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Identifying Preferred Activities to Increase Engagement in Residents with Dementia

Regan Scally

Abstract

Elders with dementia spend the majority of their day inactive, often with little more than general music or movies playing in the background. The purpose of the current study was to increase engagement in elderly residents within a dementia care facility. Nine residents with severe dementia and five caregivers participated. Intervention 1 required caregivers to complete activity records and receive supervisory feedback during afternoon observation sessions. No increase in appropriate engagement was observed, contrary to previous research. Single stimulus engagement preference assessments were used to identify preferred activities that residents could engage with independently. During Intervention 2, caregivers were provided with information on resident preferences, and these activities were made easily accessible to caregivers. An increase in appropriate engagement was observed for some of the residents. Intervention 2 was also implemented in the morning by a caregiver who led group activities at the same time. Findings were inconclusive from the morning sessions due to participant attrition. Improvements made during follow up and suggestions for future improvements are discussed. Intervention 2 allows any member of staff to efficiently engage residents, even during times that they are required to complete other tasks.
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Identifying Preferred Activities to Increase Engagement in Residents with Dementia

The number of elderly in the world is increasing, especially within developing countries (Fratiglioni, De Ronchi, & Agüero-Torres, 1999). The risk of developing a dementia has also been found to increase nearly exponentially with age across the globe (Fratiglioni, et al., 1999). Per 100 people in their respective age groups, the prevalence of dementia is 1.3 in people aged 60-64, 2.4 people aged 65-69, 4.5 people aged 70-74, 8.4 people aged 75-79, 15.4 people aged 80-84, 28.6 people aged 85-89, and 63.9 people aged 90 and older (Prince et al., 2013). It was estimated that in 2010, 35.6 million people around the world currently suffered from dementia; and this number was estimated to be 65.7 million by 2030, and 115.4 million by 2050 (World Health Organisation, 2012). The most common of the dementias is Alzheimer’s disease, which accounts for approximately 60-70% of dementia diagnoses (National Institute of Aging, 2007). It is estimated that 5.2 million Americans currently suffer from this disease (Fargo & Bleiler, 2014), and an earlier study predicted that by 2050, 13 million will be affected (Hebert, Scherr, Bienias,Bennett, & Evans, 2003).

Within New Zealand, approximately 28,000 people were living with Alzheimer’s disease in 2008, and this number was estimated to increase to 70,000 by 2031 (Tobias, Yeh, & Johnson, 2008). There is currently no cure to reverse the symptoms for any of the dementias (Fargo & Bleiler, 2014). Projections of dementia rates point to it being an epidemic on a global scale (Brookmeyer, Johnson, Ziegler-Graham, & Arrighi, 2007).

Dementia is the biggest determinant of disability and required care among the elderly and the global economic impact of dementia in 2010 was estimated to be US$604 billion (Wimo, Jönsson, Bond, Prince, & Winblad, 2013). The distribution of costs in high-income countries is similar for informal and direct care; whereas the cost of informal care in low- and middle-income countries is much higher than that of formal care (Wimo et al., 2013). This suggests that those elders with formal diagnoses of dementia within low- and middle-income
countries were more likely cared for in the community than those in high-income countries. Wimo et al. (2013) also predicted that the care for elders with dementia within low- and middle-income countries will become more evenly distributed. Combined with the aging of the baby boomer generation, this will result in an increase in the total global costs for dementia. Despite the difficulty inherent to such a prediction, total costs have been forecast to increase by 85% by the year 2030 (Wimo et al., 2013).

**Cognitive and behavioural issues.** Dementia is the broad term that has been used to categorise a number of neurological diseases that cause a socially significant loss of cognitive functioning with respect to memory, executive functioning, visuospatial skills, and language (Flashman, Wishart, Oxman, & Saykin, 2003). This is also in excess of what is typically observed during typical aging (e.g., slowing brain waves, slowing reaction times, the increase in respiratory problems, decreased muscular function). The decline in functioning is characterised as progressive and often reduces an inability to live autonomously and can therefore result in the need for nursing home placement during mid to latter stages of the disease (Jacqmin-Gadda et al., 2013). A population-based study from the UK found that (1) on average, 34% of elders that suffer from dementia live in institutional care, and (2) of all elderly living in institutions, 62% had some form of dementia (Mathews & Dening, 2002).

There are a number of common behavioral deficits and excesses that characterise dementia. These deficits and excesses vary between patients, the different types of dementia and the patient’s current severity. The commonly manifest deficits include deficiencies in language, short-term memory, self-care, reasoning and orientation (Buchanan, Christenson, & Houlihan, 2011). There are also a number of ‘behavioural and psychological symptoms of dementia’ (BPSD; Finkel, Costa e Silva, Cohen, Miller, & Sartorius, 1997). These include agitation, aggression, psychosis, wandering, depression, impulsivity, inappropriate sexual behaviour, disruptive or repetitive vocalisations, delusions, hallucinations and possibly others.
Behaviour problems amongst elders diagnosed with dementia are common. One study found that within a specialty clinic, 83% of the elders with dementia presented with at least one problem behaviour, and 74% presented with at least two (Swearer, Drachman, O’Donnell, & Mitchell, 1988). Another study which sampled elderly residents living in social care facilities and nursing home care, 79% of those diagnosed with dementia also had clinically significant behavioural and psychological symptoms of dementia (BPSD; Margallo-Lana et al., 2001). Thus it appears that researching methods of dealing with the behavioural problems commonly presented should receive a great deal of research attention. This would allow the ability to provide the best care possible for elderly living with dementia.

**Treatment.** Historically, the medical model has been prominent within long term care for the elderly population (Vladeck, 1980). According to this model, the behavioural changes observed within the elderly population are solely the result of biological deterioration (Baltes & Barton, 1977). This has historically resulted in the use of restraints, medications, and higher staff-resident ratios being used to manage various inappropriate behaviours (Cohen-Mansfield, Marx, & Rosenthal, 1989).

Medications are often still used as first-line treatments in attempts to reduce BPSD within dementia care (Douglas, James, & Ballard, 2004). The effectiveness relative to placebo may be statistically significant, although the clinical significance is questionable (Ballard & O’Brien, 1999; Schneider et al., 2006). A 2005 survey of rest homes within New Zealand found that on average, over half of the residents were on at least one type of psychotropic medication (Tucker & Hosford, 2008). The same study revealed that the average proportion of residents within dementia units prescribed antipsychotic medication was just fewer than 60% (Tucker & Hosford, 2008). Medications prescribed to dementia patients have associated side effects (Ballard et al., 2003) – especially when multiple
medications are administered (Hajjar, Cafiero, & Hanlon, 2007) – which can reduce the patients safety, well-being and quality of life (Ballard et al., 2003; Kallin, Gustafson, Sandman, & Karlsson, 2004).

It has been argued that good clinical practice should: first, consider whether behaviours are caused by medical symptoms (e.g., infections, migraines); and second, attempt the use of nonpharmacological interventions before considering pharmacological ones (Douglas et al., 2004). Nonpharmacological interventions can also lead to improved physical and social environments to optimize daily life, improving the care that is received and result in lower costs (Mallidou, Oliveira, & Borycki, 2013).

The medical model within elderly care is often spoken of synonymously with institutionalised care, and rightly so (Chapin, 2010). It is a model of care better suited to acute, rather than complex chronic health issues like aging, and especially dementia (Deutchman, 2005). Under the medical model, a great focus is on attending to and documenting the physical care and management of elders, with little focus on their psychological needs (Barba, Tesh, & Courts, 2002; Wack & Rodin, 1978). Residents are commonly treated collectively conforming to pre-set routines. The structure of organizations providing long term care under this model have historically been hierarchical, resulting in the recipients of care (and those that work the closest with them) having little input into the decisions directly relating to their care (McWilliam et al., 2003; Miller, Booth, & Mor, 2008). It is easy to see how this model can result in the quality of life and preferences of individuals being overlooked (Lundervold & Lewin, 1992).

There has been a growing cultural change within elderly care which was started to bring empathic care to the elderly (Harrop-Stein, 2014). The central aim of the culture change movement is to continually improve the provision of elderly care by focusing on the lifestyle, needs, and preferences of the person (Miller et al., 2008). Things like changing nursing home
environments from their traditional institutional look (e.g., long open corridors) to more homelike environments is increasingly common (e.g., Anderson & Spiers, 2014). However, if long term care organisations seek the adoption of culture change, they should do so with caution, since limited empirical research has investigated the efficacy of their various components (Rahman & Schnell, 2008); and research investigating the health outcomes of residents following adoption have been inconclusive (Hill et al., 2011). Since culture change is understudied, its adoption may not result in desired outcomes, and therefore, may result in wasted time and money (Harrop-Stein, 2014).

There has also been a growing trend since the 2000’s promoting the use of non-pharmacological treatments as the first line of intervention within dementia care (Cohen-Mansfield, 2005). This trend has resulted in a multidisciplinary approach to elder care becoming more commonplace (Mallidou, Oliveira, Borycki, 2013). Non-pharmacological interventions also provide a way to personalise care, catering to individual abilities, unmet needs, habits and preferences (Cohen-Mansfield, 2005).

**Applied Behaviour Analysis and the Elderly Population**

Applied behaviour analysis (ABA) is a field of psychology that views behaviour as the result of the dynamic interaction between the biological organism and environmental stimuli (Skinner, 1983). Behaviours that can come under the voluntary control of the individual are called operants, and are able to be modified (Baltes & Barton, 1977). The behaviours of elders (with and without dementia) are no exception to this perspective (Burgio & Burgio, 1986). This perspective therefore offers an alternative view of the behaviours of elders and thus contrasts with that held by the medical model (Baltes & Barton, 1977). Behaviour is determined by the presence and absence of environmental stimuli. Control of behaviour is therefore exerted either by manipulating the antecedents and/or consequences of behaviour (Baltes & Barton, 1977). Looking at the behaviour of elders (with and without
dementia) in this way can provide a more optimistic outlook for the future of their care than can be conceived under the current state of the medical model.

**Development of behavioural interventions for the elderly.** The first applications of behavioural techniques to the problems of the elderly occurred during the 1970’s (Cartenson, 1988). Macdonald and Butler (1974) observed an increase in independent ambulation when elderly residents were prompted and provided with social attention for doing so. Sachs (1975) also increased elderly residents’ teeth-brushing by verbally prompting and reinforcing them for doing so. Macdonald (1978) used prompts and social praise to increase speaking in elderly residents. Blackman, Howe, and Pinkston (1976) increased social interactions between elderly residents by providing refreshments for attending a small lounge area at an organised time. These initial studies provided evidence that the elderly can benefit from behavioural research and interventions, and thus can be used to improve the care of elders in long term care (Cartenson, 1988).

A short time after these initial studies however, far less behavioural research was conducted with the elderly (Burgio & Burgio, 1986). Cartenson (1988) proposed several potential reasons for this, for example: behaviour therapists may still have viewed the progression of old age as being irreversible. This progressive decline may mean that even if improvements are made, they may decline some short time after. Additionally, Cartenson (1988) suggested that the publication of research involving the elderly may have been more difficult compared to behavioural research with other populations (e.g., developmental or intellectual disabilities). Publication was difficult for several reasons: the improvements observed of the elderly were likely to be minor compared to that of other populations; researchers were often turned down by behaviourally-oriented journals and were told that they were not interested in publishing research on the elderly; in addition, mainstream gerontology journals were known to be quite anti-behavioural (Cartenson, 1988).
A special section of the *Journal of Applied Behaviour Analysis (JABA)* was dedicated to behavioural research within the elderly population (Iwata, 1986). Prior to this special section, only nine articles published in JABA included elderly participants, and only two of which included participants diagnosed with dementia (Trahan, Kahng, Fisher, & Hausman, 2011). One of the purposes of the special section was to therefore bring attention to this lack of research and suggest promising areas for future behavioural research within the elderly population (Burgio & Burgio, 1986). The suggested areas included field study, training caregivers in the community, training and management of staff within institutions.

Despite the intentions of those involved (Burgio & Burgio, 1986; Iwata, 1986), this special section failed to increase the prevalence of behavioural research within the elderly population being published within behaviourally-oriented journals. As of 2008, the total number of publications including the elderly published in eight behaviourally-oriented journals was 109; less than one per year for each of the journals (Buchanan, Husfeldt, Berg, & Houlihan, 2008). The total number of these articles that specifically analysed or discussed issues relating to elders with cognitive impairments (i.e. dementia) was 32 (Buchanan et al., 2008). Using this outcome measure as an indication of the current status of behavioural research within the elderly population, and particularly with elders with dementia, suggests that it is a largely understudied area.

In a recent commentary, Burgio and Kowalkowski (2011) argued that looking only at “behavioural” journals was a misleading outcome measure for the state of behavioural research within the elderly population. The central argument of the commentary was that behavioural methods, procedures, and treatments are commonly used within mainstream gerontology; however, they may not always describe them with the same “behavioural” language used within behaviourally-oriented journals (Burgio & Kowalkowski, 2011). A literature review of many non-pharmacological interventions used within mainstream
psychology for the treatment of BPSDs labelled behavioural interventions as promising (Cohen-Mansfield, 2001). Burgio and Kowalkowski (2011) also mention that behavioural research is well funded by the National Institute of Health. For example, 33.2 million (from a total budget of 83.9 million) was given to “behavioural medicine and interventions” in FY07 of the Division of Behavioural and Social Research according to a Review Committee Report from 2009. The NIH has also funded a large amount of research within areas that Burgio and Burgio (1986) originally argued would benefit from future behavioural research (see Burgio & Kowalkowski, 2011). This provides evidence that behavioural research is becoming increasingly more valued within mainstream gerontology.

Burgio and Kowalkowski (2011) go on to say that their research team decided to publish in mainstream gerontology journals in order to spread knowledge of behavioural methods to professionals that did not access behavioural journals, but who were in positions to fund and disseminate the research. As has been evidenced above, this type of strategy has resulted in generous funding and acceptance of behavioural methods within mainstream research and specifically, within mainstream gerontology. In their concluding comments, Burgio and Kowalski (2011) argued that due to the increased interdisciplinary approach used by most professionals today, these same professionals are more likely to access behavioural, as well as mainstream research journals; thus, behavioural research within the elderly population should be published in both domains (Burgio & Kowalkowski, 2011).

An important characteristic inherent to elders with dementia is the progressive deterioration of brain tissue, which makes the task of learning new skills difficult (Buchanan et al., 2008). Therefore, it may be a more acceptable goal to focus on the maintenance of current abilities of elders, especially those within long term care. The following are interventions that have involved manipulations of the physical and/or social environments for the purpose of allowing elders with and without dementia to improve their qualities of life.
with their current abilities.

**Physical environment.** Changes in the physical environment for the purpose of improving behaviour have been effective with elders with dementia. A study conducted by Namazi & Johnson (1991) found that carefully placed signs greatly improved the continence within two special dementia care units. Several different sign types were used, including the words “toilet” and “restroom” as well as a picture of a toilet. All types of signage increased the number of times the toilet was used by elderly residents compared to pre- and post-test, that did not include any. Observing that elders with dementia often have a downward gaze when walking, the researchers also examined the influence of placing the signs on the ground. The most effective signage procedure within both units was when the word “toilet” was placed on the floor along with arrows indicating the direction of the toilet. The removal of any signage during the post-test resulted in an immediate reduction in toilet usage, highlighting the control this antecedent intervention had over continence behaviour.

Positive outcomes have also been observed when meals were presented “family style” to elderly residents with dementia (Altus, Engelman, & Mathews, 2002a). This meant introducing a self-service meal in which the different components were presented separately on the table, instead of meals being pre-plated before being placed on the tables. Participants included five female residents with diagnoses of dementia of the Alzheimer’s type, but were capable of eating independently (or with minimal prompting). This minor alteration of the physical environment during mealtimes resulted in moderate increases in communication and participation in tasks relating to mealtimes.

Bourgeois (1993) provided memory aids to elders with dementia and analysed the conversations between them and a dyadic pair. The memory aids were books and they contained various pictures and text about the respective elders with dementia. Without the memory aid, the conversations between the dyads were often not on topic. With the memory
aids, the conversations were on topic more often. This suggests that conversations of elders with dementia can be improved with changes to their environment.

Kincaid and Peacock (2003) investigated the effect of painting a wall mural over an exit door on the frequency of door-testing behaviours of twelve elderly residents with dementia. Investigating behaviour using a group design they found a significant decrease in overall door-testing behaviour. It is likely that the wall mural functioned to reduce the saliency of the door to the elders with dementia, reducing the stimulus control of the door on door-testing behaviours.

It has also been shown that changes in the physical environment can reduce problem behaviours of elders with dementia. One study found that playing participants’ preferred music during bathing routines significantly decreased the occurrence of aggressive behaviours and reportedly improved affect and cooperation (Clarke & Bilbrey, 1998).

**Social environment.** One of the most important aspects of the social environment for elderly – especially those that need full time care – is the primary provider(s) of care. For elders within nursing homes for example, nursing aides (also known as caregivers or certified nursing assistants [CNAs]) by far provide the majority of care to elderly residents (e.g., Burgio & Burgio, 1990). Since care staff interact with elderly residents to such an extent, it is important to consider the influence their behaviour has on resident behaviour.

Attention may be a potent reinforcer for the behaviour of elders, especially for those residing within long term care. This is because the current social environments within the average long term care facilities for elders provide very low levels of social interaction for elderly residents. For example, even though caregivers often provide the majority of interaction with residents, caregivers were found to spend 42.5% of their days engaged in “nonresident work” (e.g., paperwork and cleaning the facility), 25.1% engaging with people other than residents, and spent 22% interacting with residents (Shore, Lerman, Smith, Iwata,
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& DeLeon, 1995). However, due to the ratios of nurse aides to residents being between 1:8.5 and 1:11.5, the amount of staff-resident interaction each elderly resident received was likely to be minimal across their day.

Another observational study investigating how staff allocated their time found that the proportion of samples staff spent verbally interacting with elderly residents (10.7%) was about half as much as staff spent talking to other members of staff (Burgio et al., 1990). In this same study, it was also observed that staff often engaged in low levels of positive or negative verbal interactions with residents and later suggested this may be due to many of the interactions being instructional (e.g., “come sit over here”). Even when directly receiving care, residents with cognitive impairments have been known to receive little social interaction from staff (Cohen-Mansfield et al., 2006). Receiving low levels and quality of attention within long term care facilities likely makes it a more potent reinforcer, especially considering many elders would have had a history with much higher levels of attention.

Baltes, Burgess, and Stewart (1980) found that staff attention was more likely to follow dependent resident behaviours compared to independent resident behaviours during elderly residents’ morning routines. Further, residents who are not engaged, or who have engaged themselves independently in a task like letter writing, are unlikely to receive attention from staff (Baltes, 1988). It was argued that this association between resident and staff behaviours was reinforcing resident dependency and extinguishing resident independency (Baltes, 1988).

Support for this argument comes from research showing that when independent resident behaviours are prompted and reinforced, they increase. Elderly residents were shown to ambulate more independently to meal time seating when they were prompted and praised for doing so by an experimenter (Burgio, Burgio, Engel, & Tice, 1986). A similar procedure carried out by nurse aides showed that prompting and praise/disapproval successfully reduced
elderly residents’ urinary incontinence, with a 45% increase in appropriate toileting (Schnelle et al., 1983). Baltes and Zerbe (1976) also found that when resident independent eating responses were continuously immediately reinforced, the levels of independent feeding increased markedly.

A recent study provides similar evidence that staff directly influence the dependence/independence of elderly residents with dementia (Engelman, Altus, Mosier, & Mathews, 2003). During baseline, caregivers rarely prompted residents to dress themselves and commonly fully assisted them. Caregivers were taught – using role-play and feedback – to use two or more less intrusive prompts (e.g., modeling, gestural, verbal) prior to physically prompting the resident; wait at least 5-seconds between prompts; and provide immediate praise to the resident for completing a part of the task, even if they were fully assisted. The results showed that the caregivers often only had to use minimally intrusive assistance (i.e. verbal, gestural, or model prompts) in order for the same residents to complete the same tasks in the same amount of time. This study therefore provides evidence that residents with dementia can increase their level of independence with minor changes in the behaviour of care staff.

The above literature suggests the importance of the physical and social environment on the behaviour of elders with and without dementia. Due to the increasing world-wide costs of dementia (Wimo et al., 2013), it seems important to design interventions in the most time and cost efficient way possible (Kolanowski, Fick, Frazer, & Penrod, 2010). This will increase the likelihood they will be maintained within typical facilities with typical staffing ratios.

**Activity Engagement and the Elderly Population**

The importance of activities is evidenced in legislation by the U.S. congress in the form of the Omnibus Budget Reconciliation Act of 1987 (OBRA; U.S Congress, 1987). This
mandated that facilities providing long term care to the elderly in the U.S. are to provide their residents with activities. More specifically, this legislation states that activities should be tailored to each resident’s preferences, physical and cognitive abilities, and psychosocial needs. Despite this type of legislation, residents in long term care commonly spend the majority of their day inactive (Burgio et al., 1994). Similar legislation has been introduced in New Zealand by the Ministry of Health in 2002 and is currently the responsibility of New Zealand district health boards (New Zealand Ministry of Health, 2013). This legislation is called the Age-Related Residential Care Services Agreement for the Provision of Age Related Residential Care (New Zealand Ministry of Health, 2013). However, elders in long term care in New Zealand may likely be just as inactive despite such legislation.

**Benefits.** Activity programs commonly involve scheduled periods of group activities (Volicer, Simard, Pupa, Medrek, & Riordan, 2006). These are often led by a small number of activity staff and last for about 30 to 45 minutes. Schreiner, Yamamoto, and Shiotani (2005) observed the behaviour of 35 elderly residents with Alzheimer’s disease living within either of two special care units for dementia during scheduled activity periods and during other times of the day. Many of the residents had severe dementia. Residents’ affect (facial expressions) was seven times more likely to be scored as ‘happiness’ during structured recreational activity (mean of 22.3%), compared to other times (2.9%). On top of this, 43.75% of the residents observed were only scored as displaying ‘happiness’ during activity periods and never during other times.

At the end of the scheduled activity periods, the activity staff will often leave the area and elderly residents are then left to pursue and initiate their own engagement (Volicer et al., 2006). Particularly in the past, this has been aggravated by the fact that staff members from other disciplines (i.e. caregivers and Registered Nurses) that are not typically responsible for engaging residents in activities, are unwilling or are unaware of how to engage elderly
residents (Voliker et al., 2006). Scheduled periods of group activities also comprise only a small portion of residents’ daily lives.

Direct observations of the daily behaviour of elderly residents in long term care have been carried out in several studies. Elderly residents of a nursing home were observed every day from 7:00am to 8:00pm, for five weeks (Shore et al., 1995). “No activity” was recorded for an average of 51.4%, the most of any category. “Appropriate nonsocial” was the second highest reported, at an average of 34% (most of which was ambulation). A similar study observed life in a nursing home once a week from 7:00am to 7:00pm over a period of eight weeks (McClanahan & Risley, 1975). Elderly residents were found to spend the majority of their days sitting or lying down, whilst rarely engaging in social interactions or appropriate activities. In a study which included 27 nursing homes, elderly residents were observed to spend an average of 65% of their day doing “little or nothing” and only engaged in social activities for 12% of their days (Harper Ice, 2002).

