsychology students who together with myself, all enrolled with some trepidation, at the beginning of 1996 in the first Geropsychology Master of Psychology course in Australia. I believe that these students Judith, Valerie, Eva, Marnie, and Christina, have shown true pioneering spirit and I cannot thank them sincerely enough for their unflagging support and willingness to help through the often difficult times of the last two years. They will always have a special place in my heart.

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CHAPTER ONE
INTRODUCTION

<u>Background</u>

Behavioural disturbances are common among nursing home residents and these impact at a number of levels within these organisations (Burgio & Bourgeois, 1992). At ward level, nursing and allied health staff members are exposed to considerable emotional and physical strain, together with the possibility of personal injury. For institutional management, the disruptive behaviour exhibited by residents represents considerably increased costs in terms of greater numbers of ward staff and higher insurance premiums for injury claims and lost time from work (Cohen –Mansfield, 1989). Indeed, it has been stated by Cohen – Mansfield, a pioneer researcher in this field, that "agitation is probably the most important management problem in elderly people" (Billig & Rabbins, 1989, p.101). Although there is an increasing realisation that the cost of management of the problem is substantial, there has, up until recently, been a relative paucity of research world wide on the problem.

Over the last few years, governments have begun to address the extent and severity of disruptive behaviour in aged care institutions in Australia. In 1996, the Australian Federal Government commissioned a numbe . of reports specifically relating to these issues. The results of these confirmed the anecdotal evidence long held by nursing home staff of the extent of the problem. The report stated that currently in Australia: "In nursing home level care, the prevalence of dementia is 60.3% or 45,084 residents and furthermore moderate to severe challenging behaviour represents 36% or 26,752 residents. These findings indicate that particularly in nursing homes, people with dementia and challenging behaviour are not a minor group to be considered of marginal importance to service providers" (Commonwealth Government Working Paper, March, 1997, p27).

The impact of these reports can be seen in recent amendments made to "The Commonwealth Department of Health and Family Services – Resident Aged Care Classification Scale" (Commonwealth Department of Health and Family Services,

1997). This scale became the Commonwealth Government funding instrument for all aged care institutions in Australia from 1 October 1997. In it, a 34% weighting (8 out of 23 questions) was given to behavioural disturbance in elderly residents. This official recognition, together with the well publicised numerical increase in future numbers of aged people in residential institutions, suggest that finally a government acknowledges the extent of the problem.

Disruptive behaviour in nursing home residents has long been associated with dementia. Dementia is a clinical syndrome characterised by "deterioration in intellectual ability (cognitive impairment) of sufficient severity so as to interfere with usual social or occupational functioning" (Storandt & Vanden Bos, 1994, p33). A relationship between the prevalence of general behavioural disturbance and cognitive impairment has also been demonstrated in a number of studies (Cohen – Mansfield, 1988; Cooper, Mungas & Weiler, 1990; Snowden, Miller & Vaughan, 1996; Teri, Larson & Reifler, 1988; Ray, Taylor, Lichenstein & Meador, 1992).

Early researchers in the field quickly ascertained that a number of specific disruptive behaviours, such as screaming and wandering, were affected by a considerable number of confounding variables, in addition to the degree of dementia. Some of the more important variables suggested for further research were dosage levels of psychotropic medication (Zimmer, Watson & Treat, 1984; Salzman, 1987); resident isolation (Davis, 1983; Cohen – Mansfield, Werner & Marx, 1990), noise levels (Cariaga, Burgio & Flynn, 1988), and environmental and design considerations in nursing homes (Ryan, Tainish & Kolodny, 1988). Staff expertise and their level of training in the day to day management of disruptive residents were also identified as being of considerable concern (Birchmore & Clague, 1983). Unfortunately, behavioural and pharmacological procedures aimed at ameliorating the disruptive behaviour are often instituted on a reactive basis, rather than as a result of careful operational planning.

Effective management of problem behaviour requires adequate initial assessment. Such efforts require accurate instruments and staff who are properly trained

in their use. The evaluation of resident behaviour in nursing homes has traditionally been a function of the nursing staff. Yet the level of their training may vary widely. The most highly trained staff involved, are likely to be in supervising and management roles and so may have relatively little time for the assessment of disruptive residents. Instruments used for this purpose range from the haphazard recording of specific incidents in nursing records, to methodical and comprehensive behavioural analyses by highly trained staff.

The literature reviewed for this thesis has overwhelmingly suggested that a systematic investigation of a range of variables associated with behavioural disruption in nursing home residents be undertaken. One purpose of this thesis is to identify, assess and examine the relevant data on level of cognitive impairment and the type of dementia.

Overview

Chapter Two begins with an overview of the construct of dementia. Following this, the discussion of aspects of dementia syndromes is extended to the two major classifications of dementia, namely Alzheimer's disease and vascular dementia. Together, these classifications constitute a majority of the cases of dementia diagnosed in the elderly, and were the two groups specifically selected for this particular research question.

Other conditions that may effect dementia in the elderly are also discussed, as are the development and use of specialised assessment instruments. These are not only important for initial differential diagnostic purposes, but also to monitor disease progression and severity.

The variable of medication is briefly reviewed. Medication to control disruptive behaviour in demented nursing home residents remains widespread (Thompson, Moran & Nies, 1983). Whilst the classes and dosages of psychotropic drugs vary widely, many studies have either only fleeting or no reference to the practice, and to its not inconsequential mediating effect on behaviour.

The subject of the definition of agitated behaviour is introduced with the

conceptual research first conducted in 1986 by Cohen – Mansfield and Billig. Empirical evidence supporting the use of various instruments is raised and important findings concerning variables impacting on disruptive behaviour, such as medication, environment, and various clinical diagnoses are extensively reviewed. Additionally, inconsistencies apparent in the published studies are reviewed. Two specific findings are reviewed in some detail. First the linear relationship between the number of behavioural disturbance problems and cognitive impairment (Teri, et al. 1988) and second whether a relationship exists between specific aggressive behaviours such as hitting, kicking and biting, and cognitive impairment (Snowden, et al.1996).

The integrated model proposed by Cohen – Mansfield, Marx and Rosenthal (1990) states that the highest levels of physically aggressive behaviours are manifested by those residents who presented with intermediate levels of cognitive impairment. This model is described in detail and a number of other factors are also explored, including the exhibition of verbally agitated behaviour by cognitively intact residents.

Chapter two reviews in some detail the study by Swearer, Drachman, O'Donnell and Mitchell (1988); in which they broadened the discussion by identifying clinical diagnosis as a potential variable. This study evaluated behavioural disturbance amongst 126 demented outpatients with three diagnoses, Alzheimer's disease (AD), Multi - infarct dementia (MID) and mixed AD and MID.

Perusal of the literature identifies several problematical issues: instrument reliability and validity and differential diagnostic categorisation. Significantly, almost all researchers in the field have suggested that further investigation is warranted to explore the existing variables with more valid and reliable instruments and also to widen the discussion by investigating a number of other selected mediating variables.

The first of these is the difference between two identifiable groups of dementia sufferers. Those who have sustained a Cerebral Vascular Accident (CVA) and thus have a high likelihood of vascular dementia and those who have not suffered this. A number of earlier studies (Swearer, et al. 1988; Sultzer, et al. 1993) have identified important differences in behavioural patterns between groups with differing diagnoses, in contrast

to the majority of studies which have used a global dementia construct.

The second major mediating variable is the level of intellectual impairment, commonly described by the Mini Mental State Exam (MMSE; Folstein, Folstein & McHugh, 1975) score. A number of earlier studies (Teri, et al. 1988; Swearer, et al. 1988; Cohen – Mansfield, et al. 1990), assumed that cognitive impairment is the most significant factor influencing the presence and severity of behavioural disturbance. However, as a number of subsequent studies have demonstrated (Ryden, 1988; Hamel, Gold, Andres, Reis, Dastoor, Grauer & Bergman, 1990; Gilley, Wilson, Bennett, Bernard & Fox 1991), the equation is much more complex than it first appears. This study will explore not only the overall level of disruption, but also investigate a number of specific individual types of behaviour.

CHAPTER TWO
LITERATURE REVIEW

The Construct of Dementia

A moderate degradation of memory capacity has been a widely recognised symptom of ageing for many years. More severe memory loss is characteristic of dementia. However, the clinical distinction between normal ageing and dementia is often difficult to make, especially in its early stages. This may be due to a number of illnesses that are prevalent in the elderly presenting with symptoms similar to those associated with dementia, and to the diversity in normal ageing. It has only been relatively recently that sophisticated neuropsychological assessment procedures and diagnostic systems have been developed to increase the accuracy of both diagnosis and enabled more accurate prognosis of the course of the condition.

Three distinct features, cognitive impairment, functional impairment and neuropathological changes in the brain generally distinguish the construct of dementia from normal ageing (Emery & Oxman, 1994). In addition to these three primary features, the degree of severity, together with the rate of progression, need to be considered as comprehensive criteria in the diagnosis.

The core requirement for a diagnosis of dementia, as outlined in the latest Diagnostic and Statistical Manual of Mental Disorders is "the development of multiple deficits, that include memory impairment and at least one of the following cognitive disturbances, apraxia, agnosia, or a disturbance in executive functioning." (American Psychiatric Association, 1994, p.134). Psychiatric symptoms such as delusions, depression and agitation are common. These symptoms are important, as they are significant determinants of both onset of dementia and caregiver distress. Furthermore, they also precipitate the use of physical or chemical restraint in many residential care facilities.