Bowie and Mountain (1993) observed the behaviour of elderly residents with dementia living in seven wards. A total of 110 residents with dementia were observed systematically from 8:00am to 9:00pm for a total of 114 hours of observation time. The percentage of time that residents were not engaged in any activity was 56.5%. This result is similar to the observation studies of elderly residents without dementia cited above. However, residents were also observed to engage in: inappropriate behaviours – defined as unacceptable behaviours that did not involve others (e.g., sucking fingers and throwing food) – for 11.3% of the time; motor activity – defined as repetitive and unnecessary behaviours (e.g., aimless wandering and fidgeting) – for 18.7% of the time; and antisocial – defined as unacceptable behaviours that did involve others (e.g., aggression and stealing) – for 0.2% of the time. Thus, on top of the large percentage of time that residents were observed to be not engaged, they also spent a substantial amount of their day engaging in inappropriate,
repetitive, and antisocial behaviours.

Research shows that a low level of engagement has a range of different adverse consequences for elders, especially those with dementia. For example, low levels of engagement have been associated with increases in problem behaviours. Cohen-Mansfield, Marx, and Werner (1992) observed the patterns of agitation (e.g., repetitive vocalisations, throwing or picking objects, pacing, and aggression) in a group of residents with dementia. It was found that during times in which participants were not engaged in structured or social activities, were associated with a greater number of agitated behaviours.

It has been reported within the literature that a large proportion of the day within long term dementia care is spent in “controlled inactivity” (Schreiner, Yamamato, & Shiotani, 2005). This is time in which elderly residents are encouraged to remain in one main area so that they are less likely to injure themselves by way of a fall or some other accident, in places where they cannot be seen. This is likely due to the contingencies in place for the staff, as they are aware they will be held responsible if a resident has an accident, or even more so if they are not attended to straight away. During this time though, residents are often left with little more than a T.V. or music playing in the background (Cohen-Mansfield, Thein, Dakheel-Ali, & Marx, 2010a).

Sensory impairments have also been associated with low levels of engagement in elderly residents (Resnick, Fries, & Verbrugge, 1997). This finding is significant given that other studies have found that the prevalence of sensory impairments is quite high within elderly nursing homes. Two studies found the prevalence of hearing impairments to be 24% and 19%, respectively (National Centre for Health Statistics, 1989; Tielsch, Javitt, Coleman, Katz, & Sommer, 1995). Two other studies found the prevalence of moderate to severe hearing loss to be 51% and 22%, respectively (Garahan, Waller, Houghton, Tisdale, & Runge, 1992; Voeks, Gallagher, Langer, & Drinka, 1990). Despite the differences between
the prevalence levels presented by these studies – which were likely the result of the procedures each study used (Resnick et al., 1997) – sensory impairments within elderly nursing homes appear to be common. Elderly with severe visual impairments were 51% more likely to exhibit low levels of social engagement and 65% more likely to engage in little or no activities (Resnick et al., 1997). Similarly, elderly with severe hearing impairments were 42% more likely to exhibit low levels of social engagement and 30% more likely to engage in little of no activities (Resnick et al., 1997). This research highlights the significance of sensory impairments as they relate to the engagement of typical elders residing in nursing homes.

This also highlights the fact that television and music, which rely on these senses being relatively intact, may be insufficient to engage elders based on sensory impairments alone (Cohen-Mansfield et al., 2010a). General television and music is also not likely to be preferred by all residents. With respect to elders with dementia, some television may not also be suitable due to the progressive cognitive decline. Taking these things together, it appears that merely having general background stimuli will be insufficient to engage all elderly residents living within long term care, especially those with dementia.

Volicer et al. (2006) have emphasised the importance of continuous activity programming within long term dementia care. Rather than typical scheduled activity periods, which only comprise a small portion of residents’ daily lives, continuous activities aim to provide opportunities for engagement for the majority of the day. Volicer et al. (2006) described examples of continuous activity programming within two dementia care settings that had successfully implemented continuous activity programming. Both had also done so without the need to employ more staff. It instead required a restructuring of staff duties, often with one or two staff always being present in the activity room of a facility. The results showed increases in activity involvement, satisfaction of families, decreases in sleep disturbances, agitation, and in the use of psychotropic medications. As well as larger group
activities, individual and small group based activities were used and were considered vital to the continuous activity programming (Volcier et al., 2006).

An important aspect of small group, and especially individual activities, is they allow the physical and cognitive abilities of elderly residents to be catered for (Volcier et al., 2006). Group activities are often more focused towards residents that are more physically and mentally able, and are sometimes not suitable for less able residents (Buettner & Fitzsimmons, 2003; Shore et al., 1995). Smit, Willemse, Lange, and Pot (2014) conducted an explorative study of a number of dementia care facilities to investigate factors that were associated with resident engagement. Within three facilities that had a central activities program, it was observed that only a few of the residents were engaged during these scheduled activity periods, resulting in many remaining unengaged. It was argued that centralised activity programs alone may not provide all residents with dementia with meaningful engagement (Smit et al., 2014).

Voelkl, Fries, and Galecki (1995) found that elders with dementia who were scored as having a very severe impairment on the Cognitive Performance Scale (CPS; Morris et al., 1994), had the lowest mean time spent engaging in activity programmes. Based on observations of ten elders with dementia during unstructured periods in a nursing home, Lucero et al. (2001) suggested that different stimuli may be more appropriate than others depending on the severity of the elder’s dementia. It was suggested that those with middle stage dementia may be able to engage with more complex tasks than those with late stage dementia, who may only be able to perform simple manipulations (e.g., feeling fabric books). It was also strongly argued that familiar activities would be more appropriate than unfamiliar activities, regardless of the stage of dementia (Lucero et al., 2001).

Orsulic-Jeras, Judge, and Camp (2006) compared the engagement of elderly residents with severe dementia during the regular scheduled activity program to engagement during
Montessori-based activities. Montessori-based programming is usually used as an approach to learning in preschool aged children and involves independent activities that are organised into ability ranges. The 14 women in the study engaged significantly more and displayed more positive affect (positive facial expressions) during the Montessori-programming compared to the regular scheduled activities. This study adds further support that individual activities based on skill level can be more effective than regular activity programming for residents with severe dementia.

Moore, Delaney, and Dixon (2007) observed the affect of three elderly residents with Alzheimer’s disease before during and after they were presented with individualised activities, and recorded their affect. Three different activities were assessed, and each was assessed for different durations. All participants were exposed to an ice cream parlour activity and an outdoor farm. The third activity for each respective participant was singing, puzzles, or a conversation. For all three participants, the level of positive affect was highest when any of the three activities were provided, compared to observations from before and after. This study revealed that elders with dementia can display positive affect during individual activities.

Another advantage of individual activities is it can cater more easily to the preferences of individuals than can group activities. Research has shown that elders with dementia prefer individual leisure activities more than edible items, and that they can be used to reinforce behaviours (Ortega, Iwata, Nogalez-González, & Frades, 2012). This further emphasises the fact that increasing engagement with individual leisure activities during the daily lives of elderly with dementia will help to improve their quality of life.

One study compared the effectiveness of three individualised interventions designed to engage elderly residents with dementia, for the direct purpose of reducing their various verbally disruptive behaviours (Cohen-Mansfield & Werner, 1997). Activities were presented
to each participant non-contingent on their behaviour, and the durations of their verbally
disruptive behaviours were measured. Preferred background music was compared to one-on-
one social interaction with research assistants, video recordings of family members, and to a
no stimulation control condition. Aside from the control condition, music was the least
effective in reducing the residents’ verbally disruptive behaviours. Verbally disruptive
behaviours reduced by 16% during the control condition and by 31% during the music
condition. This was a statistically and clinically significant reduction. Superior reductions
were observed during the family video condition, and especially in the one-on-one social
interaction, with 46% and 56% reductions in verbally disruptive behaviours respectively.

It is important to highlight here that the reductions observed by Cohen-Mansfield and
Werner (1997) were limited to the times in which the various interventions were in place, and
verbally disruptive behaviours usually reappeared upon their removal. Therefore, despite the
effectiveness of social interaction in increasing the engagement of elderly residents and the
benefits that come as a result, increased social interaction is often very expensive (Cohen-
Mansfield, Dakheel-Ali, Marx, 2009). This is because caregivers and other staff often have
many different jobs to complete and are therefore unable to provide enough social interaction
to produce meaningful increases in the levels of elder engagement. Increasing staffing ratios
to accommodate this is not feasible in the majority of long term care facilities, due to
increased costs. Even employing more staff may not necessarily increase resident
engagement, as other studies have observed no relationship between resident engagement and
staff ratios (Innes & Surr, 2001; Smit et al., 2014).

Individual differences were also observed with respect to the relative effectiveness of
the three interventions (Cohen-Mansfield & Werner, 1997). Out of all of the interventions,
music worked the best for two participants, family videos worked the best for four, and one-
on-one social interaction worked the best for twelve. It was argued that better results may
have been obtained during the music intervention if more specific information (i.e. song titles) were obtained concerning these residents’ possible preferences. Cohen-Mansfield et al. (2009) argued that staff members should be made aware of which individualised activities are likely to be engaged with by residents, and how to match stimuli to individual residents during times in which staff members are too busy to provide adequate social interaction.

Arenstein, Olsen, and Schulman (1996) have also investigated whether presenting individual activities to elderly residents with Alzheimer’s disease would reduce their problem behaviours (e.g., repetitive self-talk, wandering, and aggression). Activities were to be selected based on the current physical and cognitive abilities and past experiences of the residents. The results showed that presenting these activities to residents when they began to engage in problem behaviours, resulted in a cessation of that behaviour in more than half of the instances. Engagement with activities functioned by providing them with an alternative behaviour that was then more reinforcing than the problem behaviour. On top of this, the authors observed an increased number of social interactions towards residents from staff, other residents and visitors.

The discussed research thus far has highlighted that the elderly, particularly those with sensory and cognitive impairments (i.e. dementia), spend large percentages of their day inactive. This is despite the recognised importance and benefits of engagement. In addition, times of inactivity have been associated with various inappropriate behaviours. Individual characteristics have also been discussed as influencing the relative benefits of different activities. More specifically, the importance of each individual’s sensory, physical and cognitive abilities, as well as their preferences has been emphasised. Implicit within this discussion has been the influence of the physical and social environment on the engagement of elders.

**Behavioural interventions and elderly engagement.** Given that current research
suggests the particular importance of engagement within the elderly population, it is important that environments facilitate such levels of engagement. Inactivity, particularly for those elders suffering from dementia, has been viewed as a natural change as elders progress through life (Alston & Dudley, 1973). In contrast to this view, ABA looks directly at the impact of the environment as having a significant influence on the presence (or the absence) of behaviours. For elders with dementia within long term care facilities for example, inactivity is seen as an interaction between residents’ limited ability to pursue or initiate engagement with their environment, and the limited amount of activities provided (Cohen-Mansfield et al., 2010a). This latter point was argued by Cohen-Mansfield et al. (2010a) to be due to staff being unaware of how to engage residents, which can then lead to residents being left in a room for periods of time with either T.V. or music playing in the background. Many studies have shown that the levels of engagement exhibited by the general elderly population and the dementia population can be increased by changing the physical and social environment. These studies are discussed below.

**Typical elderly in long term care.** An early study provided evidence that the environment plays a significant role in the engagement of elderly nursing home residents (McClannahan & Risley, 1975). The study was conducted in a 100-bed nursing home, with demographics typical of American nursing homes. A scheduled period each weekday morning in a designated lounge was used to assess the effects that changes to the environment had on resident engagement. An activity coordinator remained in this area across all conditions. During the first condition, no leisure activities were available in the lounge, but residents could bring leisure activities with them into the lounge. In the second condition, leisure activities were available on shelves within the lounge. If residents did not initiate engagement with the activities, they were presented with an activity and prompted to use it. In the third condition, leisure activities were available on the shelves and by request,
but residents were not provided with activities or prompted. The activity coordinator never praised resident engagement.

Relatively low levels of engagement were evident both when no activities were available, and when activities were available but no activities or prompts were given to residents (McClannahan & Risley, 1975). Resident engagement during both these conditions averaged 20% and 25% respectively. When activities and prompts were provided by the activity coordinator, resident engagement was significantly higher with an average of 74%. This provided quantitative evidence that simple manipulations of the physical and social environment increased engagement during a scheduled activity period for elderly nursing home residents.

Burrows, Jason, Quattrochi, and Lavelli (1981) conducted two studies which increased the engagement of elderly residents of a nursing home. Study one investigated whether placing leisure items on tables (each of which had four seats) within a main lounge, would increase the level of activity and social engagement of residents seated at the tables. This was compared to baseline, where no leisure items were placed on the tables, using an ABAB (first baseline, then intervention, then repeat) experimental design. The average level of engagement for the two baselines was 12%, which increased to 25% for the intervention. This shows that simply placing leisure items on tables can increase the activity and social engagement of the elderly residents seated there.

In the second study, Burrows et al. (1981) observed even greater increases in engagement in another group of elderly residents when an organised, prompted leisure activity (bingo), was carried out. Residents could receive prizes for winning, or even be involved in calling the bingo numbers. This again was compared to a baseline level of activity and social engagement, but this time it was assessed using an ABA (baseline, then intervention, then a return to baseline [not to be confused with applied behaviour analysis])
design. The average level of engagement during both baselines was 2.5% which increased to 60% during the intervention. This demonstrated that an organised, prompted leisure activity produced superior resident engagement compared to the presentation of unprompted activities.

Of significant importance in both these of studies is the number of elderly residents that attended these scheduled activity periods. Within the McClannahan and Risley (1975) study, attendance averaged only 25 residents or less, within each of the three conditions. Within the Burrows et al (1981) study, there were a total of 58 residents on the floor in which study one was conducted and 64 resided within the floor in which study two was conducted (Burrows et al., 1981). However, during study one, an average of only 19.5 and 18.9 residents attended the main lounge during the scheduled activity period for baseline and intervention phases respectively. During study two, an average of 15.3 and 19 residents attended the main lounge during the scheduled activity period for baseline and intervention respectively. This suggests that a significant proportion of the elderly residents did not attend the scheduled activity periods. Consequently, increasing attendance to scheduled activity periods needs addressing.

An early study investigated the effectiveness of different types of announcements for the purpose of increasing attendance to a scheduled activity by elderly nursing home residents (Reitz & Hawkins, 1982). Inclusionary criteria for the study included being at least 65 years old, able to independently attend the activity area without assistance, and physically capable of engaging with leisure activities. Of the 85-90 residents within the nursing home, all data are presented for only 20 residents. The types of announcements were signs, using a loudspeaker, personal invitations and staff prompts. During the signs condition, three signs were placed in areas around the facility. Two were placed in the large lounges and one was placed at the entrance to the dining hall. During this condition, attendance averaged less than
one person per session. This suggests that displaying signs was relatively ineffective to encourage resident attendance to scheduled activity periods.

During the loudspeaker condition, the activity coordinator made an announcement over the loudspeaker five minutes prior to the scheduled activity period. During this condition, attendance increased somewhat compared to the signs condition, but still remained low at an average of just under two of the observed residents attending per activity period. Personal invitations were then added so that after the activity coordinator had made the loudspeaker announcements, he/she would then also approach each of the residents and personally invite them to attend. This resulted in a sharp increase in resident attendance, with the average attendance for this condition being 9.2. This effect was also replicated when residents were returned to the loudspeaker only condition and then returned again to the loudspeaker and personal invitation condition. Thus providing strong evidence that when residents are personally invited to attend scheduled activities, they are more likely to attend than when they are just informed over a loudspeaker.

During the staff prompting condition, staff received a memo highlighting the importance of resident activity attendance and directing all staff to encourage residents to attend activities. On top of this, the activity coordinator still made the loudspeaker announcements which now included prompts for staff to encourage resident attendance. The frequency and content of staff prompts to residents were not controlled for. Following the loudspeaker announcement, the activity coordinator went to the activity area and waited for residents to arrive. During this condition, resident attendance initially increased to 16 on the first session. However, resident attendance began a downward trend, reaching as low as only two residents attending the session. Fortunately, the number of residents that were prompted by staff was also recorded, and can be used to explain the decrease in resident attendance. At the same time that resident attendance was decreasing, so to was the number of residents
prompted by staff, and the variability in both trends was also very similar. This strongly suggested that resident attendance was dependant on staff prompting (Reitz & Hawkins, 1982).

In an effort to insure that staff continued to prompt resident attendance, feedback was provided to staff concerning the number of residents that attended the scheduled activity period. The feedback was in the form of two large signs displayed within the facility that: (1) thanked staff for their efforts in increasing resident attendance; and (2) displayed the total number of residents that attended the previous activity period. When this feedback was provided to staff, resident attendance averaged 10.4. The removal of the staff feedback resulted in a reduction in resident attendance to an average of 7.6. When it was reintroduced, resident attendance averaged 11.6. This provides strong evidence that resident attendance can be increased when they are prompted by staff, and that staff are more likely to continue prompting resident attendance when they receive feedback for doing so.

Elders with dementia in long term care. The previous section discussed studies demonstrating that manipulations of the physical and social environment can evoke attendance and engagement behaviours of typical elderly within long term care. It has been suggested that due to the associated cognitive decline, many elders with dementia have difficulty pursuing and initiating their own engagement with activities (Kuhn, Fulton, & Edelman, 2004; Volicer et al., 2006). In viewing engagement with activities as an operant behaviour, Brenske, Rudrud, Schulze and Rapp (2008) stated that this lack of initiative could be conceived as of weak stimulus control of activities. In other words, the presence of an activity coordinator (person who coordinates and facilitates activity engagement), or stimuli that can be engaged with (e.g., leisure activities), may fail to evoke appropriate engagement behaviours, even though reinforcement may be available (Brenske et al., 2008). In particular, elders with dementia often need to be prompted to initiate engagement with stimuli (Cook,
Fay, & Rockwood, 2008). Therefore, the behaviour of others becomes a critical component within interventions designed to increase activity engagement in elders with dementia. For this reason, involving not only activity staff, but also staff from all disciplines – particularly caregivers – seems important for the purposes of engaging residents with dementia for long durations of the day.

A foundational study provided quantitative evidence that when elderly residents with physical or mental impairments were given the opportunity to engage with recreational materials, levels of activity engagement were considerably higher than during baseline (Jenkins, Felce, Lunt, & Powell, 1977). Two special care homes – that catered for elders with physical (Home A) or mental (Home B) impairments respectively – participated. During 45 minute long structured activity periods in the respective lounges of the homes, one experimenter provided residents that were awake with a choice between several activities, prompted their use and praised appropriate engagement. Residents who agreed to engage with activities were interacted with on an ongoing basis. Residents who originally refused to engage, had recently woken up, or entered the room were offered activity materials again about midway through the activity period.

Within the homes, the average number of residents engaged in activities during baseline was 2.4 in Home A and 0.7 in Home B (Jenkins et al., 1977). When the residents were provided with the opportunity to engage, the average number of residents engaged was 6.1 in Home A and 4.1 in Home B. The average number of residents present in the respective lounges remained similar across sessions. For Home A, the average number of residents present was 13 during baseline and 14 during the intervention. For Home B, the average number of residents present was 11 during both baseline and intervention. This showed that the levels of activity engagement within special homes for elders with physical or mental impairments could also be increased when an experimenter carried out simple behavioural
techniques.

Some limitations exist within this study. One of the limitations is that the levels of engagement were assessed at the group level, which can potentially hide variability within individuals’ data (Cooper, Heron, & Heward, 2007). Therefore it cannot be known whether there was a large increase in the levels of engagement of just a few residents within both homes, or whether levels of engagement increased in a similar way for all residents. Another limitation is that the presence of residents within the respective lounges was not controlled for. By chance, the average number of residents within the lounges were similar during baseline and intervention, allowing the average number of residents engaged to be a comparable dependant variable. As with the previous studies that increased the engagement in elderly without dementia, not all residents within the facility attended the scheduled activity periods.

As previously discussed, an important consideration in any discussion about engagement with leisure activities is individual preferences. Knowledge of individual preferences was used to effectively increase the overall level of attendance of elders with dementia to a scheduled activity period (Brenske et al., 2008). Preference questionnaires and observations of resident engagement during previous activity periods, were used to obtain information of resident’s preferences. During baseline, residents were given a general prompt (e.g., “There are activities in the room down the hall”). It was made sure that the residents knew where to go and were even escorted there if they showed a commitment to come (e.g., “That sounds like fun, I will come”). During the intervention, knowledge of the residents’ preferences was used to encourage their attendance to the activity room- if a resident did not show a commitment to come when given a general prompt, they were also given a descriptive prompt. A descriptive prompt entailed making the resident aware that an activity they preferred was in the activity room (e.g., “You should come; there will be a pack of playing
This intervention was assessed using an ABAB design. The results from the six residents that participated were averaged. The average percentage of time-samples that the residents were present during both baselines was 17%, which increased to 78% during the first application of the intervention and 75% for the second. These results suggest that providing descriptive information about activities that are known to be preferred by residents was sufficient to significantly increase the attendance of elders with dementia to scheduled activity periods.

During the same intervention, model prompts, verbal prompts, and praise statements were delivered to residents to increase the overall level of engagement of the residents (Brenske et al., 2008). Upon entering the activity room, all residents were given general prompts (brief descriptions of the activities in the room) during both baseline and intervention sessions. During baseline, if a resident asked a question about an activity, they were told that they were to do it on their own. During intervention sessions, residents that had not engaged in an activity within two minutes were given activity specific prompts by staff. This consisted of staff modelling appropriate engagement in a specific activity, and then verbally prompting the resident to engage in that specific activity. In addition, each resident was delivered one verbal praise statement (“Nice one, you are good at that!”) during each intervention session.

During the first baseline, the average percentage of time-samples that the residents were engaged in activities was 78% with a decreasing trend, and was 44% during the second baseline. During the first application of the intervention this was 92% and was 79% during the second. This evidence suggests that model and verbal prompts – delivered to residents that were not engaged following general prompts – and a praise statement, increased average levels of engagement in activities within the activity room.

One noteworthy limitation of this study is that it is difficult to analyse the full effects
of the prompts and praise used to increase engagement from the increase in attendance that co-occurred during the intervention (Brenske et al., 2008). This is because the attendance to the room likely confounded the engagement results and it is impossible to know to what extent this is true. Despite this limitation, this article adds research evidence that knowledge of individual activity preferences can be used to increase attendance to an activity area. It also provides further support that the use of prompts (and perhaps praise) is important within interventions designed to increase the engagement of elders with dementia in long term care.

Behavioural techniques have also been integrated into an intervention designed to increase engagement in elders with dementia in activities of daily living and leisure, outside of scheduled activity periods. Thus, it can practically be used to increase resident engagement at any time of the day and position of the residents within the facility (Engelman, Altus, & Mathews, 1999). Labelled the ‘check-in procedure’ by the authors, the intervention involved a certified nursing assistant (CNA) that was rostered for either the morning or afternoon shift within a seven bed dementia care facility checking in with each of five elderly residents with dementia within no longer than 15 minutes. If the resident was appropriately engaged with either a daily living or leisure activity, they were praised by the CNA for doing so; if the resident was not engaged in an activity, the CNA provided them with a choice between two or more activities. Observation sessions were 50 minutes in duration and were carried out twice per week at varying times, both in the morning and afternoon shifts. Resident behaviour was observed using a time-sampling procedure, and levels of engagement were assessed using a multiple baseline design across morning and afternoon shifts.