Jorm, Korten and Henderson (1987) suggested that for those people who live beyond the age of 60 years there was a steadily escalating risk of a diagnosis of dementia. The worldwide increase in ageing populations and the seriousness that a

diagnosis of dementia implies for patients and families, have generated interest in further research into its identification and subsequent treatment. (Morriss, Rovner & German, 1995; Rashti, Molinari & Orengo, 1996). Dementia is predominantly a disorder of old age, and represents a major category of chronic disease. Thus both the incidence and prevalence increase significantly with advancing years. Terry and Katzman (1983) estimate that dementia affects approximately 5% of people over the age of 65 with this rate rising to 20% of those aged over 80 years. A meta – analysis by Jorm, et al. (1987) attempted to address this question in adults from 65 to 85+ years. They found significantly increasing rates for two major classifications of dementia, with Alzheimer's disease being 32% to 84% and vascular dementia from 2% to 48%.

Alzheimer's Disease and Vascular Dementia

Many dementing disorders have been identified; for example, Parkinson's Disease, Huntingdon's disease and Pick's Disease (American Psychiatric Association, 1994, p152). However the two most common are Alzheimer's disease and Vascular Dementia.

In 1907, Alois Alzheimer examined a 51-year-old woman displaying behavioural abnormalities and progressive cognitive deterioration. The behavioural symptoms were diverse, including delusions of persecution, auditory hallucinations, agitation, irritability and apathy. These behavioural abnormalities have appeared in many subsequent descriptions of Alzheimer's disease. However, systematic research into the disorder has only developed in the last 20 years.

Alzheimer's disease is a neurodegenerative disorder producing numerous deficits in several domains of cognitive functioning. Often psychiatric symptoms such as delusions, hallucinations and depression appear together with anxiety and aggression. Increased levels of irritability and aggression occur in 30 – 50% of cases (Aarsland, Jeffrey, Cummings, Yenner & Miller, 1996).

The essential feature of Alzheimer's disease is its insidious onset and gradual progressive course (Carstensen, Edelstein & Dornbrand, 1996) where all other specific causes have been excluded by the history, physical examination, neuropsychological

examination and laboratory tests (Midence & Cunliffe, 1996). For the individual, dementia involves a multifaceted loss of intellectual abilities, such as memory, judgement, abstract thought and other higher cortical functions, together with changes in personality and behaviour (Aarsland, Cummings, Yenner & Miller, 1996).

As already mentioned, work on the development of reliable formal diagnostic criteria for identifying Alzheimer's disease has been undertaken only quite recently. A work group initiated some early research towards the development of a reliable diagnostic instrument. They proposed a standard for diagnosis that became known as The National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS – ADRA) criteria (McKhann, Drachman, Folstein, Katzman, Price, & Stadlan, 1984). Later research into the diagnostic accuracy of these criteria reported accuracy in diagnosis of between 80% and 100% (Boller, Lopez & Moossy, 1989; Morris, McKeel, Fulling, Torack & Berg, 1988). Further studies, however, identified the clinical variance as stemming from differing interpretations of the significance of symptoms, differing importance of comorbid conditions, or differing interpretations of diagnostic criteria (Lopez, Swihart, Becker, Reinmuth, Reynolds, Rezek & Daly, 1990). Despite several such advances in diagnostic techniques, Alzheimer's disease, the major cause of dementia in the elderly, remains essentially a diagnosis by exclusion.

Early in this century, sclerosis of brain arteries was considered the major causal factor in dementia. In 1974 Hachinski, Lassen and Marshall published a cogent paper which argued that when vascular disease is responsible for dementia, it is through the occurrence of "multiple small or large cerebral infarcts" rather than through "a progressive chronic ischemia"(p307). They also suggested that there was widespread diagnostic confusion between cerebral arteriosclerosis and "Alzheimer's like degeneration" of the brain. In a later paper, Hachinski (1991) revised his earlier position, stating that "multi infarct dementia may not be the only or even the most important form of vascular dementia".

Although some diagnostic confusion remains, vascular dementia represents the

second most common form of dementia after Alzheimer's disease with an estimated rate of 10% -15% of diagnosed cases of dementia (Terry & Katzman, 1983). With the substantial increase in the size of the elderly population, and a prevalence rate of 896 per 100,000 (Terry & Katzman, 1983), indications are that the numbers of cases of this disease will continue to escalate until well into the next century.

In contrast to Alzheimer's disease that has a steady progressive degeneration into dementia, vascular dementia may not be progressive. In fact in some cases it may even be characterised by a plateau of stable functioning. Abrupt onset, stepwise deterioration and a fluctuating course of decline in cognitive functioning differentiate this from Alzheimer's disease in most investigations (Erkinjuntti, Ketonen, Sulkava, Vuorialho & Palo, 1987).

Roman, et al. (1993) recently outlined the criteria for the clinical diagnosis of probable vascular dementia as all of the following:

1. Dementia- defined by cognitive decline from a previously higher level of functioning.
2. Cerebrovascular disease – presence of focal signs such as hemiparesis on neurologic examination.
3. A relationship between the above two disorders.

The usual features of vascular dementia include psychological symptomology, motor disturbance and neuropsychological impairment. A diagnosis of vascular dementia by the DSM – IV (American Psychiatric Association, 1994) requires the presence of a dementia, and either focal neurological signs, or symptoms or neurological diagnostic evidence of cerebrovascular disease that are judged to be related to the behavioural presentation. The focal neurological signs include the presence of primitive reflexes not commonly displayed by adults, such as motor weakness and gait disturbance.

Under all current diagnostic criteria for VaD, evidence of a cerebrovascular accident (CVA) would be presumptive evidence for vascular dementia.

Other Conditions which Affect Dementia in the Elderly

Although the most prominent feature of dementia is progressive cognitive decline, other symptoms include impaired language skills, disorientation, and personality and behavioural problems. However, a number of other conditions may also result in these symptoms and hence confound accurate diagnosis of the condition.

Depression is one of the most common psychological problems in older people (Teri & Wagner, 1992) and particularly severe cases can lead to symptoms resembling those in dementia: loss of pleasure in activity, disturbances of sleep and appetite, feelings of worthlessness, confusion, poor memory and irritability (Storandt & VandenBos, 1994). An assessment of symptoms of depressed mood and thoughts requires self – report that is difficult to obtain accurately in people with moderate to severe dementia. This factor was not controlled in the present study because of this difficulty.

Assessment of Dementia

The DSM –IV (American Psychiatric Association, 1994) includes criteria common to all categories of dementia.

A. The development of multiple cognitive deficits manifested by both

1. Memory impairment (inability to learn new information and to recall previously learned information, and

2. One (or more) of the following cognitive disturbances:

a. Aphasia (language disturbance)

b. Apraxia (inability to carry out motor activities despite intact motor functions)

c. Agnosia (failure to recognise or identify objects despite intact sensory function)

d. Disturbance to executive functioning (planning, organising, sequencing and abstracting)

B. The cognitive deficits in Criteria A1 and A2 each cause significant impairment in social or occupational functioning and represent a significant

decline from a previous level of functioning

C. There is evidence from the history, physical examination, or laboratory findings that the disturbance has more than one etiology (eg. Head trauma plus chronic alcohol use, Dementia of the Alzheimer's Type with the subsequent development of Vascular Dementia).

D. The deficits do not occur exclusively during the course of a delirium (APA, 1994, p.155).

A number of researchers have questioned the reliability of diagnosis for a variety of specific dementias: Lopez, Larumbe, Beck, Rezek, Rosen, Klunk, and De Kosky (1994), for vascular dementia; Paulsen, Salmon, Monsch, Butters Swenson and Bondi, (1995), for subcortical and cortical dementia, and Lopez, Swihart, Becker, Reinmuth, Reynolds, Rezek and Daly (1990), for Alzheimer's disease. Despite referring to distinctly different degenerative conditions, all the above researchers concluded that both the use of uniform criteria and additional studies to explain why researchers cannot achieve better levels of agreement were necessary to maximise diagnostic accuracy in both daily clinical practice and research investigations.

Impaired social and occupational function is the second essential criterion for the diagnosis of dementia. Residents with a clinical diagnosis of moderate dementia usually requires the assistance of carers in choosing clothing and coaxing them to handle such daily tasks as washing (Reisberg et al. 1985). It is during this stage of the cognitive deterioration that carers are most at risk of injury from the demented individual, while attempting to assist them with basic bathing, feeding or toileting needs (Cohen Mansfield, Marx & Rosenthal, 1989).

The frequency and consequences of aggression and the other disruptive behaviours in the elderly are profound. They affect the social relationship between patient and caregiver in both private and public situations. Indeed, Hamel et al. (1990) noted that aggression made a significant contribution to the decision to transfer a patient from community based to institutional care. Studies in residential institutions demonstrate that aggression occurs at clinically significant rates (Burgio, Jones, Butler

& Engel, 1988) that pose additional strains on nursing staff. Therefore the role of agitated behaviour in dementia is of substantial practical importance.

The Theoretical Construct of Agitated Behaviour

The definition and classification of agitated and disruptive behaviour has been undertaken by several researchers. In an early conceptual review, Cohen – Mansfield and Billig (1986) stated three requirements for behaviour to be defined as agitation. First, it is behaviour that is observable; second, it should not include behaviours generally known to occur due to factors other than agitation, such as sleep disturbance and thirdly behaviours that can be explained, such as purposeful walking, must also be excluded. The definition of agitation is "inappropriate verbal, vocal, or motor activity which is not explained by apparent needs or confusion per se" (Cohen – Mansfield, 1986). It is classified into categories of aggressive behaviour, physically non-aggressive behaviour, verbally agitated behaviour and hiding or hoarding behaviour (Cohen – Mansfield, Marx and Rosenthal (1990).

Terms describing aberrant behaviour such as agitation, challenging, disruptive or disturbed, are often used to describe normal behaviour that occurs at either an excessive level, such as constant talking, or behaviours that are exhibited at inappropriate times and places, such as disrobing in public and physical sexual harassment. Careful interpretation of behaviours must be undertaken prior to labelling them as aberrant. For example, an elderly resident may be shouting because their hearing is deficient and inattention by staff creates a misunderstanding, that they are not being understood. Furthermore, excessive noise in both public places and ward situations disorientates many older people who find it difficult to follow conversations conducted in these situations. Unless such considerations are well understood, a disturbance of executive functioning may be attributed to a person, rather than the underlying cause being deafness, which is a physical consequence of ageing and not deliberate antagonistic aberrant behaviour.

A number of other variables have been proposed as a having a link with disruptive behaviour in dementia, including neuropsychiatric symptoms (Aarsland, et al,

1996) and premorbid level of aggression (Hamel, et al, 1990). Other potential links, such as between depression and levels of agitation have been investigated and subsequently discounted (Cohen Mansfield & Marx, 1988). However, these variables are beyond the scope of this small study, which will be concentrating in the relationship between behavioural disturbance and respectively, level of impairment and dementia classification.

Cognitive Impairment and Agitation

Teri, et al. (1988) investigated 127 patients with a primary diagnosis of dementia of the Alzheimer's type. Their results indicated that the overall number of problems increased significantly with increasing cognitive impairment. They suggested that the type of problems differed with the level of cognitive impairment and the behavioural problems were not associated with the patient's age. Although their findings generally supported the clinical literature to that date, several cautions were noted. Firstly, the use of a simple checklist for recording behaviour rather than a recognised instrument and second, the study provided only correlational data on a cross section of patients. They concluded that further examination of variables associated with the presence of these behaviours may yield directions for their understanding and intervention.

Snowdon, et al. (1996) conducted the most substantial study in Australia. They examined the behaviour of 2,445 residents across 46 nursing homes using the Cohen Mansfield Agitation Index (CMAI; Cohen – Mansfield et al. 1990). They concluded that the disruptive behaviours were more likely to be displayed by cognitively impaired individuals. Nevertheless, there were some exceptions; the cognitively intact were more likely to be rated as calling for attention than those with more severe dementia. Cohen - Mansfield (1988) also demonstrated this finding.

An association between excessive motor activity (mainly wandering and restlessness) and the severity of cognitive impairment has been demonstrated a number of times (Martino – Saltzman et al.1991; Cohen – Mansfield et al. 1990). Studies of elderly patients with psychiatric symptoms, specifically the presence of delusions and hallucinations, has also been associated with wandering and restlessness (Lachs, Becker,

Siegal, Miller & Tinetti, 1992).

By contrast, a number of studies (Ryden, 1988; Hamel et al. 1990; Gilley et al. 1991) found that the level of cognitive deterioration did not predict aggression. Furthermore, residents with visibly aggressive behaviour and moderate cognitive impairment are also more likely to be described by nursing staff as troublesome than either more or less severely demented residents. It appears that aggressive behaviour occurs at all levels of cognitive function, at least in the early and moderate stages of dementia

In a comprehensive review of 680 patients with dementia, Cooper et al. (1990) found that abnormal behaviours are more likely to occur with decreasing function. However, their results also suggest that there is a great deal of variability amongst patients and predicting agitated behaviour from cognitive impairment alone is difficult, if not impossible.

Cognitive impairment and specific disruptive behaviours have been investigated by a number of researchers. Cohen – Mansfield et al. (1990) identified screaming as a major problem in nursing homes, with some 25% of the residents screaming at least four times a week. They presented the screaming resident as one who was cognitively impaired, had a tendency to fall and was highly dependent on caregivers for basic activities of daily living.

Snowden et al. (1996) found that 10 –15% of the nursing home residents exhibited the following behaviours: daily restlessness, pacing, repetitive sentences, constant calls for help, cursing/verbal aggression, and complaining. Some other aggressive behaviour such as hitting, kicking and biting were less common. This study also suggested that residents who were rated as complaining more frequently, were those with MMSE scores of 24 or more, which supported Cohen Mansfield's (1988) earlier report of this relationship.

In summary, the relationship, though complex, appears to be there but currently there are not yet enough studies to determine the robustness of these findings.

Clinical Diagnosis as a Potential Variable

In comparison to numerous studies concerning cognitive impairment and behaviour, relatively few studies have investigated the relationship between clinical diagnosis and behaviour. One study, Sultzer et al. (1993) paired patients with Alzheimer's disease and vascular dementia. Using the Neurobehavioural Rating Scale, they concluded that patients with vascular dementia had more severe behavioural retardation, depression and anxiety than patients who suffered from Alzheimer's disease. This differential remained even when levels of cognitive impairment were controlled for. They also found an inverse correlation between motor inventory score and the score on the Neurobehavioural Rating Scale (NRS). However it should be noted that the nine items comprising agitation/disinhibition recorded on the NRS showed no significant difference between the two groups.

In an earlier study by Swearer et al. (1988), the prevalence and severity of the behaviours increased with the global severity of dementia. Neither frequency nor type influenced this relationship when patients with three alternative diagnoses were compared: Alzheimer's disease, Multi infarct dementia, and mixed Alzheimer's disease and Multi infarct dementia. The results suggest that, although troublesome and disruptive behaviour are a very frequent component of dementing disorders, they are related to disease severity and parallel, but are probably not determined by, intellectual deficit. However, the data must be considered preliminary. Firstly, because the behavioural evaluation was measured by telephone interviews of caregivers using a scale of severity of 1 to 4 rather than an established measure. Furthermore, the use of a mental status test procedure that combined items from the MMSE and the Blessed Dementia Scale is unconventional and makes it difficult to compare the level of cognitive impairment to other studies.

Associations between clinical variables and different behaviour problems do not necessarily imply causality. Sometimes it is impossible to know whether behaviour problems are caused by clinical variables, or vice versa, because the exact temporal relationship between the onset of behaviour problems and the clinical conditions is at

this stage unknown. However, the examination of relationships between the various psychological variables remains of more than clinical interest.

Pharmacologic Intervention in Dementia

Pharmacologic strategies are widely implemented in dealing with behavioural disturbance problems. Neuroleptics are the most frequently used drugs in the treatment of aggressive behaviours in dementia sufferers, yet there appear few studies with adequate methodology for examining alternatives to drug strategies. Although anti - psychotics have some efficacy in the treatment of behavioural problems, they also have frequent and dangerous side effects, including movement disorders, anticholinergic toxicity, postural hypotension, and excessive sedation (Arsland, 1995).

Schneider, Pollock, and Lyness (1990) have addressed medication as a mediating variable on disruptive behaviour. Their meta-analysis reviewed 17 controlled studies and reported that the effects of medication on behaviour, although modest, were consistent and reliable. Most studies on disruptive behaviour in nursing homes that were examined, made little mention of medications administered, despite their widespread use and the acknowledgement of the efficacy of modern medications to control behavioural problems in a nursing home environment.

The discussion regarding appropriate types and dosages of medication for dementia sufferers is wide ranging and largely beyond the scope of this work. However, given the demonstrable effect that medication has on agitated behaviour, and its prevalence in nursing home environments, any study relating to dementia and disruptive behaviour should make every effort to control for the influence of psychoactive medication.

Behavioural assessment instruments

Efforts to develop an accurate method for measuring the severity of perceived resident disruptiveness in nursing home environments are advancing. For this research, a thorough review of published instruments for assessing disruptive behaviour was undertaken.

Some scales vary widely in length from ratings of four behaviours (Mungas,

Weiler, Franzi & Henry, 1989) to checklists of 45 behaviours (Teri, Borsen, Kiyak & Yamaguchi, 1989).

While scales with fewer items have yielded lower prevalence estimates, (Zimmer, Watson, & Treat, 1984), the more comprehensive scales have yielded estimates exceeding 60% for the prevalence of disruptive behaviours amongst cognitively impaired nursing home residents (Burgio, Jones Butler & Engel, 1988).

A problem identified with several scales, including the CMAI, is that some have items that are often not directly observable, but instead rely on a judgmental interpretation of behaviour. For example 'being negative', 'uncooperative' and 'agitated' require subjective interpretation. In general, instruments lacking behaviourally anchored items are more vulnerable to rater biases than are those with strictly behavioural items. The decision therefore must be to use an instrument that maximises the validity and reliability, but minimises the subjective judgement of the rater, whilst ensuring that as many items as possible are recorded with regard to their severity.