Two of the five participating residents’ levels of engagement during baseline, intervention and follow up from both the morning and afternoon shifts were presented (Engelman et al., 1999). During the morning shift, the female resident was appropriately engaged during 53% of baseline, which increased to 89% during the intervention, and
maintained at 98% during follow up. Similar results were observed of the same resident during the afternoon shift. She was appropriately engaged during 40% of baseline, which increased to 93% during the intervention, and maintained at 93% during follow up. During the morning shift, the male resident was appropriately engaged during 61% of baseline, which increased to 85% during the intervention, and maintained at 87% during follow up. During the afternoon shift, the same resident was appropriately engaged during 43% of baseline, which increased to 84% during the intervention, and reduced somewhat to 69% during follow up. Residents also engaged with more than twice the number of different activities during the intervention as they had during baseline. The results demonstrate that the check-in procedure can increase the levels and variety of activity engagement of residents with dementia.

Despite the large increase in engagement for these residents, staff did not continue to implement the check-in procedure once the researchers left the facility (Altus, Engelman, & Mathews, 2002b). It is difficult to know why this might be, but it could have been helpful to obtain information from staff – by requesting they complete and return social validity questionnaires – to investigate the interventions acceptability (Engstrom, 2011). There are several further limitations. The check-in procedure requires a significant amount of one caregiver’s time, especially if there are a large number of residents within a particular facility. Another limitation is that the intervention requires staff training, which can incur more costs. Additionally, no data on procedural integrity (i.e. how accurately the staff carried out the procedure) were taken, and therefore it is unknown whether the staff continued carrying out the intervention competently with the amount of training that they had (Engstrom, 2011).

A replication of the check-in procedure was carried out by Engstrom (2011). The purpose of which was to: (1) investigate whether similar results would occur with other elders with dementia in a different long term care setting; (2) to address some of the limitations
stated above; (3) to see whether the intervention may also influence the levels of social interaction; and (4) the levels of resident affect. Similar results were obtained for increases in appropriate engagement. Out of a total of five residents, two (Joseph and Molly) displayed significant increases in appropriate engagement during their first intervention phase compared to baseline. Their levels of appropriate engagement significantly decreased again with the reintroduction of baseline, and significantly increased again with the reintroduction of the intervention. For another two residents, a moderate increase in appropriate engagement was observed during the intervention compared to their respective baseline levels. For the other resident, the intervention failed to increase her levels of appropriate engagement. This replication of the check-in procedure provided further evidence that it is effective in increasing the levels of appropriate engagement in elders with dementia in long term care.

Apart from the one resident whose engagement did not increase during the intervention, a greater variety of daily living and leisure activities engaged with was observed for each resident during intervention phases compared to baseline (Engstrom, 2011). Increases in social interaction also occurred during the first intervention phase for residents Joseph and Molly (Engstrom, 2011). However, this was not replicated when these two residents were reintroduced to the intervention (after the return to baseline). There was also no change observed in the residents’ affect during the intervention.

The results from the social validity questionnaire provided evidence that the check-in procedure was well accepted as an effective way to increase the engagement of the residents (Engstrom, 2011). This however fails to provide any indication as to why the intervention failed to be maintained by the staff within Engelman et al. (1999). Also, despite the positive results from the social validity questionnaires, the check-in procedure also failed to be maintained by the staff that participated within Engstrom (personal communication). Research should therefore continue to examine the effects of the different components when
used individually and in combination with others to find the most efficient and effective intervention(s) to increase engagement within dementia care.

*Activity recording and supervisory feedback.* Motivated by the fact that staff discontinued the use of the check-in procedure (Engelman et al., 1999), Altus et al. (2002b) designed a different staff intervention that would be more practical. Like the check-in procedure, it was also able to be applied during any time of the day, but did not require a staff member to check-in with each resident at pre-organised times. The intervention was applied to a one hour period following breakfast, in which elderly residents were reportedly difficult to engage. The intervention involved a CNA being instructed to record resident behaviour at the end of the session. Specifically, she was instructed to list which activities individual residents engaged in, and estimate their total engagement during the one hour period on a thermometer drawn on paper. At the bottom of the thermometer was written “poor” and at the top was written “excellent”. This was then shown to the facility’s activity director who then provided the CNA with positive feedback regarding resident engagement, with a focus on improvements in the engagement of individual residents.

Due to attrition, the intervention was only implemented with one CNA (CNA1; Altus et al., 2002b). CNA1 was a 54-year-old female with some college education. During baseline, the residents were appropriately engaged an average of 17.6% of the time when CNA1 was working. Engagement was also quite stable. During the intervention, average engagement increased to an average of 43.6%. Looking at the graphic display of resident engagement, engagement during the first three sessions of the intervention appeared to be stable at around 30%. From the fourth session of the intervention onwards, resident engagement appeared to stabilise at around 60%, with only one session (out of four) deviating from this. Therefore, resident engagement was significantly higher during the intervention than during baseline, especially during the final four sessions.
The average percentages of other resident behaviours were also different during the intervention. The average percentage of inappropriate engagement (e.g., screaming, wandering, or aggression) decreased from 8.5% during baseline to 1.1% during the intervention. Also, the average number of different activities engaged in increased from 1.4 during baseline to 2.3 during the intervention.

The results also provide evidence that the change in resident behaviour was dependent on changes in staff behaviour. First, CNA2 remained in baseline while CNA1 was in the intervention phase. Resident engagement remained low during every shift that CNA2 was working at an average of 6.6%. Second, CNA1 was observed performing a greater number of behaviours that have been associated with increases in resident engagement in previous research (e.g., prompts). During baseline, she provided an average of 3.6 activity prompts in the hour, which increased to 26.8 during the intervention. During baseline, she provided an average of 1.3 praise statements, which increased to 3.2 during the intervention. Similarly, she provided other forms of contact an average of 28.3 during baseline, which increased to 51.5 during the intervention.

There are several benefits of this intervention. One advantage is that no training of CNA1 was required (Altus et al., 2002b). This immediately reduces a cost if other facilities were to implement the same intervention. The intervention also does not require any staff behaviours to be performed at specific times, making it more practical for staff that already have a lot of tasks to do during their shifts. It also allows the caregiver and the person providing supervisory feedback with information regarding the progressions of residents’ levels of engagement across sessions.

The main limitations of this article relate to the fact that the intervention was only implemented with one CNA (Altus et al., 2002b). This makes it difficult to know the generality of the procedure. This limitation is even more of an issue given that when
performance feedback is used within interventions, it does not always produce improvements in behaviour (Alvero, Bucklin, & Austin, 2001). It has been argued that there may be various reasons for this. One important reason was because there is no agreed upon behavioural function of feedback (Alvero et al., 2001). In other words, it is unclear why the use of feedback produces changes in behaviour. For example, feedback has been argued to function as a reinforcer (Komaki et al., 1978), an antecedent (Daniels, 1994), bring about rule-governed behaviour (Agnew & Redmon, 1993), or serve multiple functions (e.g., Sulzer-Azaroff & Mayer, 1991).

As previously mentioned, Altus et al. (2002b) stated that CNA1 received positive feedback from the activity director regarding resident engagement, with a focus on improvements in the engagement of individual residents. This implies that the function of the supervisory feedback was to reinforce behaviours that had led to improvements in the engagement of individual residents (e.g., prompts). No other details about the content of the performance feedback are mentioned. It is unclear whether CNA1 was prompted in any way to try and increase the engagement of residents or perhaps she developed a rule about her behaviour (Agnew & Redmon, 1993). For example, having received feedback, CNA1 may have developed a rule like “If I try and engage the residents in the next session, I will be more likely to receive positive feedback”.

If reinforcement of behaviour was the only function of the performance feedback, CNA1 would have had to been able to engage residents for significant durations in order for performance feedback to have been effective. This is because resident engagement would have had to improve in order for her to contact the reinforcement. Speculation is therefore required into how activity recording and supervisory feedback was sufficient to produce changes in CNA1’s behaviour. Something within the learning history of CNA1 that was not mentioned within the article may have been critical to her ability to successfully increase the
appropriate engagement of the residents. For example, CNA1 may have had previous experience engaging the residents during her four months at the facility. During this time, she could have learnt that verbal prompts can increase resident engagement and/or may have learnt which activities were preferred by the residents, based on their engagement in the past. It is also possible that she had completely no experience engaging people in activities and learnt how to do so during the time of the intervention. Either way, if reinforcement was the only function of the performance feedback, then CNA1 would have had to be able to engage the residents in activities in order for her to contact the reinforcement in the form of positive feedback from the activity director.

It is alternatively possible that the supervisory feedback served multiple functions. As well as reinforcing increases in the level of resident engagement, it may have also functioned as an antecedent in the form of a prompt (Daniels, 1994). Since there are no results of what exactly the activity director said to the CNA whilst giving feedback, the activity director may have prompted CNA1 to engage in certain behaviours during the next session for the purpose of increasing resident engagement. For example, the activity director may have prompted CNA1 to directly present the residents with activities and prompt them to engage. As described previously, such techniques have been effective in increasing levels of engagement in elders with dementia. Prompting from the activity director may therefore be an alternative explanation for the results observed by Altus et al. (2002b).

Aside from such speculation, it is difficult to know what the critical variable(s) was. This is often the case with interventions that include performance feedback (Alvero et al., 2001). Since this intervention offers staff more flexibility in its use, it seems worthy of further investigation. Replication of this intervention was recommended by the original authors (Altus et al., 2002b). Importantly, future replications should investigate the procedure using a strengthened design to better demonstrate a functional relation (Altus et al., 2002b).
Kazdin (1975) has recommended using at least four baselines for this purpose.

*Preference assessments and elders with dementia.* Providing preferred activities may result in longer durations of engagement, better quality of engagement, and require less staff prompts (LeBlanc, Cherup, Feliciano, & Sidener, 2006). Presenting leisure items to elders with dementia when their preferences are unknown may not produce desired changes (Staal, Pinkney, & Roane, 2003). It seems intuitive that not knowing residents’ preferences would increase the effort required to engage them. This is because staff may have to present a greater number of activities before the resident engages with an activity, or they might only engage with activities for short periods of time. This may then result in staff being less willing to continue providing activities altogether (Cohen-Mansfield et al., 2010a). Knowing their preferences may make the task of engaging residents easier, less time consuming, and may even provide reinforcement for staff.

Alike with other populations more commonly studied within ABA, elders with dementia often have difficulty communicating their preferences, especially those with moderate to severe cognitive impairments (Feliciano, Steers, Elite-Marcandonatou, McLane, & Areán, 2009). Verbal reports from elders with dementia can result in false negatives-reports that they do not prefer a stimulus but later engage with it for relatively long durations (LeBlanc, Raetz, Baker, Strober, & Feeney, 2008). Reports on preference from informants (e.g., caregivers) are also not always predictive of preference (Parson & Reid, 1990). Systematic procedures – known as preference assessments (PAs) – have been developed within ABA to assess relative preferences for items/activities in individuals that may have such communication difficulties (e.g., Fisher et al., 1992). Several PA procedures are commonly used within applied settings, which each have their advantages and disadvantages, making them suitable for different applications (Ortega et al., 2014). Recent research has shown that PA procedures can be applied successfully to elders with dementia (Feliciano et
A commonly used PA is the paired stimulus (PS) PA (Fisher et al., 1992). The procedure involves stimuli being presented in pairs (usually using a tangible modality) and the participant’s approach to either of the stimuli is recorded. All stimuli are paired with all other stimuli. A hierarchy of preference is then derived based on calculating the percentage of times each stimulus was selected with respect to the number of times it was presented (DeLeon & Iwata, 1996). This procedure has been known to produce distinct preference hierarchies due to the wider range of preference values it obtains compared to other procedures (DeLeon & Iwata, 1996).

Feliciano et al. (2009) conducted paired stimulus PA with elders with dementia and then incorporated preferred items into their respective care plans to reduce various problem behaviours. Some of the behaviours observed included wandering, fidgeting with doorknobs, screaming, and aggression. The presentation of preferred items noncontingent on behaviour (noncontingent reinforcement) during times that residents commonly displayed their problem behaviour(s) resulted in the family members or caregivers of 8 of 11 residents reporting lower scores on the Cohen-Mansfield Agitation Inventory-Long Form (Cohen-Mansfield, Marx, & Rosenthal, 1989). This antecedent intervention likely reduced the workload for the staff, improved the quality of life for the residents, and lessened the need for medications (Feliciano et al., 2009). Such research is extremely promising for the usefulness of PAs within dementia care.

One limitation of approach-based PAs (e.g., paired stimulus and multiple-stimulus without replacement) is that it is not applicable to all stimuli due to size (e.g., piano) or modality (e.g., leisure activities; Karsten, Carr, & Lepper, 2011). These items can still be included using this procedure when items/activities are presented in other modalities (i.e. pictorial, textual, or vocal); however, presenting stimuli using these other modalities may
produce less reliable results for elders with dementia (i.e. LeBlanc et al., 2006). Preference hierarchies derived from approach-based PAs also may not translate into corresponding hierarchies in subsequent engagement analyses (Raetz et al., 2013). Therefore, other PA procedures may be more appropriate for identifying stimuli that will more likely result in long durations of engagement.

In this light, two PA procedures worthy of discussion are the single stimulus engagement (SSE) and free operant (FO) PAs (DeLeon, Iwata, Conners, & Wallace, 1999; Worsdall, Iwata, & Wallace, 2002). In contrast to the PS procedure which measures approach responses, the dependent variable for both the SSE and FO preference assessments is the duration of engagement with each item/activity, from which preference hierarchies are derived. This makes them highly practical for assessing items/activities that will be used within interventions designed to increase engagement.

These two procedures differ in the fact that multiple items/activities are available during an FO trial, whereas only one item/activity is available during a SSE trial. Not surprisingly, the SSE procedure takes longer to implement. Importantly though, Worsdell et al. (2002) found that individuals with developmental disabilities only engaged in one out of seven tasks during 5-minute FO trials, whereas they engaged in all tasks across 5-minute SSE trials. The result was that the SSE procedure was more predictive of engagement with tasks during a 60-minute vocational assessment (Worsdell et al., 2002). The FO procedure also requires individuals to initiate engagement with items, which was previously discussed as being a problem for elders with dementia (e.g., Kuhn et al., 2004; Volicer et al., 2006).

The SSE procedure has been applied to elders with dementia that attended an adult day care program (LeBlanc et al., 2006). Each activity was assessed three times for 15 minutes, each in a pseudorandom order and two to four trials were conducted each day. When presenting an item the experimenter said “Here is ___, you can ___ for as long as you want.
Let’s get started.” A 15-second partial interval recording system was used wherein engagement was scored if the elder actively looked at or manipulated the activity for 2 or more consecutive seconds. All trials were conducted within the general activity area, but importantly, no reinforcement was ever given for engagement.

The purpose of the SSE PAs was to derive hierarchies of preference for each elder and then correlate these with four other hierarchies of preference derived from four different paired stimulus PAs. Each of the four PS PAs presented the same stimuli for each elder, but presented them using different stimulus modalities (tangible, verbal, textual, and pictorial). The modality that produced the highest correlation with engagement during the SSE was then used in an intervention as the basis for offering frequent choices to elders. In other words, if the hierarchy with the highest correlation was the verbal PS PA for an elder, the choices offered to them would use the verbal modality (i.e. “Would you rather [activity A] or [activity B]?”). Choices were offered approximately every 15 minutes if the elder was not engaged at that time.

During this intervention, activity engagement was higher and more stable than during baseline (LeBlanc et al., 2006). Jim’s average level of engagement was 64% during baseline and 74% during the intervention. Most data points from the intervention were also above that of baseline and were far more stable. John’s average level of engagement was 16% during baseline and 92% during intervention. All data points during intervention were higher than all baseline data points for John. These results show that providing elders with dementia frequent choices between a highly preferred and a non-preferred activity, using the presentation modality with the highest correlation with engagement, can increase engagement in elders with dementia.

A notable limitation of LeBlanc et al. (2006) was that several elements were included within the intervention. This makes it unclear which were necessary to increase the levels of
activity engagement. Specifically, it is unclear whether the effects were caused by: (1) choices being offered; (2) the modality the choices were offered in; (3) the fact that information concerning the elders’ preferences were given to staff; or (4) some combination of these. It would have been interesting had the authors compared providing staff have knowledge of elders’ preferences with and without being instructed to present them in a choice format. Since the results showed that significant increases in engagement are possible using this intervention, and the fact that the intervention caters to individual preferences, suggests a need for further systematic replication.

**Research Aim**

The primary aim of this study was to increase appropriate engagement with activities in elderly residents living within a dementia care facility. Two interventions were conducted for this purpose. The secondary purpose of both interventions was to investigate their influence on other resident and caregiver behaviours. Intervention 1 was a replication of the activity recording and feedback procedure used by Altus et al. (2002b).

SSE PAs were carried out with each of the residents. The primary purpose was to identify each resident’s most preferred activities. The secondary purposes were to investigate the stability of SSE PAs, engagement towards different types of activities, and the impact that SSE trial length and location had on engagement.

During Intervention 2, caregivers were provided with information about residents’ most preferred activities – as identified using the SSE PAs – but were not required to present them to residents using a choice format. Preferred tangible activities were also placed on a trolley with wheels. The importance of activity recording and supervisory feedback to the implementation of Intervention 2 by caregivers was also investigated. Follow up was conducted to reduce the response effort required for caregivers to carry out the procedures and to incorporate activity choices into the intervention.
Method

Ethics Approval and Initial Approach

The University of Auckland Human Participants Ethics Committee (UAHPEC) approved the current study on the 21st of March 2014 for a period of three years (reference number 011364; Appendix A). The main researcher had already made contact with the manager of the facility since he volunteered there several months prior to the start of the current study. The author spoke in person with the manager concerning his intent for conducting this research within the facility. Verbal approval was subsequently obtained from the management of the foundation itself, having been contacted by the manager of the facility. Following this, the manager of the facility was provided with a Participant Information Sheet (PIS) and a Consent form, which she was invited to sign (Appendix B).

Initial contact with the significant others of the residents concerning this research, was made by the manager. This provided the significant others with a brief overview of the aim of the research. Interested significant others were then contacted by the researcher over the phone. This allowed the researcher to discuss the aim of the research and the potential procedures in more detail. The significant others also had the opportunity to ask questions. A cover letter, PIS, CF (Appendix B) and an additional stamped envelope addressed back to the researcher, was sent in the mail to each significant other. An additional email with the PIS and CF attached was also sent to those who preferred. Significant others were invited to sign the CF and return it to the researcher either by mail or email.

Initial contact with each caregiver was made by the researcher, whom they knew well. Information about staff rosters and which staff to contact first was provided by the manager. Caregivers were individually provided with a PIS and CF (Appendix B) just prior to their active participation in this study.
Setting

All procedures and observations were conducted within a 16-bed dementia care facility. The facility had one main dining and lounge area where the residents spent the majority of their time. The dining area contained dining tables and chairs for all major meal times and activities that required large bench space. The lounge area contained another set of chairs, a piano, several small moveable tables, a T.V., radio and shelves where books and several other small activities could be kept. Three hallways dissected the facility, off which resident’s bedrooms were adjoined. At the end of one of the halls was another smaller lounge which residents could access freely. This lounge also contained a T.V., a piano, a set of chairs and one dining table. Down one hall there was also an activity cupboard which contained a large range of leisure activities. There was an outdoor area out the back of the facility. Residents who could safely ambulate independently were allowed access to this outside area; other residents required a caregiver or volunteer to escort them outside.

Within the daily schedule of the facility, the two important sessions of the day relating to the current study were the morning (10:40 am-11:40 am) and the afternoon (12:40 am-1:40 pm) sessions. Typically during these times, one manager and three caregivers were rostered on. During the morning session on Monday, Wednesday and Saturday, group activities were carried out; usually by one of the caregivers working that day. At the beginning of the afternoon session on most days, residents had or were just finishing their lunch. They were then led to the couches within the main lounge and the T.V. and/or general music was played. The caregivers completed many pre-planned tasks during this time, which were largely delegated based on which wing of the facility each caregiver was working. The caregiver on the north wing was responsible for the residents within the main lounge, as well as several other tasks that usually took between 15 to 30 minutes to complete. The caregivers working on the north wing rotated fortnightly.
**Participants**

**Selection criteria.** The manager and author discussed which of the residents would likely benefit the most from participating in this research. Residents whom required more than minor assistance to ambulate at the beginning of the study were not included. Residents also had to have some form of dementia. Ten of the residents were considered for participation within this research. Caregiver consent was obtained for nine of these residents.

Caregivers were selected for participation based on their rostered shifts. They had to have been working there long enough to know the residents by name and be planning to work regular shifts within the facility for the rest of the time they were needed for the study.

There were two managers that worked regular shifts within the facility. In addition, one of the caregivers that had been trained to distribute medication worked as the manager on occasion. All three were asked to participate in this study.

**Residents.** The Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975; Appendix C) and the Montreal Cognitive Assessment (MoCa; Nasreddine et al., 2005; Appendix D) were administered to participating residents. Both of these cognitive assessments examine the cognitive abilities of elders with dementia. A maximum of 30 can be scored in both assessments. On the MMSE, a score between 20 and 10 suggests a moderate cognitive impairment and a score of 10 and under suggests a severe cognitive impairment. On the MoCa, a score of 17-10 suggests a moderate cognitive impairment and a score of 10 and under suggests severe cognitive impairment (Nasreddine, 2014).

The two cognitive assessments were administered by the researcher to each resident prior to and during the start of baseline. For each resident, the two assessments were completed within two weeks of each other.

Resident 1 was 81-years-old, female and of New Zealand European descent. Her former occupation was working in a retail store. She suffered from Mixed Vascular and
Alzheimer’s disease with associated BPSD (Behavioural and Psychological Symptoms of Dementia), and diabetes. She had lived in the facility for 19 months at the beginning of the study. Resident 1 scored 8 on the MMSE (Orientation=2, Registration=3, and Language=3), indicating severe cognitive impairment. She also scored 0 on the MoCa, again indicating severe cognitive impairment. She was able to safely ambulate independently. She required assistance with showering and dressing but could toilet and feed herself independently. She would commonly exhibit hoarding behaviours, hiding things in her room and in her clothing. In terms of mood, she was most commonly neutral and would occasionally present with positive affect. Her speech was soft but mostly coherent and she was capable of initiating conversation. For her medication she received Cilazapril + Hydrochlorothia 5mg + 12.5mg (for blood pressure), 100mg of Aspirin (for thinning blood), and 500mg of Metformin Hydrochloride (for her diabetes).