A number of other considerations on a wide range of scales including length, psychometrics, summation of behaviours and consequences need to be considered. Whilst a major evaluation of scale development for assessing disruptive behaviour is beyond the scope of this paper, those interested are referred to the following excellent articles by Beck, Heithoff, Baldwin, Cuffel, O'Sullivan and Chumbler (1997) outlining the development of the Disruptive Behaviour Scales. Lefroy, McHale, Hyndeman & Hobbs (1996) investigated the contribution that rating scales make to the understanding of the behaviour of people with dementia. They concluded that although there were some differences, overall, the Crichton Royal Behaviour Rating Scale (CRBRS), the Confusion Rating (CR) and the CMAI all provide adequate information about nursing home resident's behaviour, both as individuals and as groups.

The Cohen – Mansfield Agitation Index (CMAI) was developed using factor analysis of the 29 separate behaviours recorded for 408 patients of a nursing home. The following four individual factors, each with a loading of at least 0.40 was identified: aggressive behaviour, physically non-aggressive behaviour, verbally agitated behaviour

and hiding or hoarding behaviour (Cohen – Mansfield, et al., 1990).

Many researchers exploring the relationship between agitation and a variety of variables have since used the CMAI. One of the most consistent findings has been a significant negative correlation between the degree of cognitive impairment (MMSE score) and the total CMAI agitation score. Intellectual impairment has been implicated in both aggressive and non-aggressive physical agitation for in-patient residents (Rashti et al. 1996).

In summary, for this study the CMAI was chosen because of its psychometric properties, brevity and ease of administration, together with the fact that it has been used extensively in similar prior studies.

The Present Study

Prior research has highlighted the need for information on several variables relating to dementia and agitation in nursing home residents. The literature reviewed for this study has indicated a number of areas that present problems for researchers. As Burgio and Bourgeois (1992) noted, data collection in a nursing home environment remains an area littered with pitfalls. Inexperienced staff coping with a notoriously difficult workload, and with distressed residents, are two of the problems. Differential diagnosis in psychogeriatric research has been widely commented on in the literature as problematic. All these factors must be considered before research concerned with demented individuals is commenced.

In summary, the literature underscores the multifaceted nature of dementia as an illness. Behavioural disturbance, cognitive dysfunction, and psychosocial function form a triad of relatively independent domains of disability within dementia. Clinical diagnosis, age of onset, depression, pre - morbid personality, concomitant psychiatric symptoms and psychoactive medication may all impact on the disturbed behaviour. Furthermore, other factors such as age, marital status, environment location and caregiver relationships also need to be considered. However, what is readily apparent is that further investigation is required to clarify the nature and extent of the variables outlined.

With the probable non-vascular dementia group, no attempt was made to categorise the dementia sufferers into Alzheimer and non-Alzheimer's dementia groups because a clinical diagnosis of Alzheimer's dementia especially in the early stages, is notoriously difficult (Lishman, 1987). Therefore, for this study, it was considered that due to diagnostic difficulties outlined earlier, the prudent option was to apportion the residents into a single dementia group. Using these two broad diagnostic categories, rather than a highly selected sample population, also gives a sample population more representative of a typical nursing home population.

Long-standing problems regarding the validity of measures of dementia obviously affect research results. For example, a researcher cannot be confident of a correct interpretation of a relationship unless there is trust that the measures used accurately represent what they are purported to mean. Furthermore, the great variability in prevalence rates between Alzheimer's disease, and dementia in general, is unlikely to be caused solely by variations in environmental or genetic risk factors among the populations studied. Any differences in methodology are generally suspected as much greater and more obvious sources of variability than the reported prevalence rates. For this reason the two most widely used measures in this area of research are also employed in this study; the CMAI for behavioural disturbance, and the MMSE for level of impairment.

In this study, nursing home residents were classified into two differential groups - those suffering dementia and those who had suffered a CVA and were therefore highly likely to be suffering from vascular dementia. Data was collected to determine if there were significant behavioural differences between these two groups.

Criteria for the dementia group took into account the course and severity of the illness and indications of a progressive longitudinal cognitive decline in functioning. Where diagnostic evidence of dementia was established through specialist psychogeriatric evaluation, this was considered definitive for inclusion in the dementia group. As mentioned earlier, no attempt was made to further differentiate the dementia group into Alzheimer and non-Alzheimer for the purposes of this study.

Finally, this study will also assess the relationship of cognitive impairment to the following four broad classes of behaviour extracted from the CMAI: aggression, physical agitation, verbal agitation and other behaviours. Individual disruptive influences such as screaming that have previously been researched in demented individuals will also be explored.

CHAPTER THREE
METHOD

<u>Participants</u>

The 63 subjects for this study were all resident in two Perth metropolitan nursing homes, 50 from the first 70-bed establishment, and 13 from the second smaller 60-bed establishment. The participants were 22 male and 41 females with a mean age of 82 years (SD = 8.1) and their average length of residence in the nursing homes was 21 (SD = 23.2) months. Written informed consent from the next of kin or legal guardian was provided for all participants (Appendix A).

The first aged care facility was the larger 70-bed nursing home. Although it had no facilities for separating residents with advanced dementia, it did provide a separate zone within the home for a twice-daily therapeutic intervention program for a number of residents. This home was considered to provide excellent care for residents who were in a moderate state of cognitive impairment.

The second nursing home was a new specialist dementia unit with 60 residents attached to a large adjacent nursing home. The residents of both homes had been admitted following assessment by a Specialised Aged Care Assessment Team (ACAT) and were admitted to the homes either from their domestic residence or another aged care facility.

Medical practitioners, who were skilled in the management and treatment of geriatric inpatients, visited all residents on a regularly scheduled basis in both homes. The size of the two homes were similar (70 and 60 bed), and both provided a walled garden environment for the recreation of the residents. The individual ward size ranged from 12 to 15 in the first home and from to 20 to 30 in the second.

Theoretically all the residents (130) of both homes were eligible for inclusion in the study. All residents' next of kin were included in the letters sent requesting their relatives' permission for participation. Responses were as follows. No explanation can be advanced for the substantial difference between the acceptances from the next of kin of the two homes.

	Participation Requests	Permissions Received	Study Participation
Home 1.	68	53	50
Home 2.	47	14	13
Total	115	67	63

Difference between the permissions received and the study participation numbers were due to the following:

1. Transferred from the nursing home for hospital treatment.　3

2. Died during or prior to study being completed　　　　　1

The clinical characteristics that were to be used for identifying group membership were determined prior to the commencement of the study. Those in the first group had a demonstrated history of CVA (N =25) and were therefore highly likely to have vascular dementia, probable vascular dementia or mixed dementia. A second group (N = 38) comprised participants with no history of CVA or evidence of vascular dementia such as focal neurological signs and therefore likely included a substantial number diagnosed as suffering from Alzheimer's disease, probable Alzheimer's disease or possible Alzheimer's disease.

Prior to the collection of behavioural and cognitive functioning data, a full review of each participant's history, and relevant medical notes was completed. This review provided the definitive history of CVA for inclusion in the first group. Discussion with both nursing and medical staff was also used to gather information for group entry for the second group. No participants were rejected due to their inability to satisfy group membership. Despite these difficulties, every effort was made to ensure rigorous collection of data and to minimise cross contamination between the two groups involved.

Behavioural data was collected across the three nursing shifts of morning, day and night. Data was collected for five classes of psychotropic medication being administered to residents: Anxiolytic, Antidepressant, Anti - psychotic, Sedative hypnotic and CNS stimulant. However, the individual dosage rates were not recorded. This was due both to the frequent alterations of dosage rates of individual medications

during the study, and withdrawal and alteration within specific classes of medication for individuals involved.

Materials

The accurate assessment of cognitive impairment for deteriorating individuals is crucial, not only as an aid in decision making for ongoing medical and therapeutic purposes, but to monitor the progression of the dementing illness.

Several instruments have been developed to measure the level of cognitive impairment. The Mini Mental State Exam (Folstein et al. 1975) is in widespread use as a screening instrument for cognitive dysfunction. The MMSE was selected for administration in this study, firstly because of its widespread use in prior similar studies and because it had been, for several years, the preferred method of cognitive assessment at both nursing homes.

The MMSE was designed as a brief (5 – 10 minute) screening instrument. The extensive published literature, its ease of administration, its high correlation with other similar instruments (Thal et al., 1986; Weiler, Chiriboga & Black, 1994) and ability to accurately screen for mild to moderate dementia have contributed to its widespread acceptance as a research tool with geriatric patients. The retest reliability was evaluated using 24 hour and 28 day repeat administration by both single and multiple examiners. When given twice (24 hours apart by the same examiner) the correlation was 0.87. The Pearson's r also remained high at 0.78 when the test was given twice, 24 hours apart, by two different examiners (Thal et al. 1986).

Agostinelli, Demers, Garrigan & Waszynski, (1994) determined the concurrent validity of the scale by correlating the MMSE scores with the Wechsler Adult Intelligence Scale (WAIS) verbal performance scores of 206 patients diagnosed with organic and or psychiatric syndromes. For MMSE versus WAIS scores, the Pearson r was 0.77. For MMSE versus performance scores, the Pearson r was 0.66. The MMSE consists of 11 questions that evaluate the following cognitive functions: orientation to time and place; registration; attention; calculation; short-term recall; language including verbal fluency; repetition; comprehension and writing, along with constructional ability.

The maximum score for the MMSE is 30. Higher scores indicate better functioning. Guidelines offered by Molloy, Alemayehu, & Roberts (1991) classified the impairment on total scores along the following lines, normal = 30 to 25, mild = 24 to 20, moderate = 19 to 11 and severe 10 to 0. In nursing home environments, when used serially, the MMSE becomes a useful tool with which to monitor the rate of progressive decline in cognitive deteriorating dementia residents.

The level of agitation was measured using the CMAI. This instrument measures 29 specific behaviours. Individual behaviours were rated on a 7-point scale where 1 indicates that the behaviour exists but is not observed on this shift and 7 indicates that the behaviour is a few times an hour. Interrater reliability coefficients calculated by Cohen Mansfield et al. (1989) range from 0.88 to 0.92. The behaviours were grouped into the same four categories that had been identified by factor analysis in earlier studies (Cohen Mansfield, 1986). The groups delineated for this research were Aggression, Physical Agitation, Verbal Agitation and Other Behaviours (see Appendix A). The means were calculated for the below listed categories of behaviour from the detailed individual behaviours of the CMAI as follows:

1. "Aggression" – Spitting, cursing or verbal aggression, hitting, kicking, grabbing on to people, pushing, scratching, tearing things, biting and hurting oneself.

2. "Physical Agitation" – Pacing, inappropriate dress, repetitious sentences, trying to get to a different place, restlessness, handling things inappropriately and performing repetitious mannerisms.

3. "Verbal Agitation" – Constant attention seeking, making strange noises, screaming, complaining and negativism.

4. "Other Behaviour Measures" – Hiding things, hoarding things, verbal sexual advances, physical sexual advances, intentional falling, throwing things and eating inappropriate substances.

Reliability and validity of the instruments used in behavioural research is problematic. Giancola and Zeichner (1993), in a critical review of the literature on aggressive behaviour, noted that of 22 studies assessing aggressive behaviour in

geriatric patients, only two different instruments were used more than once: the CMAI in three studies and a Behaviour Inventory in two other studies. Their conclusion was that almost none of the reports present any statistical data on the reliability or validity of the instruments used. The CMAI has inter-rater reliability coefficients calculated by Cohen Mansfield, Marx & Rosenthal (1989) range from 0.88 to 0.92.

Procedure

Following approval from the University's ethics committee, the management of the two nursing homes was approached. The full details and implications of the study were discussed and their approval to conduct the research in the particular home was given. Following this, the individual medical practitioners whose patients were resident at the home were contacted. The rationale for the study and its data collection methodology was discussed with them, and their approval was sought to examine the medical records of the respective residents' involved in the study.

A letter was circulated to all nursing home residents' next of kin or legal guardian, requesting permission for their next of kin to participate in the study. The letter outlined the reasons for research in this area, the non-invasive nature of the procedures to be undertaken and pointed out the nursing home management's prior support for data collection in the homes. An opportunity was provided for the next of kin or guardian to contact the researcher to discuss any aspect of the research. They were asked to sign a letter granting permission (see appendix A) for their relative to participate in the study.

The first step in the identification process was to thoroughly examine each resident's medical record. Particular attention was taken to identify residents having a definitive diagnosis of CVA either by CT scan, specialist neurological examination or documented cerebral insult. The history of CVA trauma was used to select a group considered highly likely to have vascular dementia and only where these criteria could be firmly established, was the resident allocated to the vascular dementia group. Where residents presented without a CT or similar scan, the diagnostic criteria used was a positive measurement on The Hachinski Ischaemic Score, on which a score of 3 or more

in a demented patient is considered indicative of vascular dementia (Blass & Barclay 1985).

The exclusion criteria used for the diagnosis of the non-VaD Dementia group were: no evidence of infarcts on CT, no MRI, no focal neurological signs and no Hachinski Ischaemic Scores greater than 3.

Following differentiation into their respective groups and allocation of an identification number and booklet (see Appendix A) for each participant, the researcher interviewed the resident and sought their co-operation for the administration of an MMSE examination. No participant declined this request and the cognitive assessments were conducted. At the same time, this enabled the researcher to create a sense of rapport with the resident prior to the commencement of the behavioural assessments, and if necessary, to reassure the subjects as to the non-invasive nature of the process. This process is often overlooked in nursing home research but is an essential component of both clinical practices with the elderly and a key ingredient in undertaking reliable research in a nursing home environment.

The behavioural recordings were obtained over a two-week period. Initially this involved the training of state registered nursing staff as to the purpose and methodology required for recording of specific behaviours on the CMAI. This was done through a series of short training sessions conducted at the respective homes. Despite earlier reservations, this exercise proved to be easier than expected due primarily to the expertise of the nursing staff. Their long experience in recording behaviours for specific programs instigated by senior staff for behavioural management purposes over many years was of substantial benefit in the accurate and reliable record of individual subjects behaviour. The researcher conducted supervision of the behavioural recordings made by the staff on a regular basis, and randomly conducted spot inspections to verify recorded data. The inspections included observing individual residents during random visits, recording their behaviours and subsequently verifying the data scored for that particular resident. Scores were summed across the 3 shifts over the two - week observation period.

Although the CMAI has been carefully designed to allow minimal room for recorder bias in interpretation of particular behaviours, one sub group "Verbal Agitation" requires the objective recording of such items as Constant Attention Seeking, Complaining and Negativism. The recording of these items in particular, required passing on special instructions to the nursing staff so as to ensure an acceptable degree of reliability in interpretation. The instructions on the methodology required to ensure consi tency of recording were given to the nursing staff. This was done where possible on a consensual basis, following discussion with the senior nursing staff at the time of change of shift. As Cohen Mansfield et al. (1989) had identified this as a particular problem, some effort was expended to minimise staff error in recording of these particular items.

Statistical Analysis

The small sample sizes used in this study mean that the power of the study is low to detect "small" effect sizes, as defined by Cohen (1988). Hence the probability of detecting the behavioural differences between the groups is decreased accordingly.

All data were coded and entered into a computer for statistical analysis. Due to the varying number of items per scale on the CMAI scores, mean scores for each scale were used in order to allow comparisons across scales. Analyses including frequencies, cross tabulation, Pearson's correlations, One - way analysis of variance (ANOVA) and repeated measures ANOVA were performed using the SPSS package.

CHAPTER FOUR
RESULTS

Table 1 provides demographic information on the two nursing homes. There were significant differences in the mean MMSE scores between the two nursing homes (one way ANOVA, $F = 8.797$, $df = 1$, $p = .004$) and also significant differences in Verbal Agitation scores (one way ANOVA, $F = 9.365$, $df = 1$, $p = .003$) which are both discussed later in some detail. In other measures however, there were no significant differences.

Table 1

Nursing Home Characteristics

	Home # 1. N = 50		Home # 2. N = 13	
	M	SD	M	SD
Age	82.3	8.5	80.6	6.2
MMSE Score	13.8	9.0	6.0	5.0
Aggression Score	1.1	1.0	1.0	1.0
Physical Agitation Score	3.2	1.6	2.1	1.1
Verbal Agitation Score	1.5	1.3	0.3	0.4
Other Behaviour Score	0.3	0.5	0.4	0.5

Males and females were equally likely to have disruptive behavioural patterns (one way ANOVA, $F = 0.459$, $df = 1$, $p = 0.501$), and with respect to the individual behavioural measures there was no gender bias in any category within the CMAI scale.

Table 2 illustrates the class of medication prescribed at the time of the study. CNS stimulants were not prescribed to any resident during the course of data collection. Chi – square analysis was performed to compare the two groups, using 2 x 2 matrices for each class of medication and showed that there was no significant difference in the class of medication prescribed between the two groups. The non-significance of medication between the groups also meant that no adjustments were made in the behavioural data recorded prior to analysis to compensate for medication effects.

Table 2

Residents Class of Medication by Group

	(1) Sedative hypnotic N = 16	(2) Anti anxiety N = 4	(3) Antipsychotic N =28	(4) Antidepressant N =3
Dementia	8	3	20	1
Vascular Dementia	8	1	8	2

(1) χ_2 (1), .954 p = 0. 329

(2) χ_2 (1), .385 p = 0 .535

(3) χ_2 (1), .2.60, p = 0.107

(4) χ_2 (1), .958, p = 0.328

Age, MMSE score and CMAI scores (Aggression, Physical Agitation and Verbal Agitation) of the participants in the two diagnostic groups are shown in Table 3. The mean MMSE score for all 63 subjects was 12.2, and the range was 0 – 30. There was no significant difference between the mean ages (one –way ANOVA, $F = 3.943$, $df = 1$, $p = 0.052$) or mean MMSE scores of the two groups (one way ANOVA, $F = 0.398$, $df = 1$, $p = 0.531$).

Table 3

Group Demographics

	Vascular Dementia N =25		Dementia N =38	
	M	**SD**	**M**	**SD**
Age (years)	79.6	9.1	83.6	7.0
MMSE Score	11.4	9.0	12.8	8.9
Aggression Score	1.1	1.0	1.1	1.0
Physical Agitation Score	2.8	1.6	3.1	1.6
Verbal Agitation Score	1.0	1.3	1.4	1.2
Other Behaviour Score	0.1	0.3	0.5	0.5

The "Other Behaviour Measure" was not used for the main statistical analysis due to 40 of the participants recording zero on this category of behaviour. The other three behavioural categories analysed were approximately normally distributed, all with a slightly positively skewed distribution.

The Mauchley's Test of Sphericity indicated that the error covariance matrix of the orthonormalised transformed dependent variable was not significantly different from an identity matrix (Mauchly's $W = .921$, $df = 2$, $p = 0.96$).