Resident 2 was 82-years-old, male and of New Zealand European descent. For his occupation he was an Anglican priest. He suffered from a non-specified dementia, hypertension, and coronary heart disease. He had lived in the facility for 15 months at the beginning of this study. Resident 2 scored 13 on the MMSE (Orientation=1, Registration=3, Attention=3 and Language=6), indicating moderate cognitive impairment. He also scored a 5 on the MoCa (Naming=1, Attention=2, Language=1, and Abstraction=1), which indicates severe cognitive impairment. He was able to safely ambulate independently. He was able to wash and dress himself with supervision and occasional prompting. He could also toilet and feed himself. He has been known to be verbally aggressive on occasion. In terms of mood, he often displayed positive affect and would sometimes display negative affect. He would also weep when looking at certain things or listening to certain music, which was interpreted as positive affect. He was capable of complex conversations. For medication he received 50mg of Minocyclone Hydrochloride (for infection), 2mg of Docazosin Mesylate (for blood
pressure), 2.5mg of Cliazapril (for blood pressure), and 2.5mg of Bendrofluzaide (for blood pressure).

Resident 3 was 86 years old, female and of New Zealand European descent. For her occupation she was a Registered Nurse and a university lecturer. She suffered from Alzheimer’s disease and Osteoarthritis. She had lived in the facility for 15 months at the beginning of the study. Resident 3 scored 1 on the MMSE (Orientation=1), indicating severe cognitive impairment. She also scored 0 on the MoCa, again indicating severe cognitive impairment. She was able to safely ambulate independently but would sometimes require assistance to stand and sit down. She required assistance with showering, dressing and often toileting. She was capable of eating independently but would often need prompting to do so. She also had difficulties interacting with items in front of her, which may or may not have solely been caused by vision problems. For example, she would sometimes need to be told where her food is in front of her. She rarely engaged in any problem behaviours. In terms of mood, she would commonly present with positive affect during social interactions. She was able to have simple conversations but would often go off topic. For medication she received 30mg of Codeine (for pain), Paracetamol, and 20mls of Lactulose (for constipation).

Resident 4 was 76 years old, male and of New Zealand European descent. For his previous occupation he was a lawyer. He also used to compete in many triathlons and similar sports. He suffered from Alzheimer’s disease, and several skin conditions. Resident 4 scored 1 on the MMSE (Orientation=1), indicating severe cognitive impairment. He also scored 0 on the MoCa, again indicating severe cognitive impairment. At the beginning of the study, he was able to ambulate with a small amount of physical guidance. By the end of the study, he sometimes required much more physical guidance to ambulate. He required assistance with showering, dressing and toileting. He was able to feed himself independently. On occasion he would present with verbal and physical aggression, negative verbal statements, and public
urination. In terms of mood, he was known to grimace but would also smile and laugh on occasion. He was capable of simple conversation. For medication he received Risperidone (antipsychotic), Lorazepam (anti-anxiety), and medication for his skin conditions.

Resident 5 was 79-years-old, female and of New Zealand European descent. For her occupation she used to work in a orchard and later worked in a supply store. She suffered from a non-specified form of dementia, anxiety states, agitated depression, and hypertension. She had lived in the facility for 5 months at the beginning of the study. Resident 5 scored 7 on the MMSE (Orientation=2, Registration=2, and Language=3), indicating severe cognitive impairment and scored 0 on the MoCa, again indicating severe cognitive impairment. She was able to safely ambulate independently within the building but due to difficulties with her sight, she could not do so outside. She required assistance with showering and dressing but could toilet and feed herself. She would often make negative verbal statements about her family rarely visiting even though they visited at least several times a week. In terms of mood, she often displayed negative affect which was often in the form of a trembling lip. Her family disclosed that she was often anxious even before her diagnosis of dementia. She was also known to display positive affect on occasion and was capable of conversing. For medication she received 2.5mg of Bendrofluazide (for hypertension), 2.5mg of Cilazapril (for blood pressure), 30 mg of Mirtazapine (for depression), 10mg of Donepezil Hydrochloride (palliative treatment for Alzheimer’s disease), 40mg of Atorvastatin (for Cholesterol), 7.5mg of Zoplicone (sleeping pill), and Lorazepam (for anxiety).

Resident 6 was 93-years-old, female and of New Zealand European descent. Her former occupation was teaching art. She used to live in Europe and and studied to be a cook. She suffered from what was likely Frontotemporal lobe dementia, Postural hypertension, Ischaemic Heart Disease, Coronary Heart Disease, chronic obstructive pulmonary disease (COPD), and chronic renal impairment. She had lived in the facility for 8 months at the start
of this study. Resident 6 scored a 7 on the MMSE (Orientation=1 and Language=6), indicating severe cognitive impairment and scored 5 on the MoCa (Visuospatial/Executive=2, Naming=1, Abstraction=1 and Orientation=1), again indicating severe cognitive impairment. She required assistance with showering and sometimes with dressing. She was able to feed and toilet herself independently. She was able to ambulate independently but required a walker to do so safely. She was not allowed to ambulate outside without the assistance but would often try. She sometimes wore glasses. She would engage in verbal aggression on occasion. In terms of mood, she would often display positive affect but did have days where she would present with a lot of negative affect. She was capable of complex conversation but would sometimes have difficulty wording a sentence. For medication she received Paracetamol, 40mg of Furosemide, 20mg of Omeprazole, 7.5mg of Zopiclone (for insomnia), and Budesonide + Eformoterol (for her COPD).

Resident 7 was 82-years-old, male and of New Zealand European descent. His former occupation was a builder. He suffered from a non-specified dementia. He had lived in the facility for 14 months at the beginning of the study. Resident 7 scored 9 on the MMSE (Registration=3, Language=5 and Copying=1), indicating severe cognitive impairment. He also scored 2 on the MoCa (Visuospatial/Executive=1 and Attention=1), again indicating severe cognitive impairment. Participant 7 required assistance with showering and dressing but could toilet and feed himself. He was able to safely ambulate independently both inside and outside. He rarely displayed any problem behaviours. In terms of mood, he would occasionally display positive affect and rarely display negative affect. He could converse but had difficulties with responding to more complex topics or statements. For medication he received 10mg of Donepezil Hydrochloride (palliative treatment for Alzheimer’s disease), 4mg of Doxazosin Mesylate, Paracetamol, Luctalose, and Flixotide (for asthma).

Resident 8 was 91-years-old, female and of New Zealand European descent. She
suffered from Multi-Infarct dementia and Delirium Secondary Urinary Tract Infection. She had lived in the facility for 8 months at the beginning of the study. Resident 8 scored 11 on the MMSE (Orientation=2, Registration=2 and Language=7), indicating moderate cognitive impairment and scored 0 on the MoCa, indicating severe cognitive impairment. She required assistance with showering, dressing and occasionally toileting. She was able to eat independently. She was able to ambulate independently but required a walker for safety, just after the start of this study. She was not allowed to ambulate outside without staff assistance. She had hearing difficulties and required glasses to read small words. Her arms would also sometimes shake, resulting in difficulty with fine motor tasks during these times. She often engaged in verbally and physically aggressive behaviours, usually during the afternoon. There was also the occasional occurrence of faecal smearing. In terms of mood, she would display positive affect as often as negative affect, both on a semi-regular basis. On average, her affect was more positive during the mornings and negative during the afternoon. She was able to converse easily. For medication she received 20mg of Citaloparm Hydrobromide (for depression), Laxol (for constipation), 0.5mg of Risperidone (antipsychotic), and 1mg of Lorazepam (for anxiety).

Resident 9 was 89-years-old, female and of New Zealand European descent. Her former occupation was clerical work. She also used to travel and paint a lot. She suffered from dementia (likely Alzheimer’s disease), hypertension, and diverticular disease. She had lived in the facility for 8 months at the beginning of the study. Resident 9 scored 0 on the MMSE, indicating severe cognitive impairment and scored 1 on the MoCa (Attention=1), again indicating severe cognitive impairment. Resident 9 required assistance with showering, dressing, toileting and sometimes feeding. She was able to safely ambulate independently, but not outside. She never appeared to engage in problem behaviours. Her mood was very stable and would occasionally display positive affect. When interacted with, she would often
just verbally respond in agreement. For medication she received 95mg of Metaprolol Succinate (for hypertension), 20mg of Omeprazole, and Cilaazapril + 5mg of hydrochlorothia + 12.5 mg (for blood pressure).

**Staff.** Caregiver 1 (C1) was a middle-aged female of South Asian descent and English was her second language. She worked as a caregiver within the facility. She had some experience leading group activities in the morning.

Caregiver 2 (C2) was a middle-aged female of Pacific Island descent and English was her second language. She had completed four years of tertiary education, not specifically related to dementia. She had level four dementia training. She had been at the facility just under four years at the beginning of this study. Her roles within the facility included caregiving, administering medication to residents, and being team leader. She had some experience leading the scheduled group activities in the morning.

Caregiver 3 (C3) was a middle-aged female of South Asian descent and English was her second language. She had a diploma in nursing and had qualified to be a registered nurse within her home country. She had no dementia specific training. Prior to working within the facility, she worked as part of the bureau, which meant that she worked within various facilities within the organisation. She had worked in the facility for seven months, the last of which was full time, before participating in this study. Her roles within the facility included caregiving and organising group activities some mornings.

Caregiver 4 (C4) was a middle-aged women of Pacific Island descent and English was her second language. She had a high school education. She worked as a caregiver within the facility. She was also often responsible for leading the scheduled group activities in the morning.

Caregiver 5 (C5) was a middle-aged female of Pacific Island descent and English was her second language. She had a high school education and had previously worked as a store
manager in a retail store. She had completed a dementia training course that lasted a week. She was employed as a caregiver within the facility and had been working there for one month prior to participating in this study.

**Behavioural Definitions**

**Observation sessions.** Across all experimental conditions, only behaviours displayed by, or directly relating to, the residents were observed. The primary behaviour was resident engagement in activities. Appropriate engagement was defined as physically manipulating leisure or daily living materials in a way that served their intended function (this did not include idiosyncratic fiddling); or displaying public behaviours that suggest they were attending to appropriate visual or auditory stimuli related to an activity or social interaction in which they were directly involved; or displaying public behaviours that suggest they were attending to a group activity. If appropriate engagement was scored, the specific activity (or activities) engaged in was also recorded. Inappropriate engagement was scored if activity materials were being manipulated in a way that did not obviously serve their intended function (e.g., throwing puzzle pieces), or if aberrant behaviours such as aggression were observed. Appropriate engagement was not scored if the resident was also displaying inappropriate engagement. All resident behaviours directed towards the observers (e.g., smiling, waving, or aggression) were not recorded.

If neither appropriate nor inappropriate engagement was observed, behaviour was categorised as either no engagement or wandering. No engagement was scored if the resident was seated or lying down and not otherwise engaged. Wandering was scored if the resident was standing or walking, and was not otherwise engaged. If both no engagement and wandering were observed, the behaviour observed last was scored.

Staff contact was also recorded. A staff member was someone directly employed by the facility or someone who was volunteering. Staff contact was generally defined as any
contact between a staff member that directly involved the resident being observed. So this
definition did not include instances in which staff members were talking to a group of
residents (which was common during group activities for example). Table 1 shows the
different types of staff contact and their respective definitions; many of which were ad hoc
definitions.

Resident affect was also recorded. These definitions were based upon those used in
previous dementia research (Moore et al., 2007). Positive affect was defined as expressions
that are the same or similar to happiness indicators (e.g., smiling or laughing) displayed by
individuals without disabilities. A couple of idiosyncratic behaviours were also regarded as
positive affect; for example, one of the male residents would weep while listening to music.
Negative affect was defined as expressions that are the same or similar to pain/ displeasure
indicators (e.g., grimacing or yelling without smiling) displayed by individuals without
disabilities. A resident was considered to be displaying neutral affect if neither of the
definitions for positive or negative affect were met or if the residents face could not be
observed. If a resident’s affect was observed to be both positive and negative within the time
observed, affect was scored as negative.

Preference assessments. During the PAs (preference assessments), the duration of
engagement in activities was recorded. Engagement was defined as physically manipulating
the leisure activity in a way that served its intended function (this did not include idle
touching); and/ or displaying public behaviours that suggest they were attending to the leisure
activity presented (e.g., tapping foot to music, looking at the leisure activity).

Measurement

All sessions lasted just over 60 minutes and were conducted during the morning
(10:40am-11:40am) or the afternoon (12:40pm-1:40pm). A modified time sampling (MTS)
procedure was used and each resident was observed in a sequential order. A time of 30
seconds were allocated to finding each new resident, 5 seconds were allocated to observing
resident behaviours and potential staff contact, and 7 seconds were allocated to recording
these. The pro version of Interval Timer - Seconds® was downloaded onto an Android
smartphone and was used to prompt each new interval to the observer(s). The observation
recording sheet was also designed by the researcher specifically for the current study
(Appendix E). Each resident was observed ten times in each session, with a period of just
over 6 minutes between each resident’s subsequent observations. The behaviour of residents
was not recorded if they were behind closed doors, if they were using the toilet, or if they
could not be located in time. If a resident was not observed for at least 70% (7 out of 10) of
their samples, their data was not recorded for that session.

During the PAs, total durations of engagement were recorded towards activities. A
stopwatch was used to time until ten minutes. Other devices were used to time resident
engagement duration. The primary researcher used the stopwatch on the Timers4me® app,
downloaded onto an Android smartphone.

Interobserver Agreement

Secondary observers were used to assess the accuracy of the current measurement systems. The secondary observers were fellow Masters Students. For the hour long
observation sessions during the afternoon and morning, the researcher and secondary
observer both wore headphones connected to the same android smartphone using a dual
headphone jack. This allowed both observers to hear the prompts from the interval timer at
the same exact times. During their first (and sometimes second) time observing, secondary
observers were provided with brief training. This lasted for approximately 20 to 40 samples
of the session and the researcher provided feedback regarding their observing accuracy.
These training samples were not included in the final agreement scores. After this training,
both researchers remained 1 to 2 metres apart. For each dependent variable, agreement was
scored if both researchers marked the same pre-set categories (see Appendix E), or if they described the same thing in the space provided. If this did not occur, a disagreement was scored. Interobserver agreement (IOA) was calculated by dividing 100 by the number of agreements plus disagreements, and then multiplying the result by the total number of agreements. This resulted in a percentage of agreement.

IOA was also collected for the PAs. The same stopwatch was used by both observers to time the total trial length. Each observer also had separate devices to time durations of resident engagement. IOA was calculated for each leisure activity trial by dividing the shortest duration of engagement by the longest duration and multiplying by 100%.

Social Validity Questionnaires

Social validity questionnaires that were made available to staff and significant others (Appendix F). Respondents were asked to rate their level of agreement with each statement. The first statements concerned the goal of increasing engagement in elders with dementia. The next statements concerned the procedures used. The final two statements were intended to be completed by the staff directly involved and concerned the ease of the procedures and their continued use by caregivers.

Procedures

Baseline. Baseline levels of behaviour were assessed for all residents during the morning and afternoon. During baseline, no caregivers were required to complete an activity recording sheet (Appendix G), nor did they receive any feedback regarding resident engagement or knowledge of residents’ preferences. During baselines, all caregivers were also unaware of the nature of subsequent procedures. An additional baseline was carried out during the afternoon observations (sessions 26-33) since the seating arrangement in relation to the T.V. in the main lounge was changed. No caregivers that were currently participating in intervention procedures worked during baseline sessions.

Intervention 1. Intervention 1 was only ever conducted during the afternoon sessions.
During this phase, the caregiver that was working on the north wing at the time was asked to complete an activity recording sheet (Appendix G) at the end of each one hour observation session (Altus et al., 2002b). Each activity recording sheet included the names of three residents—1, 4, and 6. Next to each resident’s name was a list of common activities with a corresponding tick box (☐). In line with each resident’s name was a visual analogue scale—ranging from *almost never* to *almost always*—upon which the caregivers were to estimate each resident’s engagement during the observation session.

Each caregiver was also provided with written instructions concerning the activity recording sheet and provided with brief training (approximately 10 minutes) regarding its use. One part of the training involved going through the activity recording sheet and learning what was required. The other part of the training involved the member of staff and the researcher observing residents with a focus on their current engagement. The caregiver was asked whether or not they thought the resident was engaged and with what activity. This helped to ensure that the caregivers’ perceptions of resident engagement were congruent with the current definitions.

Prior to sessions, brief instructions were repeated to the caregivers prior to each session. First, it was made clear which residents the caregiver was supposed to be observing and when the session began (“So it is [resident 1], [resident 4], and [resident 6]; we’ll start now”). This was so that the caregivers were observing the engagement of the appropriate residents, for the same duration, at the same time. When the session finished, the researcher approached the appropriate caregiver and asked them to complete the activity recording sheet. The researcher provided assistance to caregivers if they had any questions. The activity recording sheet took between one to two minutes to complete. Upon completion, the researcher placed the activity recording sheet within a 24 leaf clear file that contained all of the activity recording sheets previously completed by that specific caregiver.
The clear file was taken to the manager at a time when both the caregiver and manager were free for supervisory feedback. The feedback concerned the number of activities each resident engaged in and their estimated percentage of engagement. Prior to providing feedback to the caregivers for the first time, the managers were given brief instructions. They were shown what each part of the activity recording sheet represented and told to provide positive feedback to the caregivers, focusing on improvements in resident engagement. The researcher observed all instances of supervisory feedback given in response to the activity recording sheets but did not prompt the managers in terms of what to say.

**Single stimulus engagement preference assessments.** Leisure activities from within the facility were included within single-stimulus engagement (SSE) preference assessments (PAs; Hagopian et al., 2001). Table 2 provides the names of these leisure activities as well as a brief description of each. Two to three PAs were conducted for each resident. Each leisure activity was presented singly and their presentation constituted a trial. Most PAs used 10 minute trial lengths. The last PA for resident 2 and 8 respectively, used 5 minute trial lengths. All PAs were conducted across different days, with usually four of five activities (range one to eight) leisure activities being presented in a single session. All activities were presented to residents in a pseudorandom order.

Most of the PAs were conducted within the second lounge of the facility. PAs were conducted across the whole day, but PA trials for most residents were conducted during the same relative time each day (i.e. between 10:20pm-11:40pm, 12:20pm-1:40pm, and 2:10pm-3:30pm). Exceptions to this were resident 5, whose trials were conducted anytime between 12:20pm and 3:30pm, and resident 9, who had one session of trials conducted outside of her usual relative time. The relative time(s) that trials were conducted for each resident were largely selected based on their usual daily fluctuations in problem behaviours and mood.

General prompts (i.e. “Would you like to come with me to the other lounge to do some
activities?”) were given to each resident to encourage their attendance to PA sessions. Each resident was asked to sit at the round table, facing a nearby wall with an ocean mural for most trials.

The last PA for both resident 2 and 8 respectively, was conducted within the main lounge of the facility. All trials for these two PAs occurred between 10:20am-11:40am. During these two PAs, no effort was made to control for background noise (e.g., whether music was playing or not). If the resident was seated on one of the lounge chairs, activities were presented to the resident on one of many small brown tables. If the resident was seated at one of the dining tables, activities were presented to the resident on the appropriate dining table.

For the activities that could not be presented directly to the resident, the resident was asked to move to the appropriate location. For the piano, residents sat in front of it appropriately; for the T.V., the residents were seated and faced in the appropriate direction and approximately three to four metres away; for general music, residents sat at 90° to, and three to six metres away from the T.V.

Prior to each trial, residents sampled the stimulus that was to be presented. The primary observer placed the activity in front of the resident and said “OK [name], here is [activity]”. If the resident did not engage with the activity within 10 seconds, the primary observer used least to most prompting (verbal, then model, then physical prompt) so that the resident appropriately engaged with the item. However, if the first model prompt was unsuccessful, a different way to appropriately engage with the activity was prompted. Once appropriately engaged, the resident was allowed to sample the activity for approximately 10 to 20 seconds.

Following item sampling, the primary observer approached the resident and said “OK [name], here is [activity]. You can _____ for as long as you like. Let’s begin” (LeBlanc et al.,
2006). Following the presentation of the item, the observer(s) sat approximately one to two metres from the resident at a 90° angle. A trial was finished when the resident pushed/moved the activity item away, walked away themselves (except for music, as standing and dancing would be appropriate), explicitly stated that they did not want to engage with the activity, displayed inappropriate engagement, or when the 10 minutes were up, whichever came first.

Several further points should be noted. If a trial was interrupted for toileting or medical needs it was repeated another time. If inappropriate engagement occurred towards an activity, that activity was not included within subsequent PAs or any analyses. The observer(s) also avoided eye contact and social interactions with the residents when possible, except when not doing so may have resulted in a resident displaying negative affect. Even on these occasions, contact was kept to a minimum and gestural responses were used when possible. Following brief interactions, the observer went back to avoiding eye contact with the resident. No reinforcement was ever given for engagement with activities during or after the PAs.

**Intervention 2.** Residents’ top five most preferred activities – identified using the SSE PAs - were displayed on a poster within the main lounge. The residents’ preferred activities were placed on a moveable trolley that was kept within the facility’s activity cupboard. The only activities not placed on the trolley were ones that were typically stored within the main lounge (e.g., movies, music). Appropriate implementation of this procedure during afternoon sessions involved caregivers bringing out the activity trolley at the beginning of the observation session, providing residents with their preferred items as per the preference poster, and when possible, providing additional activities to the designated residents that were not engaged. During morning sessions, the caregiver was to bring out the trolley at the beginning of the session, carry out the scheduled group activities as usual, and when possible, provide preferred activities to designated residents that were not engaged.
Information about the intervention was made clear to the caregivers about an hour or so prior to their first session. They were informed of and shown: (1) the poster in the main lounge that displayed the residents’ preferred activities; and (2) the trolley in the activity cupboard on which the residents’ preferred activities were placed. All verbal information was then repeated to each caregiver immediately prior to the start of their first observation session. This information will be referred to as ‘initial information’.

The first three caregivers (C2, C3, and C4) that participated were also required to complete activity recording sheets for their first session. They were provided with the same training that was described previously within Intervention 1, if they had not already. The researcher also interacted with them in the same way before and after sessions that was previously described within Intervention 1 (e.g., being told when the session was to begin).

Each caregiver responded differently to the initial information. Increasing levels of prompts were provided to caregivers to allow them to carry out the intervention appropriately. C2 required further explicit prompting by the researcher. This was first delivered after she had received supervisory feedback from the manager, following her first session. It was also repeated to her just prior to her second session. She was verbally prompted to bring out the trolley at the beginning of the observation session, provide residents with their preferred items as per the preference poster, and when possible, provide additional activities to the designated residents that were not engaging.

Upon receiving the repeated initial information immediately prior to her first session, C3 asked whether she was supposed to get the trolley out of the cupboard. The researcher responded in agreement. She was able to carry out the procedures appropriately on her first session.

Once C2 and C3 carried out the procedure appropriately for one session, prompts were faded. Immediately prior to the next session, they were just prompted to do the same as
the last session. They were also told when the session began. For every subsequent session, they were not prompted regarding appropriate implementation of the procedure. The only remaining interaction between the researcher and the caregivers related to the activity recording sheet.