There was no significant main effect between the dementia and vascular dementia groups ($F = 1.07$, $df = 1$, $p = .305$). Of the three classes of behaviour examined, there was a significant interaction ($F = 178.1$, $df = 1$, $p = 0.00$) between Physical Agitation and Aggression.

Correlation analysis revealed that of the three categories of behaviour, only aggression was negatively and significantly correlated with MMSE scores (see Table 4).

Table 4.

Correlations of MMSE scores and Behavioural Categories

Category	Pearson Correlation
Aggression	-0.23*
Physical Agitation	-0.08
Verbal Agitation	0.16
Other Behaviour	-0.20

* $p < .05$

Table 5 shows the correlations among the three previously identified behavioural categories. Physical Agitation, Verbal Agitation and Other Behaviour were significantly correlated with the score on Aggression, and Verbal and Other Behaviour were significantly correlated with Physical Agitation.

Table 5

Correlations between Behavioural Categories

	Aggression	Physical	Verbal	Other
Aggression	1.00			
Physical	0.33**	1.00		
Verbal	0.41**	0.52*	1.00	
Other	0.26*	0.28*	0.14	1.00

* $p < .05$

** $p < .01$

Table 6 presents the correlations of individual Aggressive Behaviours. As can be seen, there is a significant negative correlation only between *Kicking* and MMSE scores. Of the remaining Aggressive Behaviours, however all were negatively correlated with the MMSE scores.

Table 6.

Correlations of MMSE Scores and Frequencies of Aggressive Behaviours

	MMSE	Spit	Curse	Hit	Kick	Grab	Push	Scratch	Tearing	Bite
Spit	-0.14									
Curse	-0.05	0.27*								
Hit	-0.19	0.23*	0.27*							
Kick	-0.30**	0.27*	0.25*	0.35**						
Grab	-0.17	0.15	0.29*	0.30**	0.29*					
Push	-0.04	-0.12	0.12	0.13	0.17	0.91				
Scratch	-0.01	0.26*	0.41**	0.37**	0.16	0.34**	0.00			
Tearing	-0.20	0.34**	0.19	0.16	0.31**	0.51	-0.82	-0.06		
Bite	-0.20	0.20	0.19	0.30**	0.50**	0.12	0.18	0.18	-0.32	
Hurting	-0.01	0.24	0.14	0.16	0.31**	0.22**	0.12	-0.32	0.26*	-0.70

* $p < .05$

** $p < .01$

Table 7 presents the individual item correlations of the Physical Agitation category comprising *Pacing* (aimless wandering), *Inappropriate Dress* (disrobing), *Trying to get to a Different Place, Restlessness, Handling Things Inappropriately and Performing Repetitious Mannerisms.* Of these behaviours, only *Handling Things* was significantly negatively correlated with MMSE scores.

Table 7.

Correlations of MMSE Scores and Frequencies of Physical Agitation

	MMSE	Pacing	Inappropriate	Repetitious	Different places	Restlessness	Handling things
Pacing	-0.34						
Inappropriate	-0.18	0.16					
Repetitious	0.16	0.30	0.24*				
Different places	0.18	0.38**	0.43	0.21*			
Restlessness	-0.21	0.16	0.17	0.18	0.39**		
Handling things	-0.32**	-0.21	0.26*	0.15	0.18	0.09	
Mannerisms	0.22	-0.00	0.35**	0.03	0.03	0.22*	0.13

* $p < .05$

** $p < .01$

Table 8 summarises the Verbal Agitation item correlations of *Constant Attention Seeking, Making Strange Noises, Screaming, Complaining* and *Negativism*. As can be seen, *Screaming* is negatively and significantly correlated with MMSE, although *Making Strange Noises* is not. *Complaining, Negativism* and *Constant Attention Seeking* are all positively correlated with MMSE scores, although only *Complaining* is significant.

Table 8

Correlations of MMSE Scores and Frequencies of Verbal Agitation

	MMSE				
Attention seeking	0.16				
		Attention seeking			
Strange noises	0.12	-0.06			
			Strange noises		
Screaming	-0.25*	0.10	0.24*		
				Screaming	
Complaining	0.34**	0.24*	0.03	-0.17	
					Complaining
Negativism	0.18	.043**	-0.02	-0.12	0.20

* p < .05

** p < .01

Table 9 presents the Other Behaviour item correlations, although all but *Hiding Things* were negatively correlated with MMSE scores, only *Eating Inappropriate Substances* is significant.

Table 9

Correlations of MMSE Scores and Frequencies of Other Behaviours

	MMSE	Hiding	Hoarding	Verbal Sexual	Physical Sexual	Intentional Fall	Throwing
Hiding	0.09						
Hoarding	- 0.06	0.27*					
Verbal Sexual	-0.13	-0.07	0.09				
Physical Sexual	-0.17	-0.04	0.32**	-0.02			
Intentional Fall	-0.20	-0.07	0.11	0.59**	-0.02		
Throwing	- 0.07	0.21*	0.15	-0.03	-0.02	-0.03	
Eating Inappropriate substances.	- 0.23*	0.00	0.01	-0.07	-0.04	-0.07	-0.05

* $p < .05$

** $p < .01$

CHAPTER FIVE
DISCUSSION

There was a significant difference in cognitive functioning between the two nursing homes (Home #1 MMSE = 13.8, Home #2 MMSE = 6.0). Of the CMAI categories recorded however, only the Verbal Agitation Scores were significantly different with Home #2 recording a lower Verbal Agitation Score. This difference can be possibly attributed to significant architectural design differences between the two homes. Home #1 was a three-storey block design with a conventional hospital ward structure. Those residents who had difficulty with walking, or who were severely disorientated, required staff assistance to access the ground floor garden via the lifts. Several residents were observed to repeatedly call to the staff requesting assistance in accessing the lifts to get to the garden. In contrast, Home #2 had six individual accommodation units at ground level, each with approximately ten residents and clustered around a large central secure landscaped garden. The residents, even those severely cognitively impaired, were repeatedly observed to freely move between the gardens and the various accommodation units, often several times an hour without staff assistance. Hence, although the residents of Home # 2 were significantly more cognitively impaired, they required much less staff assistance and supervision to move independently around the recreational areas.

While no significant difference in general disruptive behaviour between males and females were detected in this study, several other studies (Burns, Jacoby and Levy, 1990; Kalunian, Binder and McNeil, 1990) have indicated that male dementia sufferers are more likely to be assaultive than females. However, different definitions of aggressive behaviour make direct comparisons difficult. For example, in studies where gender differences in aggression have been observed either a numerical number of physical assaults have been recorded or the behaviour has been recorded using instruments having questionable reliability and validity. Furthermore, a review of several studies where the CMAI has been used (Cohen – Mansfield et al. 1989; Cohen – Mansfield et al. 1990; Cohen Mansfield et al. 1992; Snowden et al. 1996) indicated that

no distinction in aggressive behaviour has been identified between genders.

Five types of medication were recorded for this study and there was no significant difference between the two groups in prescribed medication. The regular alteration in individual dosage rates, the concomitant use of several types of medication and the relatively modest number of subjects meant that further analysis was not conducted. The use of medication may have influenced the expression of agitated behaviour, but any such effects do not appear to have been more likely in one group than the other.

Group behavioural differences

There was no significant difference between the two groups across the three main categories of Aggression, Physical Agitation and Verbal Agitation. The findings in respect to aggression and physical agitation support the earlier research reported by Sultzer, et al. (1993). However, the non-significant result for verbal agitation contrasts with the Sultzer study. Yet there are significant differences in methodology between the two studies. The patients in the Sulzer et al. (1993) study were matched by the degree of cognitive impairment from a group of 104 patients, who were veterans at a university affiliated referral centre. Also the recording of the behavioural ratings, using the Neurobehavioural Rating Scale, were done through an interview procedure with the primary caregiver. Furthermore the present study did not attempt any comparisons of levels of emotional functioning between the two groups

Cognitive Impairment and Behaviour

The earlier findings indicating a significant negative relationship between aggression and cognitive impairment functioning were affirmed by this research.

It should be noted that the mean MMSE score of 12 for the subjects included in this study, is located in the moderate to severe impairment classification. This contrasts with a number of other studies, which have scores closer to the normal/mild impairment levels (Teri et al. 1988; Sultzer et al. 1993; Aarsland et al. 1996) and this may account for the differences found from the Cohen – Mansfield et al. (1990) study, in which

people with only intermediate levels of cognitive impairment were responsible for higher levels of aggression.

The significant positive relationship between complaining and cognitive impairment functioning supports earlier research by Cohen Mansfield (1988) and Snowden et al. (1996). Both found that residents who had a high level of complaining behaviour had mean MMSE scores of around 24, which was substantially higher than the mean of 18 for all the participants. This study had a similar finding, in that the mean MMSE score of the residents recorded as having complaining behaviour was 18, compared to the overall mean MMSE score of 12. However, this is not an unexpected outcome, especially in residential nursing homes that have moderate to severely demented residents. Individuals who are mildly impaired, are still able to interact verbally with staff and have their needs satisfied, which serves as a positive reinforcer.

The significant negative correlation between screaming and impaired cognitive functioning supports the earlier comprehensive research into screaming behaviour (Hallberg, Norberg, & Erikson, 1990; Cohen – Mansfield et al., 1990). Staff involved in this study made similar observation to those of the earlier study, namely that most of the time, screaming by residents is directed at no one or nothing at all. The screaming resident however, often has a poor quality social network within the home. The influence that social isolation contributes to screaming behaviour requires further investigation.

In summary therefore, although some individual minor differences have been recorded overall, the well-established linear relationship between impaired cognitive functioning and the number of aggressive disturbances were affirmed by this research.

This study corroborates the clinical literature (Rashti, et al. 1996; Teri et al. 1988; Cohen – Mansfield, 1986, Cohen Mansfield et al. 1990) indicating a significant negative correlation between a resident's level of intellectual functioning and behaviours categorised as aggressive. Like Cohen – Mansfield, (1988) and Snowden et al. (1996), this study also identified a significant positive correlation between complaining and impaired cognitive impairment. No significant relationship between wandering (pacing)

and cognitive impairment was obtained, although as Teri, et al. (1992) observed this relationship is dependent on both the population studied and the relevant environmental location. For this study, the non-significant finding may be due to both homes providing large secure gardens for physically agitated residents to ambulate in throughout the day.

Limitations of the present study

It must be acknowledged that this type of study, conducted on small numbers of demented nursing home residents, has severe limitations. This is because the study of behavioural disruption in clinical populations is typically not conducted under ideal experimental conditions. In this study, not only are the sample sizes small, but there are a substantial number of uncontrollable extraneous variables. Pre - morbid personality, current levels of emotional functioning and medication profiles are just a few, which impact on the conclusions drawn from the analysis. Diagnostic separation also remains a problem in geriatric research, and many different diseases (including a number with no obvious organic pathology) have clinical presentations that are similar to dementia. Ideally, a full neurological examination using MRI or CT scanning should be conducted prior to any classification to minimise group misdiagnosis. This was not conducted for this research due to cost and the practical consideration of arranging CT or MRI scans on moderately to severely demented and disruptive residents. In this study, the problem of placing people who have small sub - acute vascular damage, in the dementia group cannot be ruled out. Nevertheless, even with comprehensive scanning, a misdiagnosis of vascular dementia, Alzheimer's disease, mixed dementia or some other type of generalised degenerative dementia remains a distinct possibility without a definitive autopsy report.

Considerable effort was expended to ensure that the behavioural recordings were accurate. However as McCann, Gilley, Hebert, Beckett & Evans (1997) have indicated, there is often discrepancies between direct observation and staff rating of behaviour, especially where the facility has a substantial number of moderately to severely impaired individuals. As particular residents become categorised by the nursing staff as habitually troublesome, individuals' objective data recorded during the study may not

have been as immediately observable, as the consensual opinion of nursing staff suggested.

Research in nursing home situations remains problematic. Management is often reluctant to commit scarce resources to undertake clinical investigation. Voluntary permission from the next of kin or guardian to conduct the research with the residents is often given sparingly and grudgingly. This may be due to fear, that participation in studies investigating such areas as disruptive behaviour, will compromise the quality of care for their relative. At ward level, the behavioural data recording process is time consuming. Also a shortage of skilled staff means that considerable time and resources must be expended on training, without which accurate conclusions cannot be drawn.

Not withstanding these perceived cautions, this study does provide some preliminary information for researchers in this domain.

Directions for future research

These findings suggest that future research into behavioural disruption displayed by residents in nursing home requires a more comprehensive investigation of mediating variables rather than a concentration on a linear relationship between cognitive impairment and behaviour.

There is often a shortage of psychologists and other mental health professionals in nursing home settings (Burgio & Bourgeois, 1992). Psychological assessments of residents are infrequent and hence staff often misunderstand the complex relationship between cognitive deterioration and presenting symptomatology. This study demonstrates the need for increased involvement by behavioural specialists in Australian nursing homes, where their expertise is needed to implement and evaluate behaviour modification programs, advise staff, and generally ensure that the residents have access to high quality specialised psychiatric care.

It is indisputable that CNS medications have a major impact on resident behaviour. Of the participants in this study, an overwhelming number of the residents were on one or more of the CNS medications. What is required, is a comprehensive analysis of the effects these medications have on day to day functioning of residents. A

relationship between medication dosage disruption and resident's falls has been well established (Cohen Mansfield, 1986; Zimmer et al. 1984). However, in view of the prevalence of such medications and the serious consequences that falls have in elderly residents, ongoing investigation is required.

That CVA remains a major cause of disability is indisputable, but up to now little research has been conducted into the long-term effects that a CVA has on the behavioural and psychological functioning of individual nursing home residents. The frustration experienced by those individuals due to physical limitation can often only be expressed through attention seeking behaviour. A number of the staff involved in data collection readily acknowledged that excessive levels of anxiety and depression were common amongst this group, especially in the months immediately subsequent to the initial cerebral trauma.

Examination of some other variables including levels of staffing, design considerations and ward configuration may also yield fruitful directions. Finally, urgent investigation is required on establishing the validity of a number of assessment instruments currently being used for geriatric research purposes, as they have often appear to have been inadequately standardised for use with geriatric populations.

Interpretations and Conclusions

This study suggests that there is no significant difference in the frequency of disruptive behaviour between vascular dementia and generalised dementia sufferers. In view of the small number of participants and the limited period of behavioural measurement, it would be presumptuous to assume that definitive conclusions could be drawn from a single study. But these results, which contrast with a similar earlier study (Sultzer et al.1993), suggest that further investigation into behavioural differences between residents suffering vascular dementia and generalised dementia is necessary.

It is possible that the reason this kind of research is not conducted 'under ideal experimental conditions' is because it is simply not logistically achievable. As Burgio & Bourgeois (1992) pointed out, all research in a nursing home setting is problematic and multi faceted. Furthermore, it is this author's experience that data collection in any

eriatric nursing home, hospital or hostel environment requires persistence, tolerance and dedication.

A rapidly ageing population means that the need to extend our understanding of the relationship between the dementing process and behaviour is becoming paramount. Observation of the general dementia sufferers during this research has indicated that ongoing investigation is required on behavioural patterns longitudinally as the level of intellectual functioning declines.

This study provides some useful preliminary data about the prevalence of aggression, which is the behaviour causing most distress to relatives and caregivers (Chappell & Penning, 1996). Future researchers should aim to understand the nature and association with other aspects of the disease process. For instance, this study highlighted difference in verbal disruption between the two nursing homes environments, and without doubt, surroundings impact markedly on this type of behaviour. This remains a domain ripe for future investigation. Another example is research into concomitant depression and clinical management. These are just two domains that are currently deficient in empirical evidence. With a large and growing elderly nursing home population, research data concerning the efficacy of pharmacological and non-pharmacological interventions for management of aggression remains an important avenue for further studies.

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Appendix A

Master of Psychology research thesis

Resident information and record booklet

Ian F Johnston
Edith Cowan University
Joondalup Campus

NURSING STAFF

PLEASE READ THE FOLLOWING INSTRUCTIONS

The aim of this study is to examine the relationship between cognitive impairment and clinical diagnosis according to criteria of disruptive behaviours. The results will provide valuable information for design of interventions and programs to manage agitation in nursing home residents.

The Assessment number referred to on the front cover has been allocated only to this resident participating in the study and will be used for all records in order to observe confidentiality of information.

Three procedures are required for each participant:

1. The demographic and clinical information from the medical file.

2. The MMSE attached is to be completed for all residents participating in the study. This will be attended to by research staff.

3. The attached CMAI, is to be completed by nursing staff, and should be completed ONCE A WEEK with a consensus of opinion between nursing staff wherever possible. If the following procedures are adopted it should take no more than 5 minutes to complete for each resident. For example, if the resident is grabbing onto people, an estimate of the number of times this behaviour has OCCURRED in the LAST WEEK is required, say "several times a day" then a number 6 is placed alongside the relevant shift. There is provision on the form for 8 weeks recording for each participant, although it is anticipated that 3 weeks will be completed for each participant, a 1 week initial trial plus 2 weeks data.

I am available for consultation on any matter relating to this study at the number below, and I would like to take this opportunity to thank you for your valuable assistance in helping accumulate this important data.

Ian Johnston
9381 3992

PATIENT INFORMATION SHEET

Disruptive behaviour in nursing home residents : A study of predisposing factors.

Dear Participant,

My name is Ian Johnston I am currently doing research at Homes of Peace (WA) Inc. for a few months as part of the requirements for my Masters degree in Geropsychology at Edith Cowan University.

The aim of the research is to investigate the relationship among behaviour, the degree of cognitive impairment and your clinical diagnosis. Both the Ethics Committee at Edith Cowan University and the management of the Homes of Peace (WA) Inc. have given approval for this study.

The research is also interested in how these things effect your behaviour within the nursing home environment. Such information is important in helping us design appropriate psychological treatment for people who are having problems.

If you decide to take part in this research, you will not be identified. Any details and information that may identify you as an individual will remain completely confidential. Participation in the study will involve you supplying information in a short Mini Mental State questionnaire interview. Nursing staff will, should you agree to participate, record your behaviour on a Cohen Mansfield Agitation Inventory for a period of about 14 days. If at any time you wish to withdraw from the study, you are free to do so without influencing your medical or nursing home care.