C4 was in charge of leading scheduled group activities in the morning and, following the initial information, required further prompts to incorporate the use of this intervention within her group activities. Prior to her second session, she was told that she did not need to complete an activity recording sheet. She was also prompted to carry on with group activities like normal, as well as provide unengaged residents with their preferred activities if their name was on the preference poster. Further, an hour before her third session of this intervention, the researcher modelled and talked through how to provide individual activities while still leading group activities. Specifically, the researcher brought out the trolley, carried out a group activity (newspaper reading and then bowling), pointed out residents that were not engaged, and then provided them with their preferred activities. This lasted for approximately half an hour.

This intervention was also carried out by C5. She received different initial instructions to those received by the previous three caregivers. She was told before her first session that she was to bring out the activity trolley at the beginning of the session, provide residents with their preferred activities as per the preference poster, and when possible, provide other preferred activities to residents that were not engaged. She was also never required to fill out an activity recording sheet or receive supervisory feedback. For her first session, she was told when the observation session started and finished. During subsequent sessions, no prompts were provided to her.

Follow up sessions were also conducted. C5 was the only caregiver to participate in these sessions. For these sessions: (1) the names of the residents and their respectively
preferred activities were placed on a piece of paper that was attached to the handle of the activity trolley; (2) the piece of paper also included a written communication about the purpose and explanation of how to provide residents with activity choices (Appendix H); and (3) the activity trolley was kept within the main lounge of the facility. No prompts were given to her during follow up.

**Experimental Design**

A multiple baseline design across participants and time of day was used to systematically assess changes in resident behaviours as a result of the two interventions. When changes are observed for residents during one intervention, it is applied to increasingly more residents, across different times. When improvements in behaviour are observed with each new application of the intervention, it provides evidence for its effectiveness and generalizability.

**Results**

A total of 69 sessions were carried out over a period of just over 25 weeks. 54 sessions were conducted during the period following lunch (12:40pm until 1:40pm). 15 sessions were conducted in the period following morning tea (10:40pm until 11:40pm). Two caregivers (C1 and C4) and two residents (R4 and R8) left the facility during the course of this study.

**Interobserver Agreement**

IOA was collected for 17.4% of all morning and afternoon observation sessions. For resident engagement, IOA averaged 93% agreement (range 87% to 98%). For staff contact, IOA averaged 97% (range 93% to 100%). For resident affect, IOA averaged 91% (range 76% to 98%). IOA was collected for about just over 6% of all PA trials. IOA averaged 88% (range 28.6% to 100%).
Within Subject Variation during Baseline

For the first afternoon sessions, the seats within the main lounge were directly orientated towards the T.V. From session 26 onwards, the seats were positioned in a semi-circle around the wall, no longer directly orientated towards the T.V. In order to investigate the influence of this potential confound, baseline sessions before and after session 26 (but before session 45) were compared with respect to the average number of sessions that residents were observed to be watching the T.V. at least once. The percentage of sessions that the residents were observed watching T.V. at least once decreased from: 67% to 0% for resident 1; 67% to 7% for resident 2; 25% to 7% for resident 3; 44% to 0% for resident 4; 13% to 0% for resident 5; 83% to 40% for resident 6; 20% to 18% for resident 7; 75% to 7% for resident 8; and 59% to 0% for resident 9.

Intervention 1

The influence of the seating arrangement previously described should not influence comparisons between baseline and Intervention 1 since the exact same number of Intervention 1 and baseline sessions were conducted before and after the seating arrangement change. Intervention 1 was compared to baseline by comparing all Intervention 1 sessions to all baseline sessions up until session 45 (when the first Intervention 2 session took place). Figure 1 displays the engagement of residents 1, 4, and 6 during baseline and intervention 1. Resident 1 was appropriately engaged for 25.8% of samples during baseline and 25.5% of samples during intervention 1. Resident 4 was appropriately engaged for 15.9% of samples during baseline and 11.7% of samples during intervention 1. Resident 6 was appropriately engaged for 48% of samples during baseline and 43.4% of samples during intervention 1. These percentages suggest that appropriate engagement was identical or lower during intervention 1 than it was during baseline for these three residents. Intervention 1 therefore, did not result in an increase in appropriate engagement for any of these three residents.
Figure 2 displays the average number of different activities engaged in during the different phases of this study during afternoon sessions, including baseline and Intervention 1. Resident 1 engaged in an average of 1.78 and 1.5 different activities during baseline and Intervention 1 respectively. Resident 4 engaged in an average of 1.17 and 1 different activity during baseline and intervention 1 respectively. Participant 6 engaged in an average of 1.95 and 2.33 different activities during baseline and Intervention 1 respectively. No systematic increase in the variety of different activities engaged in occurred during Intervention 1 compared to baseline for these three residents.

A decrease in resident wandering was observed. Average resident wandering during all baseline and Intervention 1 sessions were calculated. Resident 1 was wandering an average of 20.5% during baseline which decreased to 5.9% during Intervention 1. Resident 4 was wandering and average of 3.4% during baseline which decreased to 1.4% during Intervention 1. Resident 6 was wandering an average of 18.9% during baseline which decreased to 14.9% during Intervention 1.

Figures 3, 4 and 5 display the average number of instances per session of the different types of staff contact observed occurring towards each resident, during all phases of this study during the afternoon sessions. Looking at residents 1, 4, and 6 in Figures 3 and 4, differences between baseline and Intervention 1 are apparent. The occurrence of conversing during baseline was 0.06 (one instance out of eighteen sessions), which increased to 0.21 (three times out of fourteen sessions) during Intervention 1. One instance of staff leisure engagement (throwing ball) was also observed for resident 1 during Intervention 1 and no instance was observed during baseline. For resident 4, no instances of conversing were observed during Intervention 1 but were observed during baseline. No staff contacts directly relating to activity engagement were observed occurring towards resident 4. For resident 6, observed instances of leading resident were at an average of 0.25 (three instances out of
twelve sessions) during Intervention 1, but were never observed during baseline. One instance of staff leisure engagement (looking at, holding hands, and singing with resident) was also observed during intervention 1 for resident 6 and no instances were observed during baseline. Staff conversing with resident 6 also increased during Intervention 1 compared to baseline.

Figure 6 displays positive and negative affect for residents 1, 4, and 6 during baseline and Intervention 1. Resident 1 was observed displaying positive affect twice during Intervention 1 but not during baseline. Resident 1 also displayed negative affect during baseline but never during Intervention 1. Affect remained at zero levels for all other times for resident 1. No systematic change in affect occurred for residents 4 or 6.

**Single Stimulus Engagement Preferences Assessments**

Figures 7, 8 and 9 display the results from the SSE PAs. Engagement is presented as total durations for participants 1, 3, 4, 5, 6, 7, and 9. Engagement for residents 2 and 8 are presented as a percentage of engagement during the SSE trials. The SSE PAs were able to identify preferred and non-preferred items for all residents. A clear gradient of preference can be observed for each participant towards the range of activities to a greater or lesser extent. For resident 7 for example, a consistently high level of engagement was observed towards his top five most preferred items (jumbo playing cards, book of garden pictures, colouring book and pens, cardboard puzzle, and newspaper). Similarly, he consistently refused or displayed short durations of engagement towards a number of activities (e.g., ball and block puzzle).

The preference gradient for residents 8 and 9 for example were less clear. For these residents, engagement towards medium preference activities were quite inconsistent. Both displayed relatively long durations of engagement towards activities that had been engaged with for relatively short durations within other PAs. Despite this, their engagement towards least preferred activities (e.g., general music) was consistently low and their engagement
towards their most preferred activities (book of bird pictures and cardboard puzzle, respectively) were consistently high.

There were also differences between residents in terms of the average duration of engagement towards their top five most preferred activities. Residents 7 and 1 had the highest average durations with 598 and 544 out of 600 seconds respectively. Residents 5 and 4 had the lowest average durations with 245 and 248 out of 600 seconds respectively. The durations of engagement for the latter two residents are less than half of that observed of the former two.

There are some similarities between the residents with respect to their preference hierarchies. Ball, piano and the teddy for example were commonly among the least preferred activities for the majority of the residents. Colouring book and pens was also within the top ten preferred items for most residents.

Preferences towards the activities general music and a movie showed clear individual differences. For example, residents 2, 3, and 5 displayed relatively long durations of engagement towards general music, whereas residents 4, 6, 8, and 9 displayed relatively short durations of engagement towards this activity. Similarly, residents 2, 4, 6, 7, and 9 displayed relatively long durations of engagement towards the movie whereas residents 1, 3, 8, and especially 5 often displayed relatively short durations of engagement towards this activity.

Some inappropriate engagement was observed during the PAs. Resident 1 hoarded activity materials when presented with the colouring book and pens and the box of buttons. Resident 3 placed activity materials into her mouth when presented with the cardboard puzzle, Connect Four®, and the colouring book and pens. Resident 8 displayed negative affect and verbal aggression following the presentation of jumbo playing cards.

**Intervention 2**

**Afternoon sessions.** Figures 10 and 11 display the appropriate engagement of the
residents during Intervention 2 and previous phases, including baseline. A particularly clear increase in appropriate engagement can be seen to occur for residents 1, 7, and 9 during Intervention 2. During some points within Intervention 2, engagement was relatively higher than during recent baseline levels for resident 5 and 6. However, appropriate engagement often remained highly variable for these two residents. There does not appear to be any increase in appropriate engagement for residents 2, 3, and 8 during Intervention 2.

Generalisation effects of Intervention 2 can be seen in Figure 11. Increases in appropriate engagement occurred for residents that were still in baseline during the time that Intervention 2 was being carried out for other residents. For example, appropriate engagement appears to increase for residents 8 and 9 a few sessions after session 45.

Figure 2 displays the average number of different activities engaged in during Intervention 2 and previous phases of this study. There was an increase during Intervention 2 compared to previous phases for residents 1, 5, 6, 7, and 8. There was no increase for residents 2, 3, and 9.

Figures 12, 13 and 14 display the percentage of sessions that residents engaged with their most preferred activities. These figures provide an indication of the appropriate engagement residents had with their most preferred activities during the different phases of this study, during the afternoon sessions. Apart from those residents for which general music and/or a movie was among their most preferred activities, residents on the whole did not appear to engage with their most preferred activities that often during phases prior to Intervention 2. Exceptions to this were the magazine for resident 6, the newspaper for residents 1 and 3, and the colouring book and pens for resident 9.

Figures 12, 13 and 14 provide evidence that the residents engaged with their most preferred activities much more often across Intervention 2 sessions compared to previous phases of this study. Residents 1 and 7 engaged with all of their most preferred activities...
significantly more often during Intervention 2. For other residents, lower numbers of most preferred activities were engaged with more often during Intervention 2 compared to previous phases. Mixed results were obtained for resident 2, and no results were obtained for resident 8.

Figures 10 and 11 also display resident wandering and inappropriate engagement during Intervention 2 and baseline. It can be seen that at times when appropriate engagement was at relatively high levels for residents, their level of wandering was low compared to other times. Observing the behaviour of resident 1 displayed in Figure 10 is a good example of this. Particularly when C3 was carrying out Intervention 2, wandering was significantly lower for resident 1 than during other times. A decrease in wandering occurred for resident 6 to a level much lower than previous phases of this study. No change in wandering was apparent for any other resident. There was no change in inappropriate behaviour for any resident, which remained at low levels for all residents.

Figures 3, 4 and 5 also display the average number of observed instances of the different types of staff contact during Intervention 2, as well as previous phases. Across participants, the most commonly used prompt staff used to promote leisure engagement in residents was verbal prompting. The average number of observed instances of verbal prompts per session during Intervention 2 for all residents was 0.16. The presentation of activities was also observed to occur towards residents 1, 7, and 9 during Intervention 2 and no instances were observed occurring towards any resident during previous phases. Gestural and model prompts were also observed, occurring to residents 6 and 7 respectively. No offering of choice between activities was ever observed for any resident. There was also no praise statements observed occurring to residents.

Figure 15 and Figure 16 display residents’ affect during Intervention 2 and baseline sessions from the afternoon. For all of the residents, there does not appear to be any change
during Intervention 2 compared to baseline. Between residents, it appears that there is a lot of variation in their levels and most frequent type of affect. Residents 5 and 8 often displayed negative affect during the afternoons, often at rather high levels. Residents 2, 3, and 7 on the other hand most commonly presented with positive affect.

Looking at Figures 10 and 11, it is apparent that there were differences in the appropriate engagement of the residents when different caregivers were carrying out Intervention 2. Appropriate engagement appeared to be more consistent for example when C3 was working compared to the other caregivers. Appropriate engagement was also at higher levels for resident 1 when C3 was working compared to any other time during afternoon sessions. There also appears to be fluctuations in appropriate engagement across residents during Intervention 2. The sudden drop in the appropriate engagement of resident 8 when she entered into Intervention 2 also appears to be influenced by a change in caregivers.

**Morning sessions.** Figures 17 and 18 display the engagement of the residents during baseline and Intervention 1. Due to residents’ behaviours not being recorded for some sessions, residents participated in anywhere between five and thirteen baseline sessions. Average appropriate engagement during baseline for all residents up until and including session 51 (the last session before Intervention 2 was initiated) was 46.5%. During baseline, appropriate engagement appeared to be stable for some residents (e.g., resident 1) and less so for others (e.g., resident 6).

Three sessions of Intervention 2 were carried out in the morning and six residents participated in these. Except for resident 1, no other resident that participated in the morning Intervention 2 sessions was observed for more than two sessions. For resident 1, appropriate engagement remained stable and at the same level observed during baseline. For the other residents that participated in Intervention 2, the percentage of time samples that they were observed to be appropriately engaged did not exceed that of their baseline levels.
For the majority of participants, no new types of activities were engaged in during Intervention 2 that many of the residents had not engaged with during baseline. During baseline, common group activities were singing as a group, bowling, playing bingo, ring toss, ball throw, and group quiz. Analysing the residents as a group, the most common types of appropriate engagement observed during baseline were passive engagement in activities and engaging with general music, which residents were observed to engage with at least once a session for 51% and 34% of morning sessions respectively. During Intervention 2, resident 3 engaged with a fiddle blanket, resident 5 engaged with her iPod, and resident 9 engaged with a block puzzle which were activities not engaged with by any residents during baseline.

Figure 19 shows the average number of different activities engaged in during baseline and Intervention 2 during morning sessions. The average number of different activities increased for residents 5, 7, 6, 9 and 3. The average increase for these residents was 0.55. The average number of different activities for resident 1 decreased from 2.7 to 2.3 during intervention 2.

Figures 17 and 18 also display resident wandering and inappropriate behaviour during baseline and Intervention 2 during morning sessions. A spike in wandering behaviour occurred for the first session of Intervention 2 for several residents but returned to low levels across the following two sessions. No change from the near zero levels of inappropriate behaviour occurred.

Figure 20 displays the average number of observed instances of staff contact during baseline and Intervention 2 during the morning sessions. The change from baseline was variable across participants. Staff contact increased for residents 5 and 6, but decreased for residents 1, 7, 9, and 3.

Figure 21 and Figure 22 display resident affect during baseline and Intervention 2 during the morning sessions. No change in trend, level, or variability occurred during
Intervention 2 for any of the participants.

**Accuracy of Staff Estimates of Resident Engagement**

Figure 23 displays the percentages of resident appropriate engagement during Intervention 1, as estimated by the caregivers and observed using the MTS (modified time sampling) procedure. C2 was able to estimate the percentage of appropriate engagement to within 20% of that obtained using MTS during 88% of sessions. C1 was less accurate and only did so on 50% of sessions.

Figure 24 displays the percentages of appropriate engagement during Intervention 2 as estimated by the caregivers and observed using the MTS procedure. C2 was able to estimate the percentage of appropriate engagement to within 20% of that obtained using the MTS procedure during 60% of sessions. C3 was able to do so on 44% of sessions.

**Social Validity Questionnaires**

Social validity questionnaires were completed by 7 respondents. The distribution of ratings for each of the statements can be seen in Table 3. All respondents either agreed or strongly agreed with the importance of engagement in elders with dementia and the procedures used within the current study for the purpose of increasing the levels of engagement. Similarly, all respondents either agreed or strongly agreed that the current procedures were effective in increasing engagement for the residents.

A total of 5 responses were obtained for the final two statements, statements that were only meant to be completed by caregivers that directly participated in the study. Three of these respondents either strongly agreed or agreed that the current procedures were easy to carry out and that they would continue to use them to increase resident engagement. Two caregivers disagreed with these final two statements.

**Discussion**

Intervention 1 failed to increase the levels of appropriate engagement in three elderly
residents with dementia. SSE PAs (single stimulus engagement preference assessments) were used to obtain five activities that were most preferred for each of the nine residents. When the names of the residents’ most preferred activities were displayed on a poster in the main lounge, and the tangible activities were placed on an activity trolley during Intervention 2, resident levels of appropriate engagement increased during the afternoon sessions. Below are discussions of the results obtained during each phase of this study, including baseline, Intervention 1, the SSE PAs, Intervention 2. Following these are discussions regarding the acceptability of Intervention 2, changes that were made during follow up, and potential improvements that could still be made. Finally, discussions of the current study in terms of how it relates to the broader literature, as well as its general limitations, are included.

**Intervention 1**

Intervention 1 was a replication of the procedures used by Altus et al. (2002b). Specifically, caregivers were instructed to observe three residents (participants 1, 4, and 6) during a one hour observation period, record the quality and quantity of resident engagement and then receive supervisory feedback from the manager. Activity recording and feedback is designed to increase caregiver behaviours that are related to increasing the levels of engagement in elders with dementia (e.g., providing activities and prompting engagement). No increase in resident levels of appropriate engagement was observed, therefore, the current study fails to replicate the results of Altus et al. (2002b). There were also no systematic changes in the variety of activities engaged in or any change in the observed instances of inappropriate engagement.

It was discussed previously that performance feedback does not always produce improvements in behaviour (Alvero et al., 2001). On top of this, because other authors have proposed various behavioural functions of performance feedback (e.g., Komaki et al., 1978; Agnew & Redmon, 1993), reasons for discrepancies are often difficult to pinpoint. The
following discussion provides an analysis of the observed changes during Intervention 1 from baseline and is an attempt to explain why Intervention 1 may have failed to increase the levels of appropriate engagement for these three residents.

The researcher observed all instances of supervisory feedback from the manager. The managers never provided the caregivers with suggestions for possible ways to engage the residents. This means that supervisory feedback did not function to prompt different staff behaviours (Daniels, 1994), which may or may not have been the case within Altus et al. (2002b). It is most likely that if the supervisory feedback influenced caregiver behaviour, the function would have been the reinforcement of caregiver behaviours that resulted in increases in resident engagement (Komaki et al., 1978). It is also possible that the supervisory feedback functioned as a punisher for behaviours that did not lead to increases in resident engagement (e.g., sitting down, not interacting with residents).

If supervisory feedback only functioned to reinforce and/or punish staff behaviour, there are a number of possible reasons why Intervention 1 failed to increase appropriate engagement. Caregivers may have been unaware of the contingency. In other words, they may have been unaware that increasing resident engagement would result in more positive supervisory feedback from the manager. However, the nature of the supervisory feedback was such that changes in resident engagement were often directly attributed to the behaviours of the caregivers (e.g., “good work engaging [resident 1] today”). Therefore, an unawareness of the contingency is unlikely to be the reason.

Another possible reason is that supervisory feedback may not have functioned to reinforce and/or punish caregiver behaviour. Previous research has however, shown that feedback delivered by managers often produces consistent, or at least mixed results, in terms of improving staff behaviour (Alvero et al., 2001). On top of this, C1 explicitly said she wanted to take her completed activity recording sheet to, and receive feedback from, one of
the managers on a day that both managers were working. This is a clear example of preference towards receiving supervisory feedback from this manager. The existence of preference suggests that supervisory feedback from at least one of the managers may have served a punishing or reinforcing function.

Two explanations are currently argued to be the reasons that Intervention 1 failed to increase appropriate engagement appear to be complimentary to each other. For one, the caregivers appeared to be unable to significantly increase the levels of appropriate engagement in these residents above baseline levels. Quantitative as well as anecdotal evidence provide support for this explanation. Neither C1 nor C2 had much experience engaging residents in individual activities. C2 for example had some experience carrying out scheduled group activities in the morning, but little experience providing residents with individual activities. As stated previously, group activities require at least one member of staff continuously carrying them out which makes them impractical during some periods of the day, and may not increase engagement as much as individual activities (e.g., Orsulic-Juras et al., 2000).

The current results suggest that the caregivers were more likely to try lead and retain residents within the main lounge of the facility. Evidence to support this is that resident 6 received staff contact in the form of leading resident at an average number of 0.25 observed instances per session during Intervention 1 but never during baseline. If the frequency of staff behaviour was recorded, more comprehensive results may have been obtained. Further evidence though comes from the fact that resident wandering during Intervention 1 decreased for all three residents.

Attempting to increase resident presence within the main lounge may have served a dual purpose. Having all three of these residents within the lounge would have allowed the caregivers to observe their engagement easier. Additionally, caregivers may have done so in
an attempt to increase resident engagement in the general activities that were often playing in the main lounge (i.e. the T.V. and music). Previous research by Cohen-Mansfield and Werner (1997) though observed variation between residents towards such activities and so increasing resident attendance to the lounge would not necessarily have resulted in increases in appropriate engagement.

The current results also provide evidence that more direct approaches were taken by these caregivers. The increased average number of observed instances of conversing and leisure engagement from staff towards residents 1 and 6 are examples of this. These changes in staff contact support the fact that caregiver behaviours associated with engaging residents increased during Intervention 1 compared to baseline.

Meeks and Looney (2011) found a positive correlation between staff contact and positive affect in residents with dementia. The increased staff contact for resident 1 could explain the two instances of positive affect observed during Intervention 1. It could alternatively be the result of chance since no changes in affect occurred for residents 4 and 6, even though staff contact also increased towards resident 6. More detailed evidence of staff contact and resident affect would be needed to support this explanation further.

It is important to note that all of the interactions between these residents and staff never involved resident engagement in individual activities. This is not surprising given that the caregivers apparently had no previous experience engaging the residents in individual activities. The one to one interactions that were observed (i.e. conversing, ball throw, and directly singing with) all actively required a caregiver. The response effort required may therefore have been too high to produce observable increases in resident engagement. For the caregivers, this behaviour is also incompatible with completing their other tasks, so residents remained unengaged during these times.

The final explanation is complimentary to this. There were issues that arose from
receiving supervisory feedback on resident outcomes, even though caregiver estimates of resident engagement were often rather accurate. The managers often remained in the office during these afternoon sessions and so for them, the only information about resident behaviour came from the activity recording sheets. The researcher observed that fluctuations in caregiver estimates of resident engagement were often attributed directly to caregiver behaviour, even on sessions where they did not perform behaviours (e.g., prompts) to directly engage the residents. The fact that positive feedback was sometimes received noncontingent on behaviour, may have reduced the effectiveness Intervention 1.

These explanations are speculated to be the critical difference(s) between the current study and the original by Altus et al. (2002b). It is difficult to be sure of this speculation without a more in depth description of the learning history of CNA1 and more detail into the content of the performance feedback than what is described in the original study. Personal communications with Altus and Engelman this year failed to reveal any further information.

**Single Stimulus Engagement Preference Assessments**

The SSE PAs were able to identify 5 most preferred activities for all residents. For most of the residents there was a clear gradient of preference, with residents engaging for consistently longer durations with the top five most preferred activities and constantly shorter durations with (or refusal of) non-preferred activities. Resident 7 for example, actively and passively engaged with his five most preferred activities for their entire trial lengths during his PAs. He also consistently refused or had short durations of engagement with other activities that were less preferred. Less clear gradients of preference were however, obtained for some of the other residents (e.g., resident 8 and 9). The current results provide evidence that the current SSE PA procedure is an effective way to identify preferred activities for elders with dementia.

**Similarities and differences to previous research.** The preference hierarchies
obtained within the current study had similar patterns across residents. The clearest example being the common refusal or low durations of engagement towards the piano, ball and teddy bear. Resident similarities have also been found in previous research with elders with dementia (e.g., Cohen-Mansfield & Werner, 1997). Cohen-Mansfield, Thein, Dakheel-Ali, Regier, and Marx (2010) found that presenting stimuli belonging to certain categories (e.g., social and animated) resulted in significantly longer durations of engagement and affect a compared to their categorical opposites (nonsocial and nonanimated). This line of research appears important as it may continue to provide recommendations for potentially useful characteristics of stimuli.

It is unclear from the current study if any differences in preference hierarchies were due to differences between residents’ severity of dementia (e.g., Lucero et al., 2001). First, even if a resident was unlikely to appropriately complete some of the activities (e.g., the cardboard puzzle), they were all still capable of engaging with the activity materials. In addition, all residents had severe dementia as per their scores on at least one of the cognitive assessments. It may be that elders with medium or mild cognitive impairments would have different patterns within their preference hierarchies than the current resident participants.

Within the current study, residents 4 and 5 had the lowest levels of engagement towards the various activities, including their most preferred activities. Previous research has found that elders with dementia that score lower on cognitive and daily living assessments tend to engage less in activity programs (e.g., Voelkl et al., 2001). This may explain resident 4’s low durations of engagement, as he scored low on both cognitive assessments and required relatively more assistance in his ADLs, especially around the time of the PAs. Resident 5’s low levels of engagement may be explained as the result of her vision impairments and her depressive symptoms. Research has shown that both of these things negatively influence engagement (Resnick et al., 1997; Voelkl et al.).
Since T.V. and/or music were often the only activities available within the main lounge during baseline and Intervention 1, it is important to consider the individual differences towards these activities. The durations of engagement towards these activities were variable across participants, as has been found in previous research (Cohen-Mansfield and Werner, 1997). While general music was a most preferred activity for some residents, it was a least preferred activity for others. The same was the case for the movie. This highlights the fact that general background activities are not likely to engage all residents and that a careful consideration of individual activity preferences is important.

The importance of activity familiarity for elders with dementia has been mentioned by previous authors (e.g., Cohen-Mansfield, Marx, Thein, & Dakheel-Ali, 2010; Lucero et al., 2001), and the current results provide further support for this. For example, resident 2 engaged with the piano for longer than any other resident because of his long history playing pianos. Similarly, resident 9 was anecdotally observed to actively engage with the colouring book and pens considerably more than any other activity. It was known that she had had a long history of painting with her husband. In contrast to familiar activities, low levels of engagement towards Connect Four® were common, which may partly have been due to it being unfamiliar to many of the residents.

Cohen-Mansfield et al. (2012) found that all social stimuli (alive or not alive) resulted in significantly more positive affect than a control condition. Stimuli were categorised as social if they were a live human or other animal, or if they were designed to resemble such things (e.g., a teddy bear). Some other categories of stimuli (e.g., blocks and folding towels), did not produce significant increases in pleasure. It was suggested that incorporating non-living social stimuli into the environment of elders with dementia is more likely to result in positive affect compared to other types of stimuli Cohen-Mansfield et al., 2012). Also important is the fact that such stimuli will cost much less than live social stimuli.
The only activity used within the PAs that fit one of the definitions of something social within Cohen-Mansfield et al. (2012) was the teddy bear. The subcategory that it came under was ‘inanimate social stimuli’. The results within the current study towards this stimulus were mixed. For example, resident 6 was anecdotally observed to display positive affect when she was presented with the teddy bear, but her average duration of engagement with this stimulus was relatively short compared to other stimuli. Also, resident 3 displayed a lot of positive affect when this stimulus was presented and her average duration of engagement with it were relatively high. In contrast, other participants did not show positive affect towards the teddy bear and refused to engage with it even during sampling. This further emphasises the importance of individual preferences. It also suggests that in the case of resident 6, relatively high levels of positive affect towards an activity may not be a good predictor of duration of engagement.

**Advantages and disadvantages.** Another advantage of the SSE PA is that it allows participants to sample an activity immediately before engagement is measured. This seems particularly important since dementia is associated with progressive declines in memory as well as the decreased ability to initiate engagement with activities (Brenske et al., 2008). Research has shown that for elders with dementia (especially those with severe cognitive impairments), engagement with activities was optimised when appropriate engagement with an activity was modelled prior to its presentation (Cohen-Mansfield et al., 2010b). Least to most prompting was used to insure that each participant engaged with each stimulus at least once before their respective trials. This means that the participant was appropriately and actively engaging with an activity just seconds before the beginning of the trial, allowing them to contact the potential reinforcement each activity may provide.

The same definitions of engagement were used for all residents during the SSE PAs. This was likely the reason for variable durations of engagement, and therefore less clear
gradients of preference, for resident 9. Even her medium and least preferred activities had relatively high durations of engagement during one or two of the PAs. For the majority of activities, resident 9 would often just look at the activity materials and lean in and manipulate them only occasionally, if at all. This tendency, coupled with the large number of activities sampled, may have meant that some of the activities identified as being highly preferred may have been the result of chance. Even though the cardboard puzzle was her most preferred activity, her engagement towards this activity was almost always passive, with only the occasional manipulation. In contrast, her engagement with her fourth most preferred activity, the colouring book and pens, was almost always active.

The current definitions may still have been the most appropriate for resident 9. If only active engagement behaviours and/or leaning towards an activity were recorded, her results may still have not been representative of her preferences. Watching a movie for instance – currently her fourth most preferred activity – would have been underrepresented. Activities like the colouring book and pens that often evoked active engagement behaviours may have been higher in her preference hierarchy if more PAs were conducted.

The current SSE PAs were conducted within the second lounge of the facility, often away from others and with little or no background noise. Although having a controlled environment reduces the likelihood of confounding variables, there were disadvantages to carrying out the PAs in this location. For example, conducting the PA in a more controlled environment may not have been representative of engagement within a less controlled lounge with more people and background noise. Cohen-Mansfield et al. (2010b) found that on average, elders with dementia actually engaged with stimuli more when there were others present in the same room (between four and nine) and when there was background noise.

The dimensions and furniture arrangements within the second lounge also meant that the observer(s) sat just one or more metres away from the participant. Coupled with the
common absence of others in the room, this may have increased the salience (noticeability) of the observer(s). Some residents were observed attempting to initiate conversations with the researcher. These attempts were most commonly ignored, unless not answering may have led to negative affect by the residents. In these cases, interaction was kept to a minimum and no reinforcement was ever given for engagement in activities.

For some residents, it was also very difficult to lead them to the room and to have them sit for more than just one or two trials. For example, resident 6 would often be preoccupied with trying to get outside or find family members during the afternoon. This is why she remained in baseline longer than resident 1 prior to intervention 2.

The total amount of PAs took an extensive amount of time to carry out. This was because there were 9 participants and 17 or more items being assessed. The SSE PA used differed from the initial study from which it was based by using 10 minutes as the starting trial length, as opposed to 15 minutes (LeBlanc et al., 2006). However, having trial lengths of 10 minutes still meant that the PAs took a long time. Adjustments were made to reduce the time required to complete the PAs. For example, if a resident’s durations of engagement were similar for the first two PAs, a third was not completed (e.g., residents 3 and 7).

Since each PA required a number of days to complete, changes in day to day behaviour may have had at least some influence on current results. This is one of the main reasons why three PAs were carried out for many of the residents. The possibility of sequence effects is also more likely with longer trial lengths. It is commonly referenced that elders with dementia have short attention spans (e.g., Cherry et al., 2008). Measures have been taken by previous authors to compensate for this fact. For example, Raetz et al. (2013) allowed elders with dementia the opportunity to take regular breaks of up to 5 minutes during assessments.

The final PA for residents 2 and 8 respectively, used 5 minute trial lengths. This was to investigate whether these shorter trial lengths could produce similar preference hierarchies
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for the residents. The most likely limitation of shorter trial lengths is the increased chance of ceiling effects. In using SSE PAs with two minute trial lengths to assess the preferences of individuals with autism, Hagopian et al. (2001) found that the rankings from each SSE PA were less stable across administrations compared to paired stimulus PAs. Looking at their results, the high percentages of engagement with many of the activities may have influenced that finding. More consistent preference hierarchies may have been obtained if longer trial lengths were used.

For resident 8 within the current study, a ceiling effect did occur during her third and final PA. Not including general music, she engaged with each of the other fifteen activities for more than 55% of their total trial lengths during this PA. She also engaged with ten activities (out of sixteen) for at least 90% of the total trial length. In comparison, an average of only four activities were engaged with for at least 90% of their trial lengths during the two earlier PAs. Activity refusal and low durations of engagement with activities were also less frequent during the final PA. This may in part be due to the short attention span of elders with dementia (e.g., Cherry et al., 2008).

During these final PAs for residents 2 and 8, the environment in which they were carried out was also changed. These PAs were conducted within the main lounge of the facility, as opposed the smaller lounge. As mentioned earlier, Cohen-Mansfield et al. (2010b) found that characteristics of the environment (e.g., a medium volume of background noise) influenced engagement in elders with dementia. Since the final PA for resident 8 was conducted in the noisier and more populated main lounge, these characteristics of the environment may also help to explain her decreased activity refusal and increased durations of engagement with activities.

The change in environment in which the PA was conducted also appears to have influenced the engagement of resident 2. However, activity refusal actually increased for
resident 2 within this setting. This may be because he was sometimes already engaged with the general music that was playing within the main lounge. At other times, he was asleep in the main lounge and had to be woken to sample an activity. Therefore, if sleep was more reinforcing than the activity being presented, it would have increased the likelihood of activity refusal or short durations of engagement. During the earlier PA, walking to the other lounge of the facility may have functioned to wake him up. Similarly, on days that he preferred to sleep instead of engage in activities during an earlier PA, he could refuse the general prompt used to lead him to the other lounge.

**Intervention 2**

Intervention 2 was designed with respect to the speculated reason why Intervention 1 failed to increase the levels of appropriate engagement. Specifically, Intervention 2 was designed to provide caregivers with an efficient way to increase appropriate engagement in the residents. Below are discussions of resident and staff behaviours from when Intervention 2 was carried out in the afternoon and morning sessions. Following this is a discussion concerning the acceptability and potential maintenance of Intervention 2 within the facility, improvements made and findings from follow up sessions, as well as recommendations for further improvements.

**Afternoon sessions. Resident behaviours.** Results from the afternoon sessions suggest that Intervention 2 was effective in increasing the appropriate engagement of residents with dementia. Particularly clear increases in appropriate engagement were observed for residents 1, 7, and 9. More variable results were obtained for resident 5 and 6. Intervention 2 resulted in a higher average number of activities engaged in for more than half of the residents. Residents also appeared to engage with their most preferred activities more often across sessions during Intervention 2 compared to previous phases. These findings suggest that when caregivers were provided with an efficient way to increase appropriate engagement in
the residents, they were able to do so. The influence of Intervention 2 also appeared to generalise to other residents that were still in baseline.

Looking at the results from the PAs (Figures 7, 8, and 9) and appropriate engagement during Intervention 2 (Figures 10 and 11), it appears that there may be some covariance. The higher the durations of engagement residents had towards their top five most preferred activities during the PAs, appears to correlate with the change in appropriate engagement during Intervention 2 from baseline. For example, appropriate engagement towards their top five most preferred activities during the PAs was much higher for residents 1 and 7 than it was for resident 5. The increase during Intervention 2 from baseline for these three residents appears to reflect this difference.

As has been found in previous research that compared increases in engagement at the individual level, appropriate engagement did not increase for all residents with dementia (e.g., Engstrom, 2011). For residents 2 and 3, it could be argued that their appropriate engagement, although variable, was already at sufficiently high levels during baseline. Resident 2 was also only observed during two Intervention 2 sessions, making it difficult to infer conclusions about intervention effectiveness for him.

Appropriate engagement for resident 8 on the other hand was not at sufficiently high levels during the majority of baseline. For resident 8, her increased level of appropriate engagement that occurred shortly before she entered the Intervention 2 phase may be taken as evidence that Intervention 2 was able to increase her level of appropriate engagement. It is interesting that resident 8 never engaged with her most preferred activities that were identified using the SSE PAs (see Figure 14). Looking at her levels of engagement during her final PA (the PA conducted within the main lounge; see Figure 9) appears to bring clarity to this finding. Since she appeared to engage with many activities when in the main lounge, caregivers that were unaware of her preferences, would have had a higher chance of engaging
her with activities than they would have if she had more distinct gradients of preference in this setting.

Resident wandering, inappropriate behaviour, and affect were also observed. Several of the residents’ levels of wandering appeared to be influenced by Intervention 2. When appropriate engagement increased, resident wandering often decreased. Appropriate engagement appears to be an alternative behaviour to wandering. There did not appear to be any difference in the level of inappropriate or affective behaviour for any resident during Intervention 2 compared to baseline.

**Staff behaviours.** Results from the afternoon sessions also provide convincing evidence of the influence that staff behaviour had on resident behaviours. Overall, staff contacts increased for many of the residents during Intervention 2 compared to previous phases, particularly in terms of behaviours specifically related to resident activity engagement (e.g., verbal prompts; see Figures 3, 4, and 5). The level of appropriate engagement within and across residents appeared to fluctuate with respect to which caregiver was carrying out Intervention 2, providing evidence that caregivers directly influenced appropriate engagement of residents with dementia. Despite some caregivers increasing the levels of appropriate engagement more than others, all three caregivers were able to carry out the procedures appropriately with only brief prompts from the researcher. Therefore, Intervention 2 appears to be an efficient way for caregivers to increase resident engagement with no training.

Something that the current figures do not show is the time at which the activities were presented to the residents during Intervention 2 sessions. The presentation of the first activity to the first resident appeared to vary greatly between sessions. This was in part due to the variation in time that lunch finished, but was also largely the result of the caregivers sometimes completing their other tasks before ever presenting activities to residents. If this was the case, the behaviours of the residents during the first 10 to 30 minutes were often
similar to baseline. This is believed to be the cause of some of the variation during Intervention 2. Intervention 2 is intended so that residents are provided with their individual activities to engage with, and then caregivers can complete their other assigned tasks while many of the residents will still be engaged. It is believed that more distinct increases in engagement would have been obtained had residents more consistently been presented with their preferred activities nearer to the beginning of the session.

In contrast to the check-in procedure, Intervention 2 of the current study does not require caregivers to perform certain behaviours at certain times. Although this has its benefits (e.g., it is more flexible than the check-in procedure), it makes it difficult to control for caregiver behaviour across residents, and thus assess the impact each type of staff contact has on appropriate engagement. There is likely to be a dynamic relationship between the appropriate engagement of the residents and the behaviour of caregivers.

Certain trends in resident engagement occurred across subsequent sessions that caregivers were working (see Figure 10). Some residents often had upward trends over the subsequent sessions and others often had downward trends. This suggests that the caregivers were engaging some residents in activities more over time and engaging others less over time. The upward trends in appropriate engagement for residents 1 and 7 suggest that the caregivers were being reinforced for doing so. It is possible that the source of this reinforcement was from the supervisory feedback received by the caregivers. However, since the same upward trends also occurred for C5, a caregiver that never received supervisory feedback, it is possible that other contingencies of reinforcement were responsible for these upward trends.

Reciprocal reinforcement may be responsible for these upward trends (Geiger & Johnston, 1974). In other words, increasing the engagement of, and interaction with residents may have been rewarding for the caregivers, and thus have functioned to increase the
frequency they engaged in these and similar behaviours in the future. Anecdotally, caregivers were also observed displaying more frequent positive affect towards residents that were engaged in activities, adding further support for this explanation.

While resident 9 often passively engaged with activities for long durations during the SSE PAs, she was observed to actively engage with the colouring book and pens more often than any other activity. Interestingly, this activity was by far the most engaged with by her during Intervention 2 out of all activities identified as preferred (see Figure 14). This suggests that evoking active engagement in residents was more reinforcing for caregivers than evoking passive engagement.

The downward trends that occurred for resident 5 seem to be due to the increased response effort required to engage her in leisure activities. During Intervention 2, the researcher observed that her durations of engagement with activities were often short, even for her most preferred activity (personalised music). Members of staff often had to continue to interact with her in order to engage her. It has been discussed throughout that this is not a practical way to increase the level of engagement in a number of residents. The same downward trends were observed both when caregivers were required to complete activity records for her engagement and when they were not. This is despite the fact that the caregivers (particularly C2) appeared to be rather accurate at estimating resident engagement during Intervention 2 (see Figure 24).

**Morning Sessions.** Intervention 2 was also implemented during the morning sessions to assess whether it could be used alongside the regular group activities that occurred during this time. Intentions were that the caregiver carrying out group activities would do so as usual, but provide residents that were not engaged (actively or passively) in group activities, with their most preferred individual activities.

Due to the limited number of Intervention 2 sessions conducted during the morning, it
is difficult to know whether resident and staff behaviour would have changed from baseline levels. The low number of sessions was the result of C4 leaving the facility. Alike with the caregivers that worked during the afternoon sessions, C4 also received the initial information prior to her first session. She was also required to complete activity recording sheets and receive supervisory feedback for her first session, but not for any subsequent sessions. Since C4 also required more prompting than the other caregivers to appropriately carry out the procedures, C4 only presented any individual activities to the residents on the final session. As a result of these things, many of the comparisons between baseline and Intervention 2 in the morning should be viewed with caution.

From the results obtained, there did not appear to be any obvious improving trends in resident behaviours. Similarly, the results for staff contact were mixed with some residents receiving more staff contact during Intervention 2 and others receiving less. It is likely that these mixed results were the result of the limited number of sessions.

The only recorded influence of Intervention 2 appears to be that a small number of individual activities were engaged with by residents that were not engaged with during baseline sessions for those residents. This was the fiddle blanket for resident 3, iPod shuffle® for resident 5, and the block puzzle for resident 9. All three of these instances of engagement also occurred on the last Intervention 2 session in the morning. Even though the iPod shuffle® for resident 5 was the only preferred activity according to the preference poster, this shows that C4 at least partly carried out the procedures by providing individual activities to the residents.

Acceptability of Intervention 2. Both management from within the facility and higher management directly informed the researcher that Intervention 2 was an acceptable and efficient way for the staff to engage the residents in activities. It has been argued previously in the literature that since the work load experienced by employees like caregivers,
it is important to have the support and commitment of management in order to increase the chances that improvements from interventions are maintained (Aronstein, Olsen, & Schulman, 1996; Burgio & Burgio, 1990). One of the facility managers stated that Intervention 2 was a person-centred way to reduce resident boredom. She also incorporated the residents’ preferred activities into their care plans. Within the facility, ‘individual activities’ – referring to Intervention 2 – was written into the facility’s daily plan for the afternoon period (12:40pm-1:40pm) as well as other times when no other scheduled activities were planned.

As well as managerial support, it is even more important that Intervention 2 be acceptable to the caregivers who are carrying it out. Social validity questionnaires were made available to staff and significant others to complete and return. The results from the social validity questionnaires were mixed. Even though all respondents strongly agreed with statements 1 to 8, some rated statements 9 and 10 less favourably. These two latter statements were designed to only be answered by the caregivers that directly carried out the procedures. A total of five respondents rated these statements. Although three rated these statements favourably (two strongly agreed with both statements and one agreed with both statements), two respondents rated both statements as disagree. It is interesting that five people responded to this statement since one of the five caregivers that participated had been on leave during the time that the social validity questionnaires were available. Regardless of this point, these results suggest that although all strongly agreed that resident engagement is important and the procedures used were acceptable, two respondents disagreed that the procedures were easy to do and disagreed that they would continue to use them.

**Follow up. Reducing the response effort required.** Follow up sessions were conducted during the afternoon (12:40pm-1:40pm). Since at least two respondents did not agree that Intervention 2 was easy to carry out, the response effort required to do so was
reduced even further during follow up. This was intended to increase the likelihood that these and similar caregivers would continue to use the intervention. During Intervention 2, caregivers were often observed heading over to the preference poster to see which activities were preferred by the residents. During follow up, the same information that was presented on the preference poster was also printed onto an A4 sheet of paper attached to the handle of the activity trolley (Appendix H).

The activity trolley was no longer kept within the activity cupboard and was now almost permanently kept within the main lounge of the facility. This was approved by management as the preferred activities were now often provided to the residents during other times of the day. This further reduced the response effort required for caregivers since they no longer had to retrieve the activity trolley from the activity cupboard.

**The incorporation of choice.** The final aspect of follow up was a written communication about providing residents with a choice between activities (Appendix H). Choice has been incorporated into Interventions designed to increase resident engagement previously. Within the check-in procedure, choices are offered to residents over a period of time, which functions as an informal way to derive residents’ preferences based on their previous selections and engagement with different stimuli (Engstrom, 2011). LeBlanc et al. (2006) also presented highly preferred activities to residents in a paired choice format, using one of four choice modalities. Although the results from Intervention 2 revealed that presenting residents with highly preferred activities singly increased levels of appropriate engagement for residents, the incorporation of choice within the current study was still seen as beneficial.

The main reason that choice was incorporated into the current intervention is because residents’ preferences and abilities may change over time, with the progression of the disease or as a result of frequent repetitious presentations of the same activities (Cohen-Mansfield et
For example, it could be that items that were highly preferred months ago may no longer be as highly preferred due to the progressive decline of abilities. Presenting the same small number of stimuli to an elder with dementia several or more times a day or week may result in those activities becoming temporarily less preferred, and therefore resulting in shorter durations of engagement or rejection.

Cohen-Mansfield et al. (2010b) found that only elders with mild cognitive impairment became bored when the same activity was presented a second time some number of days (between 1 and 21) later. Staff reports in a study by Noguchi et al. (2013) however suggested that a participant with severe dementia (with an MMSE score of 4) became satiated with repeated presentation of the same activity (magazines).

Providing residents with choices between high preference activities and activities to which residents’ preferences are unknown, is a good way to accommodate these changes. This would allow staff to offer activities that may be more stage-appropriate as residents progress through the disease, as well as increasing the variety of activities for elders with dementia. Presenting new activities in a choice format would reduce the chance that a resident would refuse or only display short durations of engagement with activities. Along with the reasons for providing residents with a choice, a description and example of how to offer paired choices was also included within the written communication.

**Findings.** Follow up did not produce the intended changes in resident or caregiver behaviour. Even though the activity trolley was already within the main lounge at the beginning of the sessions, C5 still did not present activities to the residents straight after lunch. Resident engagement did not increase from previous levels and in fact, for residents whose appropriate engagement increased during Intervention 2, a downward trend was observed during follow up. Despite the written communication concerning the incorporation of choice within Intervention 2, caregivers were never quantitatively or anecdotally observed
to offer residents a choice between activities during the three sessions that were observed. These findings suggest that additional steps are required to improve caregiver implementation of Intervention 2 in order to produce more effective and stable increases in resident engagement.