There are no known adverse effects of the questionnaires, however, if you have any concerns about this study, or if you require further information, please do not hesitate to contact Mr. Ian Johnston on 9381 3992. If so desired, correspondence regarding any concerns about this project can be directed to Associate Professor Ed. Helmes, School of Psychology, Edith Cowan University Joondalup Drive Joondalup W.A.

Thank you very much for your help.

Ian Johnston
Ph: 9381 3992

Associate Professor Ed Helmes
Department of Psychology
Edith Cowan University
Ph: 9400 5543

<u>CONSENT FORM - Personal</u>

Disruptive behaviour in nursing home residents : A study of predisposing factors.

<u>Participant's name</u>: .... Assessment No..........

<u>Name of researcher</u>: Ian F Johnston

<u>Name of research supervisor</u>: Associate Professor Ed Helmes

The aim of the research is to investigate the relationship between cognitive impairment, clinical diagnosis and behaviour in nursing home residents. The research is also interested in how these things impact on your behaviour in this nursing home. Both the Ethics Committee at Edith Cowan University and the management of the Homes of Peace (WA) Inc. have given approval for this study.

1. I consent to participate in the above project. The nature of the project, including the scales to be used have been explained to me.
2. I understand that:
    (a) If at any time I wish to withdraw from the study, I am free to do so without influencing my medical or nursing home care.
    (b) The project is for the purpose of research, and not for individual treatment.
    (c) The confidentiality of the information I may provide as answers in the following scales will be safeguarded:
    Mini Mental State Examination (MMSE), The Cohen Mansfield Agitation Inventory (CMAI).
    (d) There are no known adverse effects of questionnaires or scales.

Additionally, I give consent to the researcher named above to access my medical records to record my clinical diagnosis and MMSE score (if applicable) <u>only</u>. I understand that once this is recorded, the information I provide will be kept separate from this consent form.

Signed: .... Date: ....

CONSENT FORM - Legal Guardian

Disruptive behaviour in nursing home residents : A study of predisposing factors.

Participant's name: ....Assessment No............

Legal Guardian's name: ....

Name of researcher: Ian F Johnston

Name of research supervisor: Associate Professor Ed Helmes

The aim of the research is to investigate the relationship between cognitive impairment, clinical diagnosis and behaviour in nursing home residents. The research is also interested in how these things impact on the participants behaviour in this nursing home. Both the Ethics Committee at Edith Cowan University and the management of the Homes of Peace (WA) Inc. have given approval for this study.

1. I consent to the above named participant assisting in the above project. The nature of the project, including the scales to be used, have been explained to me.
2. I understand that:
    (a) If at any time I wish the above participant to withdraw from the study, I am free to do so without influencing their medical or nursing home care.
    (b) The project is for the purpose of research, and not for individual treatment.
    (c) The confidentiality of the information as may be provided as answers in the following scales will be safeguarded:
    Mini Mental State Examination (MMSE), The Cohen Mansfield Agitation Inventory (CMAI).
    (d) There are no known adverse effects of questionnaires or scales.

Additionally, I give consent to the researcher named above to access the above participants medical records to record clinical diagnosis and MMSE (if applicable) score only. I understand that once this is recorded, the information I provide will be kept separate from this consent form.

Signed (Legal Guardian) ....   Date: ....

Demographic Information

Background

Question No. 1. Participants assessment number............................

2 .Date of birth .... 3.Marital Status ....

4. Age............ 5.Gender.........6.Date of admission...................................

7. Number of months in residence ....

Items concerned with present research

Cerebrovascular problems

8. TIA   ....

9. Accident..

10. Stroke   ....

11. Duration(Months)..

12. Unconscious..

Additional information pertaining to past history

Investigations (if available)

13. CT or MRI scan ....

List of current medications

1...Duration ....

2...Duration...... ....

3...Duration..

4...Duration...

5...Duration...

6...Duration...

MINI-MENTAL STATE

(Reprinted from Folstein 1975)

Patient _____   Assessment number _____

Examiner _____   Date __/__/__   Score _____

Level of consciousness   ☐ Alert   ☐ Drowsy

Score

Orientation   ☐ Day   ☐ Month   ☐ Date   ☐ Year   ☐ Season   / 5

☐ Ward   ☐ Hospital   ☐ Suburb   ☐ City   ☐ State   / 5

Registration   ☐ Chair   ☐ Tree   ☐ House   .   / 3

Attention & Calculation   Serial 7's

☐ 93   ☐ 86   ☐ 79   ☐ 72   ☐ 65   / 5

OR   World Backwards

☐ D   ☐ L   ☐ R   ☐ O   ☐ W

Recall   ☐ Chair   ☐ Tree   ☐ House   / 3

Language   a)   Name a   ☐ Pencil   ☐ Watch   / 2

b)   Repeat "No ifs, ands or buts"   ☐   / 1

c)   Follow a 3 stage command

     TAKE A PAPER IN RIGHT HAND   ☐

     FOLD IT IN HALF   ☐

     AND PUT IT ON THE FLOOR   ☐   / 3

ame _____

Read and obey   Score

CLOSE YOUR EYES   / 1

Write a sentence

_____

_____

_____

/ 1

Copy this design
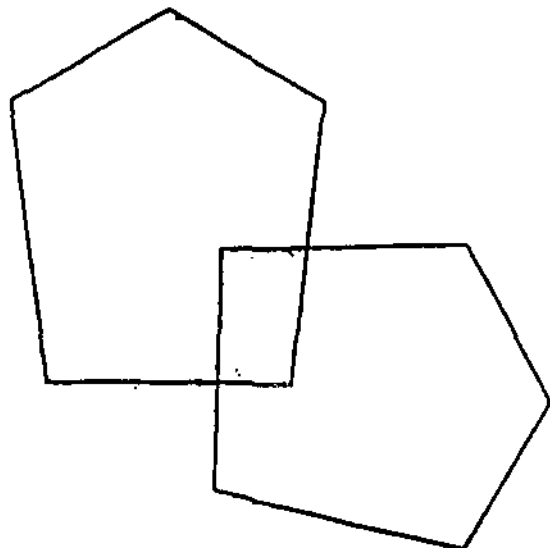
/ 1

Signature_____

AGITATION - SEE SCALE Rate behaviors as they occur on your shift (during past two weeks).

Rating Scale for Agitated Behaviors

Never	Less than once a week	Once or twice a week	Several times a week	Once or twice a day	Several times a day	Several times an hour
1	2	3	4	5	6	7

8-would be occurring if not prevented
9-Inapplicable

o *If prevented part of the time, estimate how frequently it would happen if not prevented.*

o *Do not include rare behaviors that are clearly explained by situational factors.*

1. Pacing and aimless wandering - constantly walking back and forth, does not indicate normal purposeful walk, include wandering when done in a wheelchair. _____

2. Inappropriate robing or disrobing, exposing self - putting on too many clothes, putting clothing on in an inappropriate manner, taking off clothing when it is inappropriate (If only genitals are exposed, do not rate; see item # 28.) _____

3. Spitting (including while feeding) - do not include salivating of which resident has no control. _____

4. Cursing or verbal aggression - (only when using words; swearing, use of obscenity, profanity, verbal anger. Nonverbal will be marked under screaming) . _____

5. Constant unwarranted request for attention or help - verbal or nonverbal unreasonable nagging, pleading, demanding (indicate also for oriented people) _____

5. Repetitive sentences or questions - repeating the same sentence or question one right after the other (Do not include complaining - see item # 18; even if oriented and even if possibly warranted) _____

7. Hitting (including self) - physical abuse, striking others _____

8. Kicking - strike forcefully with feet at people or objects _____

9. Grabbing onto people or things inappropriately - snatching, seizing roughly, taking firmly

 Pushing - forcefully thrusting, shoving, moving putting pressure against _____

· 1. Throwing things - hurl, violently tossing up in air, tipping off surfaces, flinging _____

12. Making strange noises - including inappropriate, unwarranted crying, weeping, moaning, weird laughter _____

13. Screaming - loud shrill, shouting, piercing howl ____

14. Biting - chomp, gnash, gnaw (people or self) ____

15. Scratching - clawing, scraping with fingernails (people or self) ____

16. Trying to get to a different place (e.g. out of the building, off the property - sneaking out of room, leaving inappropriately, trying to get into locked areas) ____

17. Intentional falling - purposefully falling onto floor, include from wheelchair, chair, or bed ____

18. Complaining - whining ____

19. Negativism - bad attitude, doesn't like anything, nothing is right ____

20. Eating or drinking inappropriate substances - putting into mouth and trying to swallow items that are inappropriate ____

21. Hurting self or other - burning self or other, cutting self or other, touching self or other with harmful objects, etc. ____

22. Handling things inappropriately. - picking up things that don't belong to them, rummaging, moving furniture, playing with food ____

23. Hiding things - putting objects under or behind something ____

24. Hoarding things - putting many or inappropriate objects in purse or pockets, keeping too many of an item ____

25. Tearing things or destroying property - shredding, ripping, breaking, stomping on something ____

26. Performing repetitious mannerisms - tapping, rocking, rubbing, fiddling with something, twiddling with something ____

27. Making verbal sexual advances - sexual propositioning, sexual innuendo or "dirty" talk ____

    Making physical sexual advances or exposing genitals - touching a person in an inappropriate sexual way, rubbing genital area ____

29. General Restlessness - fidgeting, always moving around in seat, getting up and sitting down inability to sit still ____

30. Is the resident agitated in your opinion?

    1-yes, 2-no ____