**Potential improvements to Intervention 2.** The levels of appropriate engagement for the residents would benefit greatly if caregivers were to consistently provide activities straight after lunch was finished. Additionally, caregivers were never anecdotally observed to move the trolley outside of the main lounge during Intervention 2 and follow up sessions. If residents were currently in other areas of the facility, they were not presented with activities unless the caregivers managed to lead them to the main lounge. Residents were sometimes found in their rooms or the other lounge during afternoon sessions. Similar to previous research, asking residents to attend this specific area appeared to have variable outcomes (Brenske et al., 2008). If residents were not willing to attend a specific area, it would be beneficial if caregivers presented activities to these residents at their current locations.

Since verbal prompts have proven to be effective to change caregiver behaviour, they could also work to get caregivers to present activities to residents straight after lunch, and to present them to residents in different locations if needed. If verbal prompts fail to produce changes that maintain over time, caregivers could be asked to record their own behaviour. This type of feedback is known as process feedback and is used when a functional relationship between staff behaviour and resident behaviour likely exists (Arco & Birnbrauer, 1990). For example, caregivers could be asked to record what time they first presented activities to residents and take this information to a manager or display it publicly on the scheduled activity board in the main lounge.

From the current results, it is difficult to tell whether Intervention 2 will maintain without staff completing activity recording sheets and receiving supervisory feedback.
Procedures were appropriately carried out by C5 for two weeks having only received prompting to do so from the researcher. She never completed any activity recording sheets or received supervisory feedback, yet the same patterns were observed in resident engagement while she was working compared to when other caregivers were working. Although resident engagement dropped off during follow up, having caregivers record when activities are first presented to residents may be more beneficial to recording estimates of resident engagement. This is because it avoids the problems that have been observed to occur when supervisory feedback was received for resident outcome feedback. Specifically, process feedback in this context will reduce the chance that positive supervisory feedback is delivered to caregivers, noncontingent on them attempting to engage the residents in activities.

The removal of activity recording and supervisory feedback will make Intervention 2 more efficient. The printing, storage, and filling out of activity recording sheets would take time and organisation from staff once the researcher leaves the facility. The delivery of feedback from the manager to caregivers takes time from both parties, as well as the organisation to ensure that both are free at the same time. Continued observations of caregiver and resident behaviour are required to the potential influence of these suggested improvements.

Another potential improvement worthy of consideration would be to train residents with mild dementia to carry out Intervention 2 (Camp & Skrajner, 2004). Camp and Skrajner (2004) were able to train elders with mild dementia to carry out activities for elders with severe dementia. In relation to Intervention 2, it may be possible to train one or more residents within the facility that are more cognitively and physically able, to provide the current residents with their preferred activities.

**Current Study and the Broader Literature**

The results from Intervention 2 in the afternoon sessions add to the findings from
previous research by using behavioural procedures and interventions for the purpose of increasing engagement in elders with dementia. Carrying out formal SSE PAs with elders with dementia appears to be an effective way of identifying preferences for most of the current residents. As discussed by Engstrom (2011), interviews with staff and significant others are not always reliable for identifying preferred activities (Parsons & Reid, 1990), especially as elders experience the progressive declines of dementia and the sensory impairments associated with aging (Skinner, 1983). Assessing present preferences takes the influence of changing interests, and physical and cognitive decline into account (Cohen-Mansfield et al., 2010a). Formal PAs are therefore congruent with legislation mandating that residents within long term care should be provided with activities that are preferred and that cater to their current physical and cognitive abilities (e.g., OBRA; U.S. Congress, 1987).

LeBlanc et al. (2006) also had staff present elders with dementia with their preferred activities. However, the caregivers within the current study were not required to present these preferred activities to the elders using a choice format with less preferred – and therefore less likely to be selected – activities. This is important from a practical perspective as it allowed caregivers a more efficient way to present the preferred activities.

There was no comparison between staff being prompted to bring out the activity trolley with and without the preference poster. Presenting activities from the trolley to residents whose preferences were unknown, even led to improvements in engagement for some of the participants (e.g., resident 8). Resident 8 however, appeared to have high durations of engagement towards most of the activities sampled during the PAs when in the main lounge. It is not surprising then that the caregivers were able to engage her without knowing her preferences. In contrast, if caregivers had no knowledge of preferred activities for someone like resident 7 for example, presenting activities to which relative preferences were unknown may have resulted in activity rejection or short durations of engagement being
observed. This would have increased the response effort required for the caregivers to engage the residents.

Previous research using the check-in procedure suggests that staff may be able to learn which activities more commonly result in engagement for residents with dementia (Engelman et al., 1999; Engstrom, 2011). This does however require the caregiver to observe resident engagement with the activities that are being presented, so therefore may not be practical when caregivers have other assigned tasks to complete. Since the caregivers of the current study were rather accurate at estimating resident engagement across an hour long session, future research could assess whether caregivers are accurate at estimating their engagement towards individual leisure activities. If so, caregivers that work during structured activity periods could record this information in a public area, which could then function as a prompt for other caregivers that work during busier times.

Prior to Intervention 2 in the afternoon sessions, residents were commonly prompted to remain seated within the main lounge with T.V. and/or music playing in the background. This kind of controlled inactivity is common within long term care (Schreiner et al., 2005). At the beginning of the study, the seats were positioned to face the T.V. during this time. The facility’s management decided to stop doing this just before session 26. The main reason was that it was considered a potential fire hazard to have all chairs orientated towards the T.V. The seats were positioned around the walls during all other times of the day and were left in this position from session 26 onwards.

Leaving the chairs positioned around the walls of the main lounge had a significant impact on engagement with the T.V for the majority of the residents. This was particularly the case for residents 1, 2, 4, 6, 8, and 9. As has been found within previous research, minor changes in the physical environment of elders with dementia can have a significant influence on their behaviour (e.g., Altus et al., 2002a; Clarke & Bilbrey, 1998; Namazi & Johnson,
During the morning observation sessions, group activities were often carried out for the hour. A high prevalence of passive engagement with activities was observed. This is similar to previous research with elders with dementia (e.g., Orsulic-Juras, Judge, & Camp, 2000). The group average of appropriate engagement during baseline appears to be within the range reported elsewhere, even though the cognitive assessments suggest that the current residents had more severe dementia (e.g., Brenske et al., 2008; LeBlanc et al., 2006).

Inappropriate engagement within the current study is much lower than that found elsewhere in the literature. Bowie and Mountain (1993) observed that elderly residents with dementia spent 30% of their time during the day engaging in inappropriate, repetitive, or antisocial behaviours. This is because behaviours that would potentially be termed problem behaviours by others within the literature based on things like their repetitiveness (Banazak, 1996), were not considered problem behaviours within the current study. For example, wandering has been classed as problem behaviour elsewhere based on its repetitiveness (Engelman et al., 1999; Kincaid & Peacock, 2003). Repetitious talking has also been classed as problem behaviour by others (Cohen-Mansfield et al., 1992; Cohen-Mansfield & Werner, 1997; Engelman et al., 1999). In contrast, only behaviours that were aggressive or an obvious misuse of activity materials were scored as inappropriate within the current study.

For this reason, the current study did not present a full account of all possible inappropriate behaviours, and therefore did not present possible reductions in these behaviours. Despite this, anecdotal evidence suggests a reduction in hoarding behaviour by resident 1. It can be seen from Figure 1 that her level of wandering during baseline was often quite high. She would wander the hallways and was known to hoard multiple things from around the facility (including things from other residents’ rooms), multiple times a day. Since hoarding is often a discrete (short duration) behaviour, it is likely to be underrepresented by
the modified time sampling procedure currently used (Mudford, Beale, & Singh, 1990). She was even observed several times wandering within the rooms of other residents, but her behaviour was scored as ‘wandering’, not ‘inappropriate engagement’ based on current definitions.

Depending on the type of leisure activity, her engagement with activities would have functioned as an alternative behaviour to her wandering and hoarding as she would have an alternative form of stimulation (Arenstein, Olsen, and Schulman, 1996; Noguchi, Kawano, & Yamanaka, 2013). Anecdotally, the manager noticed reductions in her hoarding behaviours during periods of engagement and even included her preferred activities into her care plan as a result. However, this should be interpreted cautiously as there is no quantitative evidence of this reduction.

In contrast to some of the literature (e.g., Orsulic-Jeras et al., 2006), no definitive increase in resident levels of positive affect occurred when they were provided with activities more often. This is despite the fact that many of these activities were also preferred by the residents, as identified using the SSE PAs. It was anecdotally observed during the SSE PAs that higher durations of engagement were not necessarily associated with the duration or quality of affect. This is an idea worthy of future research using behaviour recording procedures.

**General Limitations and Future Research**

An important limitation of the current study is the relatively low number of Intervention 2 sessions compared to baseline sessions. This occurred for a number of the residents during the afternoon sessions and for all residents during the morning sessions. This was due to Intervention 1 failing to produce changes in the appropriate engagement of the residents, the multiple baseline designs that were used, and the fact that C4 left the facility. A greater number of Intervention 2 sessions would have: (1) allowed the suggested
improvements to be applied and their effectiveness assessed; and (2) provided a better account of its practicality during morning sessions, alongside the scheduled group activities that also occurred during this time.

The current results may have benefitted from the inclusion of activities that were more stage appropriate for the residents with less functional and cognitive abilities. Inclusion of activities like fiddle blankets may have been beneficial to residents’ durations of engagement (e.g., Lucero et al., 2001). Such activities could still be included within Intervention 2 when caregivers offer residents a choice, but these stimuli would likely have been presented more frequently if they were included on the preference poster.

Categorizing and defining resident affect was not straightforward within the current study, even though the definitions of engagement were based on previous research with elders with dementia (Moore et al., 2007). The current IOA method for assessing agreement for affect may have overestimated agreement between observers. Difficulties arose because each resident’s change in facial expression from neutral, to positive or negative affect was different and sometimes very subtle. For example, resident 3’s neutral facial expression almost looked positive, and the change to positive affect was sometimes quite subtle. Along with the ‘happy sounding’ tone of her singing, the initial impressions of several of the interobservers was that her affect was constantly positive. The main researcher appeared to influence their initial impressions during interobserver training. The secondary observers’ initial impressions may have been accurate, but the main researcher had more experience with the residents, which may have allowed for a greater ability to notice certain subtle differences in facial expressions.

Idiosyncratic expressions of affect add to the difficulty of assessing whether someone is displaying some form of affect and not another. The definitions of Moore et al. (2007) did not allow for idiosyncratic expressions of affect. Participant 2 of this study was known to
weep upon hearing certain music or seeing certain things. During these times, he was also known to verbally express that the music, scenery outside, or something else was ‘beautiful’, suggesting that his weeping was a display of positive affect (colloquially known as ‘tears of joy’). This would be classed as negative affect by the definitions used by Moore et al. (2007). However, including idiosyncratic expressions of affect within the definition allowed more flexibility when analysing the individual residents’ affect.

There are a couple of limitations relating to the IOA data collected for the SSE PAs. For one, secondary observers were not provided training prior to the SSE PA trials. Therefore, despite the definitions, one of the secondary observers scored a much longer duration of engagement towards general music for a resident compared to the primary observer. It later became apparent that despite the definitions, she was scoring engagement whenever the resident’s eyes were open, even when he was not displaying public behaviours that suggested he was engaging with the general music (e.g., tapping his foot). The IOA methods used also result in a higher chance of low percentages of agreement when the duration of engagement is shorter. Many of the IOA trials were conducted with resident 4, which is one of the main reasons for many of the low percentages of agreement that were obtained.

**Conclusions**

Intervention 1, in which required caregivers to complete activity recording sheets and receive supervisory feedback, failed to produce an increase in appropriate engagement in residents living within a dementia care facility. Changes in resident wandering and staff contact were observed during Intervention 1. Although alternative reasons were considered, the speculated reasons why appropriate engagement did not increase during Intervention 1 were that the caregivers had no learned behaviours to allow them to efficiently engage the residents, and because they often received supervisory feedback noncontingently.
SSE PAs were therefore conducted for the primary purpose of identifying preferred activities for the residents. The gradients of preference obtained for the residents were distinct for some and less distinct for others. Characteristics of the individuals, the procedure, and the setting have been discussed in reference to some of the residents with less distinct preference hierarchies. The SSE PAs were still able to identify preferred activities for the residents.

Intervention 2, in which caregivers were made aware of resident preferences for activities that they could engage with independently, resulted in an increase in appropriate engagement for residents during afternoon sessions. All caregivers from the afternoon sessions only required verbal prompts in order to carry out the procedures appropriately. The current results suggest that activity recording and supervisory feedback were not necessary within Intervention 2. Results from Intervention 2 during morning sessions were inconclusive based on the limited number of sessions.

Based on the results from the social validity questionnaires, follow up was designed to reduce the response effort required for caregivers to carry out the procedure. Despite this, there was a decreasing trend during follow up. For future improvement, it was suggested that caregivers be required to record what time residents were first presented with their preferred activities during afternoon sessions.

To conclude, Intervention 2 allows any member of staff the ability to engage residents in preferred individual activities, which can be beneficial in the pursuit of increasing resident engagement; particularly during times in which staff members are required to complete other assigned tasks within the facility.
References


### Table 1

*Ad Hoc Definitions of the Different Types of Staff Contact Observed*

<table>
<thead>
<tr>
<th>Interaction</th>
<th>General Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice</td>
<td>Any member of staff member offering a resident a choice between two or more activities.</td>
</tr>
<tr>
<td>Presenting Leisure Activity</td>
<td>Any member of staff presenting a leisure activity directly to the resident.</td>
</tr>
<tr>
<td>Verbal Prompt</td>
<td>Any member of staff giving a resident a verbal statement specifically aimed towards getting the resident to engage with a leisure activity.</td>
</tr>
<tr>
<td>Model Prompt</td>
<td>Any member of staff physically demonstrating appropriate engagement in a leisure activity for the purpose of getting the resident to perform the same manipulation of the leisure activity.</td>
</tr>
<tr>
<td>Praise</td>
<td>Any member of staff giving a statement of encouragement for engaging in a leisure activity.</td>
</tr>
<tr>
<td>Leisure Engagement</td>
<td>Any member of staff directly engaging in the same activity as the resident.</td>
</tr>
<tr>
<td>Conversing</td>
<td>Any member of staff listening or talking to the resident but not including the staff member instructing the resident.</td>
</tr>
<tr>
<td>Leading Resident</td>
<td>Any member of staff walking with a resident or instructing the resident to walk somewhere.</td>
</tr>
<tr>
<td>Resident Care</td>
<td>Any member of staff carrying out any other cares (e.g., administering medication).</td>
</tr>
<tr>
<td>Other physical contact</td>
<td>Any member of staff being in physical contact with the resident in a way that did not involve leading the resident, resident care, or a leisure activity.</td>
</tr>
</tbody>
</table>
Table 2
*Leisure Activities Included within the Single Stimulus Engagement Preference Assessments*

<table>
<thead>
<tr>
<th>Leisure Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jumbo playing cards</td>
<td>A pack of 52 over-sized playing cards.</td>
</tr>
<tr>
<td>Box of buttons</td>
<td>A tin box containing a range of different types and sizes of buttons.</td>
</tr>
<tr>
<td>Book of bird pictures</td>
<td>A hard covered book that included pictures of, and facts on different bird species.</td>
</tr>
<tr>
<td>Book of cat pictures</td>
<td>A hard covered book that included pictures of, and facts on different cat species.</td>
</tr>
<tr>
<td>Book of garden pictures</td>
<td>A hard covered book containing pictures of backyard gardens.</td>
</tr>
<tr>
<td>Ball</td>
<td>A small rubber ball with a diameter of about 10cm that had a picture of a smiley face on it.</td>
</tr>
<tr>
<td>General music</td>
<td>A Karaoke DVD commonly played within the facility, was played on a 27-inch television screen.</td>
</tr>
<tr>
<td>Colouring book and pens</td>
<td>A colouring book that contained the outlines of various cottages and gardens.</td>
</tr>
<tr>
<td>Cardboard puzzle</td>
<td>A 50-piece cardboard puzzle with the picture of a fire engine and a burning building. The age range for this puzzle was 4+.</td>
</tr>
<tr>
<td>Block puzzle</td>
<td>A wooden block puzzle that was designed to fit six pictures of food onto the wooden frame.</td>
</tr>
<tr>
<td>The Holy Bible</td>
<td>A standard issue bible.</td>
</tr>
<tr>
<td>Newspaper</td>
<td>The most recent daily newspaper that was available within the facility.</td>
</tr>
<tr>
<td>Magazine</td>
<td>Any one of the many magazines that were kept within the activity cupboard of the facility.</td>
</tr>
<tr>
<td>Movie</td>
<td>A movie in the format of a DVD was played through a 27-inch television screen. The movie was called Beethoven’s 4th®.</td>
</tr>
<tr>
<td>Connect Four®</td>
<td>A game where counters are designed to be played in the top a plastic frame. This is usually a game for two players.</td>
</tr>
<tr>
<td>Teddy bear</td>
<td>One of the many standard sized teddy bears from within the facility.</td>
</tr>
<tr>
<td>Piano</td>
<td>Either of two upright pianos. The piano within the smaller lounge had several sticky keys. This means that when played, some of the keys would remain pressed down.</td>
</tr>
<tr>
<td>Personalised music</td>
<td>A personalised playlist of songs that family members specifically chose for a resident. The music was played through an iPod shuffle ® and a pair of over-ear headphones.</td>
</tr>
<tr>
<td></td>
<td>Social Validity Questionnaire Ratings</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Increasing engagement is an acceptable goal within dementia services.</td>
</tr>
<tr>
<td>2</td>
<td>The procedure used was an appropriate method for increasing engagement.</td>
</tr>
<tr>
<td>3</td>
<td>Finding out each individual’s preferred activities was an appropriate part of the procedure.</td>
</tr>
<tr>
<td>4</td>
<td>Displaying each resident’s preferred activities was an appropriate part of the procedure.</td>
</tr>
<tr>
<td>5</td>
<td>Placing all of the preferred items on an activity trolley was an appropriate part of this procedure.</td>
</tr>
<tr>
<td>6</td>
<td>Having staff record resident engagement was an appropriate part of this procedure.</td>
</tr>
<tr>
<td>7</td>
<td>Having a manager provide feedback to a staff member regarding resident engagement was an appropriate part of the procedure.</td>
</tr>
<tr>
<td>8</td>
<td>The procedure was effective in increasing the engagement of residents.</td>
</tr>
<tr>
<td>9</td>
<td>The procedure was easy to do (ONLY FOR STAFF WHO DIRECTLY PARTICIPATED).</td>
</tr>
<tr>
<td>10</td>
<td>I will continue to use this procedure to increase resident engagement (ONLY FOR STAFF WHO DIRECTLY PARTICIPATED).</td>
</tr>
</tbody>
</table>

Note. Presented in this table is the number of respondents that rated each statement, the distribution of their ratings, and the mean rating for each statement. A rating of 1 indicated strong agreement, a rating of 3 indicated neutral agreement, and a rating of 5 indicated strong disagreement. Only the staff members that directly participated were asked to complete questions 9 and 10.
**Figure 1.** Percentage of time samples residents 1, 4, and 6 were observed displaying appropriate engagement, wandering, or inappropriate engagement during baseline and Intervention 1 in the afternoons. C=Caregiver.

**Figure 2.** Average number of different activities that residents engaged in per session during afternoon sessions. Baseline results for all residents are displayed. Residents 1, 4, and 6 participated in Intervention 1. All but resident 4 participated in Intervention 2.
Figure 3. Average number of instances per session that the different types of staff contact were observed occurring towards residents 1, 2, and 3 during afternoon sessions. All three residents participated in baseline and Intervention 2. Resident 1 also participated in Intervention 1.
Figure 4. Average number of instances per session that the different types of staff contact were observed occurring towards residents 4, 5, and 6 during afternoon sessions. All three residents participated in baseline. Resident 1 and 6 participated in Intervention 1. Residents 5 and 6 participated in Intervention 2.
Figure 5. Average number of instances per session that the different types of staff contact were observed occurring towards residents 7, 8, and 9 during afternoon sessions. All three residents participated in baseline and Intervention 2.
Figure 6. Percentage of time samples that residents 1, 4, and 6 were observed displaying positive or negative affect during baseline and Intervention 1 during afternoon sessions. C = Caregiver
Figure 7. Total durations of engagement (seconds) towards each leisure activity from the single stimulus engagement preference assessments for residents 1, 4, and 5. PA=preference assessment.
Figure 8. Total durations of engagement (seconds) towards each leisure activity from the single stimulus engagement preference assessments for residents 7, 6, and 9. PA=preference assessment.
Figure 9. Engagement towards each leisure activity from the single stimulus engagement preference assessments for resident 3, 8, and 2. For resident 3, engagement is displayed as the total duration (seconds) of engagement. For residents 8 and 2, engagement is displayed as a percentage of the total trial length. PA=preference assessment.
Figure 10. Percentage of time samples residents 1, 5, 7, and 6 were observed displaying appropriate engagement, wandering, or inappropriate engagement during baseline and Intervention 2 in the afternoons. C=Caregiver.
Figure 11. Percentage of time samples residents 9, 3, 8, and 2 were observed displaying appropriate engagement, wandering, or inappropriate engagement during baseline and Intervention 2 during afternoon sessions. C=Caregiver.
Figure 12. Percentage of sessions that residents 1, 2, and 3 engaged with their most preferred leisure activities at least once during afternoon sessions. All three residents participated in baseline and Intervention 2. Resident 1 also participated in Intervention 1.
Figure 13. Percentage of sessions that residents 4, 5, and 6 engaged with their most preferred activities at least once during afternoon sessions. All three residents participated in baseline. Resident 4 also participated in Intervention 1. Residents 5 and 6 also participated in Intervention 2.
Figure 14. Percentage of sessions that residents 7, 8, and 9 engaged with their most preferred leisure activities at least once during afternoon sessions. All three residents participated in baseline and Intervention 2.
**Figure 15.** Percentage of time samples that residents 1, 5, 7, and 6 were observed displaying positive or negative affect during baseline and Intervention 2 during afternoon sessions. C=Caregiver
Figure 16. Percentage of time samples that residents 9, 3, 8, and 2 were observed displaying positive or negative affect during baseline and Intervention 2 during afternoon sessions. C=Caregiver
Figure 17. Percentage of time samples residents 1, 5, 7, and 6 were observed displaying appropriate engagement, wandering, or inappropriate engagement during baseline and Intervention 2 during morning sessions. C=Caregiver
Figure 18. Percentage of time samples residents 9, 3, 8, 2, and 4 were observed displaying appropriate engagement, wandering, or inappropriate engagement during morning sessions. Residents 9 and 3 also participated in intervention 2. C=Caregiver
Figure 19. Average number of different activities residents engaged in during baseline and Intervention 2 during morning observation sessions. Baseline results from all residents are displayed. Residents 1, 5, 7, 6, 9, and 3 participated within Intervention 2.

Figure 20. Average number of observed staff contacts towards each resident per morning session. Results from baseline are presented for all residents. Residents 1, 5, 7, 6, 9, and 3 participated in intervention 2.
Figure 21. Percentage of time samples that residents 1, 5, 7, and 6 were observed displaying positive or negative affect during baseline and Intervention 2 during morning sessions. C=Caregiver
Figure 22. Percentage of time samples that residents 9 and 3 were observed displaying positive or negative affect during baseline and Intervention 2 during morning sessions. Residents 2, 4, and 8 only participated in baseline. C=Caregiver
Figure 23. Percentage of appropriate engagement for residents 1, 4, and 6 during Intervention 1 as estimated by caregivers and observed using the modified time sampling procedure. TS= time samples; C=Caregiver
Figure 24. Percentage of appropriate engagement for residents 1, 5, 7, 6, 9 and 3 during Intervention 2 during afternoon sessions, as estimated by caregivers and observed using the modified time sampling procedure. TS= time samples; C=Caregiver
Appendix A: University of Auckland Human Participants Ethics Committee Application

Human Ethics Application Form

**PROTOCOL**

Protocol Number: 011364

Protocol Title: Increasing engagement in a dementia care facility using staff activity recording and supervisory feedback

Principal Investigator (PI): Mudford, Oliver C

Associated Department: Psychology

Note: To change the PI please see Section A, to change the Title please see Section B eFORM VERSION V 3.2 12/07/2013

Prior to completing your application:

- Read the Guiding Principles for conducting research with human participants
- Go through the Applicant’s Manual
- Check if an exemption applies (see Guiding Principles section 3e and Applicant’s Manual Section 2.5.)
- Check if the matter needs to be referred to a Health and Disability Ethics Committee (HDEC) (see Guiding Principles section 3c and Applicant’s Manual Section 2.6.)

For creating and submitting your application refer to the Human Ethics Module Quick Guide

All documentation to support your application is on the UAHPEC web page

For any queries contact the Research Office Helpdesk 09 373 7599 ext 87956 or researchoffice@auckland.ac.nz

SECTION A: PERSONNEL

1. List all personnel, including co-investigators and ethics advisors, by selecting their name from [Add personnel - review] and add their Role from the dropdown list.

2. If you are a student, you must add your own name to allow access after closing the form.

3. To change the Principal Investigator, tick the 'PI' checkbox to the left of the relevant personnel.

Personnel (Add Personnel)

<table>
<thead>
<tr>
<th>Name: Mudford, Oliver C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
</tr>
<tr>
<td>Certification Begin End</td>
</tr>
</tbody>
</table>

* Role PI

<table>
<thead>
<tr>
<th>Scally, Regan A</th>
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<tr>
<td>Certification Begin End</td>
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* Role PI
<table>
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<th>Personnel</th>
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<tr>
<td><strong>Name:</strong> Scally, Regan A</td>
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<td>□ PI</td>
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<td>N/A</td>
</tr>
<tr>
<td><strong>Certification Begin End</strong></td>
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</tr>
</tbody>
</table>

* Role
Student
**Personnel not listed in [Personnel - Review] section**

Any University of Auckland personnel and other personnel that cannot be found in the lookup list should be added here. For staff members, include Department, University ID number and email address.

PLEASE SAVE THIS APPLICATION BY CLICKING SAVE IN THE TOP LEFT MENU BEFORE MOVING TO THE NEXT SECTION.

---

* Is this a Research Project or Coursework Application? Research

If you are a student, please add the degree you are studying towards.

Master of Science in Psychology

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**SECTION B: RESEARCH PROCEDURES**

* B:1a Title.

Increasing engagement in a dementia care facility using staff activity recording and supervisory feedback

Please note: for Coursework, the title should include the Course Number and Course Name.

*B:1b Protocol number: 011364

* B:2 Aims/objectives of the project.

The aim of the current study is to increase the level of engagement in activities of people with dementia. This is for the purpose of increasing the quality of life for these individuals. The study will use techniques from the field of Applied Behaviour Analysis (ABA). The procedures are designed to be sufficiently practical and efficient to allow any observed increases in resident engagement to maintain over time.

Please note: all acronyms must be written out in full the first time they appear in the application materials, Participant Information Sheet (PIS) and Consent Form (CF).
B:3 Summary of the project (max 2000 characters including spaces). Low levels of activity engagement are often displayed by residents with dementia. Increasing activity engagement is often targeted to improve the quality of life for those individuals. Several behavioural interventions have successfully increased activity engagement by residents with dementia (Altus, Engelman, & Mathews, 2002; Engelman, Altus, & Mathews, 1999; LeBlanc, 2010). One limitation from these studies is that some require a number of staff specifically trained and dedicated to increasing resident engagement (Engelman et al., 1999; LeBlanc, 2010). This was likely the reason that the increased levels of engagement evident by Engelman et al. (1999) did not maintain over time (Altus et al., 2002). Finding an efficient and practical intervention that can be used across different times and routines within care facilities appears increasingly warranted.

The current study will investigate the effectiveness of a staff management intervention to increase the level of activity engagement by residents of a dementia care facility. The staff management intervention will be similar to the one used by Altus et al. (2002) and will incorporate staff recording resident engagement and receiving immediate supervisory feedback from the manager. If a sufficient increase in engagement is not achieved the next stage will be to assess resident activity preferences (LeBlanc et al., 2006). Time permitting and if required a third stage will include providing the participating staff member(s) with a written communication (example attached) that incorporates a number of different techniques they could use to increase resident engagement, including offering residents a choice between two or more activities (Engelman et al., 1999).

References

If more space is required, please attach a more detailed description of the project and its backgr
Focus groups
- Yes ☑

Questionnaires
- Yes ☑

Observations
- Yes ☑

Other
- Yes ☑

B:7 Does the research involve proc radiation, invasive or surface recordings?
- Yes ☑

B:8 Does the research involve processes that are potentially disadvantageous to a person or group (for example, the collection of information which may expose the person/group to discrimination)?
- Yes ☑

B:9 Who will carry out the research procedures?
- Yes ☑

B:10a Where will the research procedures take place?
- New Zealand (Letter of support for research attached)

B:10b Will the research be conducted overseas?
- Yes ☑

B:11a Is the questionnaire web-based?
- Yes ☑

Please attach the questionnaire(s) in the 'Attachment' section at the end of the form.

esses that involve EEG, ECG, MRI, TMS, FMRI, EMG,

second year of the ABA programme, will carry out from Dr Oliver Mudford (OM), who is a Registered Psychologist and Board Certified Behaviour Analyst with experience supervising research in dementia care facilities. On about 15% of observations a second observer will collect data to assess accuracy of recording. These will also be masters students from the ABA programme for them are attached).

Investigators, of this form.

Consent form, or a support letter, in the "Attachment" section at the end of the form.

Brian Wells Lodge of Selwyn Village, 23 Wainoni Street, Point Chevalier Auckland,
**B:11b Is it an anonymous questionnaire?**

Yes [ ] No [ ]

* Explain and indicate on the PIS how anonymity will be preserved:
The social validity questionnaire sheets will be anonymous. The questionnaire sheets will be made available in the staff break room. There will also be a sealed box with an opening for the completed questionnaires to be placed. The manager and staff members will be able to fill these in on their breaks.

Significant others will be contacted by the manager or the researcher and invited to come and complete the questionnaire.

---

**B:12 How much time will participants need to give to the research?**

It is estimated that the observation sessions will take between 30 and 60 minutes. These will be carried out up to twice daily. It is estimated that up to 60 sessions will be carried out but this may vary depending on the observed effects. These sessions will likely be carried out over a period of 5 months. The facility already encourages residents to engage in activities during these times. There will be four types of participants:

- **Resident participants** – Will initially have the choice to engage in a number of available activities as they normally do. They will then likely receive different levels of encouragement to do so from the staff member(s). If sufficient levels of activity engagement are not achieved by one or more residents, then those residents (or all residents) will be asked to take part in a preference assessment. This will take approximately 30 minutes. Sessions will then continue as before. Staff participant(s) – Will be required to spend approximately 20 minutes with the researcher so that they can discuss the study and sign the consent forms. This will be a time for staff to ask any questions that they may have. During the study, they will be required to fill in activity records regarding resident engagement at the end of each observation session. These are estimated to take anywhere between 1 to 3 minutes to complete. They will then spend up to 2 minutes receiving feedback from the manager. If sufficient levels of engagement are not reached by a resident(s), the staff participant will be asked to spend up to 20 minutes answering a number of questions regarding what activities that resident(s) likely prefers. Participating staff may also have to read one additional sheet of paper with suggested techniques for boosting resident engagement if residents are still not engaged and time permits nearer the end of the study. At the conclusion of the study, the participating staff will be invited to complete a questionnaire which asks them how they perceive the study’s importance and acceptability. This will take approximately 10 minutes.

- **Manager participant** – The manager will be required to spend 30 minutes with the researcher so that they can discuss the study, discuss who would benefit the most from participating in the study, sign their consent forms, and so that they can collect the information and consent forms addressed to the significant others of the resident participants. During the study, the manager will be required to spend up to 2 minutes at the end of each observation session providing feedback to the staff participant regarding resident engagement. If sufficient levels of engagement are not reached by a resident(s), the manager participant will be asked to spend up to 20 minutes answering a number of
Questions regarding what activities that resident(s) likely prefers. At the conclusion of the study, the manager participant will be invited to complete a questionnaire which asks them how they perceive the study’s importance and acceptability. This will take approximately 10 minutes.

Significant others of the resident participants – Will be required to complete the consent form for the resident. If sufficient levels of engagement are not reached, significant others will be asked to spend up to 20 minutes answering a number of questions regarding what activities the resident likely prefers. At the conclusion of the study, significant others will be invited to complete a questionnaire which asks them how they perceive the study’s importance and acceptability. This will take approximately 10 minutes.

Staff not otherwise participating – Will be invited to give information in the form of a structured interview about resident preferences for any resident participant that does not reach sufficient activity engagement. At the conclusion of the study, all staff will be invited to complete a questionnaire which asks perceptions of the study’s importance and acceptability.

* B:13 Will information on the participants be obtained from third parties?
Yes ☑ No ☐

* Explain and indicate this on the PIS. Please attach a copy of the support letter in the ‘Attachment’ section at the end of the form, if necessary.

Interview questions regarding resident preferences. Demographic information for the participant description will be obtained from the manager and staff.

Information on the severity of resident participant dementia may be obtained. For example: information is to be obtained from participant’s employer, teacher, doctor, etc.

* B:14 Will any identifiable information on the participants be given to third parties?
Yes ☑ No ☐

* State and explain:
If a resident participant(s) does not reach sufficient levels of engagement with the currently available activities, their preferences will be made known to the staff participant. Staff, significant others and the manager will be aware of which resident(s) (if any) did not obtain sufficient levels of engagement. Secondary observers will record and have access to observational data. Secondary observers will complete confidentiality agreements. Copies of consent forms will be provided to management so they know who has consented.

* B:15 Does the research involve evaluation of The University of Auckland services or organisational practices where information of a personal nature may be collected and where participants may be identified? Yes ☑ No ☐
<table>
<thead>
<tr>
<th>B:16 Does the research involve a conflict of interest or the appearance of a conflict of interest for the researcher?</th>
<th>Yes ☐ No ☑</th>
</tr>
</thead>
<tbody>
<tr>
<td>B:17 Does the research involve matters of commercial sensitivity?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>B:18 Has the study design or the use of the data been influenced by an organisation outside The University of Auckland?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>B:19 Are you intending to conduct the research in The University of Auckland class time?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>B:20 Does the research involve deception of the participants, including concealment or covert observations?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>B:21 Is there any koha, compensation or reimbursement of expenses to be made to participants?</td>
<td>Yes ☐ No ☑</td>
</tr>
<tr>
<td>B:22a Is this an intervention study?</td>
<td>Yes ☑ No ☐</td>
</tr>
<tr>
<td><strong>Explain and indicate this on the PIS:</strong> Following baseline measures of activity engagement taken and mood by the researcher, the initial stage of the intervention will involve staff recording the activities that the residents engaged in and the estimated percentage of time they were engaged within the observation session. Staff will also receive immediate supervisory feedback from the manager. The aim is to increase the levels of resident engagement through changes in staff behaviour.</td>
<td></td>
</tr>
<tr>
<td>B:22b Does this research involve potentially hazardous substances?</td>
<td>Yes ☐ No ☑</td>
</tr>
</tbody>
</table>

**PLEASE SAVE THIS APPLICATION BEFORE MOVING TO THE NEXT SECTION.**
## SECTION C: PARTICIPANTS

**C:1 Who are the participants in the research?**

- **Adults**
  - Yes [ ] No [ ]

- **Own colleagues**
  - Yes [ ] No [ ]

- **Own students**
  - Yes [ ] No [ ]

- **Persons whose capacity to give informed consent (other than children) is compromised**
  - Yes [ ] No [ ]

- **Persons who are in a dependent situation, such as people with a disability, residents of a hospital, nursing home or prison, or patients highly dependent on medical care**
  - Yes [ ] No [ ]

- **Persons aged less than 16 years old where parental consent is NOT being sought**
  - Yes [ ] No [ ]
* Persons aged less than 16 years old where parental consent is sought
  Yes ☐ No ✓

* Other
  Yes ☐ No ✓

* **C:2 How many organisations and departments within the organisations will participate in your project?** Brian Wells Lodge, Selwyn Village, Point Chevalier.
  If you have letters of support, please attach these in the 'Attachment' section at the end of the form.

* **C:3 How many individual participants (research participants) will participate in your project?** Between 4 and 8 residents, up to four staff, and one manager will be recruited from Brian Wells Lodge.

* **C:4 How will you identify potential participants and by which method are participants invited to take part in the research?**
  The manager of Brian Wells Lodge will be asked to identify residents and staff that fit the inclusionary criteria. The significant others of potential resident participants will be given an advertisement by the manager (Advertisement attached). The manager will also hand advertisements to staff members that meet the inclusion criteria (advertisement attached).
  Using a direct approach to recruit potential participants is not recommended.
  Please attach the advertisement, media release, or notice, etc. and supplying them (if applicable) in the 'Attachment' section at the end of the form.

* **C:5 Who will make the initial approach to potential participants?**
  Other(s)
  Specify and explain:
  The manager will be approached by RS. The manager of Brian Wells Lodge will be asked to identify residents who she thinks will benefit the most from participating in the study. She will then contact the significant others of those residents and advertise the study (example attached). Significant others are instructed to have any questions about the study and provide them with a PIS. The manager will also hand advertisements to staff members that meet the inclusionary criteria (advertisement attached) which will be handed out by the manager. Staff that contact RS will provide them with a PIS, CF, and RS will organise the study with them. (All information and consent forms attached).

* **C:6 Will access to participants be gained with consent of any organisation?**
  Yes ☑ No ☐
  Explain:
  RS will provide a PIS and CF for Selwyn Village management requesting permission to access staff and residents of Brian Wells Lodge as participants (the PIS and CF are attached).

* **C:7 Is there any special relationship between participants and researchers?**
  Yes ☐ No ✓
* C:8 Does the research involve The University of Auckland staff or students where information of a personal nature may be collected and where participants may be identified?
Yes [☐] No [☑]

* C:9 Does the research involve participants who are being asked to comment on employee?
Yes [☑] No [☐]

* C:10 Are there any potential participants who will be excluded?
Yes [☑] No [☐]

* Explain and state the criteria for excluding participants:
Resident participants – Residents must be medically stable and be physically able to engage in leisure activities of some sort. Therefore, residents who are medically unstable or unable to engage in activities due to visual, auditory, or ambulatory impairments will be excluded from the study.

Staff participants – In order to meet the selection criteria staff had to hold a full-time (or close to full-time) position as a caregiver, have been working there for at least three months and planning to remain in their role for the next six months. Therefore, part-time, casual, and administrative staff, or those who plan to leave their position in the next six months will be excluded from the study.

PLEASE SAVE THIS APPLICATION BEFORE MOVING TO THE NEXT SECTION.
**D:6** Is access to the Consent Forms restricted to the Principal Investigator and/or the researcher? Yes ☐ No ☑

Explain, justify and indicate in the PIS:
The manager will have access to the consent forms so that she is aware of which participants have consented.

**D:7** Will Consent Forms be stored by the Principal Investigator, in a secure manner? Yes ☑ No ☐

**D:8** Are Consent Forms stored separately from data and kept for six years? Yes ☑ No ☐

PLEASE SAVE THIS APPLICATION BEFORE MOVING TO THE NEXT SECTION.

**SECTION E: STORAGE AND USE OF RESULTS**

**E:1** Will the participants be audio-taped, video-taped, or recorded by any other electronic means such as Digital Voice Recorders? Yes ☐ No ☑

**E:3** For the questionnaire, is any coding scheme used to identify the respondent? Yes ☐ No ☑

**E:4a** Explain how and how long the data (including audio-tapes, video-tapes, digital voice recorder, and electronic data) will be stored.
Data will be stored in a locked file cabinet at RS's residence during the course of the research. The data will be in the form of paper and computer files. The paper files will be stored in a separate file divider from all other material. The computer files will be kept on an external hard drive which will be stored within the same filing cabinet. Data will be stored for the standard length of six years in a locked room at the University (in School of Psychology at Tamaki campus initially, and when that is closed, City campus).

**E:4b** Explain how data will be used.
Data will be used for a Masters thesis, possible publication in a peer reviewed publication, and possible presentation at professional academic conference(s).

**E:4c** Explain how data will be destroyed.
All data in paper form will be destroyed by secure shredding at the University. All computer files will be deleted and removed from the computer's recycle bin.
* E:5 Describe any arrangements to make results available to participants. 

On each CF, participants and significant others will have the opportunity to request a summary of the final results. Accordingly, they will provide their email addresses on their returned consent forms.

* E:6a Are you going to identify the research participants in any publication or report about the research? Yes  No

* E:6b Is there any possibility that individuals or groups could be identified in the final publication or report? Yes  No

PLEASE SAVE THIS APPLICATION BEFORE MOVING TO THE NEXT SECTION.

SECTION F: TREATY OF WAITANGI
**SECTION G: OTHER CULTURAL ISSUES**

* G:1 Are there any aspects of the research that might raise any specific cultural issues?  
Yes ☐ No ☑

**SECTION H: RISKS AND BENEFITS**

* H:1 What are the possible benefits to research participants of taking part in the research?  
For the residents, the benefits may involve increased levels of engagement with activities. This is believed to increase the quality of life for these residents. For the staff, increasing levels of resident activity engagement may be rewarding in its own right. Increased levels of engagement were also associated with lower levels of problem behaviour (Cohen-Mansfield, Marx, Dakheel-Ali, Regier, & Thein, 2010). Additionally, increasing the number of activities of daily living performed by the residents themselves results in fewer tasks for employees.

* H:2 Is the research likely to place the researcher at risk of harm?  
Yes ☐ No ☑

* H:3 Is the research likely to cause any possible harm to the participants, such as physical pain beyond mild discomfort, embarrassment, psychological or spiritual harm?  
Yes ☐ No ☑

* H:4 Does the research involve collection of information about illegal behaviour(s) which could place the research or participants at risk of criminal or civil liability or be damaging to their financial standing, employability, professional or personal relationships?  
Yes ☐ No ☑

* H:5 Is the research likely to give rise to incidental findings?  
Yes ☐ No ☑

Please save this application before moving to the next section.
SECTION J: CLINICAL TRIALS

* J:1 Is this project a Clinical Trial?
   Yes ☐ No ☐

SECTION K: FUNDING

* K:1 Have you applied for, or received funding for this project?
   Yes ☐ No ☐

SECTION L: OTHER INFORMATION

* L:1 Have you made any other related applications?
   Yes ☐ No ☐

* Approval reference number(s):
  5056, 7172, 7207, 9316

* L:2 Is there any relevant information from past applications or interaction with UAHPEC?
   Yes ☐ No ☐

   * Indicate here and attach the relevant information to the 'Attachment' section at the end of the form. No ethical problems or concerns have arisen from any of the related applications. That is, no unexpected harms or problematic incidental findings.
Please provide a summary of all the ethical issues arising from this project and explain how they are to be resolved:

As a result of resident participant dementia, they are unable to provide informed consent. This issue will be resolved by obtaining informed consent from significant others. In some cases resident participants may also be judged as capable to assent to their participation. A simplified assent form will be provided either to a significant other or to the manager (whichever is most appropriate to each individual case), who will then explain the procedure to the resident. Resident participants will still have the choice not to participate in activities. Not participating frequently will prompt the researcher to carry out a preference assessment for that resident. This will result in the available activities likely being more suited to the individual’s preferences than they currently are, likely resulting in a more enjoyable experience for the resident. The significant other also has the right to withdraw their loved one from the study at any time.

To insure anonymity and confidentiality no names or other identifying information will be used within the published results. Resident and staff participants will also receive a number that will be used during data collection and identification. A list linking participants’ names to the identifying numbers will be stored in a separate location to the data, and confidentiality agreements will be obtained from any third party who may view any identifiable data.

PLEASE SAVE THIS APPLICATION BEFORE MOVING TO THE NEXT SECTION.
**SECTION M: ETHICS ADVISOR REVIEW**

- M:1 Will this Application be reviewed by an Ethics Advisor after you submit it?
  - Yes ☐ No ☑

- M:2 Has an Ethics Advisor been consulted in the preparation of this Application?
  - Yes ☐ No ☑

- M:3a Please provide the name and email address of your Ethics Advisor. If your Advisor wishes to remain anonymous, please enter "No Name".
  Dr. Oliver Mudford (PI) is an Ethics Advisor and is authorised to take on those dual roles in the School of Psychology.

- M: 3b Does your Ethics Advisor wish to be included in correspondence?
  - Yes ☐ No ☑
Appendix B: Participant Information and Consent Forms

PARTICIPANT INFORMATION SHEET (Manager)

**Project Title:** Identifying Preferred Activities to Increase Engagement in Residents with Dementia

**Researcher Introduction**
My name is Regan Scally and I am a Masters student at the University of Auckland. I am in the Applied Behaviour Analysis (ABA) programme of the School of Psychology. My supervisor for this study is Dr. Oliver Mudford, Director of the Applied Behaviour Analysis Postgraduate Programme of the School of Psychology at the University of Auckland.

**Project Description**
The primary aim of this study is to increase the levels of activity engagement of some of the residents at Brian Wells Lodge. The purpose of which will be to improve the quality of life for the residents. Studies have shown that people with dementia often have low levels of activity engagement. The activities that will be looked at within this study will include those related to daily living (e.g., eating, drinking, putting cups away) and leisure (e.g., singing, playing ball, bingo).

**Invitation to Participate**
We would like to request your consent to invite residents and staff from Brian Wells Lodge to participate within this study. Of the residents that fit the inclusion criteria (see next paragraph), you will be asked which are likely to benefit the most from participating. Flyers for the study will then be given to significant others of those residents and also to staff that fit the inclusionary criteria.

Invited residents must be medically stable and be able to engage in the chosen activities. Therefore, residents who are medically unstable or unable to engage in activities due to visual, auditory, or ambulatory impairments cannot be included in this study.

Invited staff have to hold a full-time (or close to full-time) position as a caregiver, have been working there for at least three months and planning to remain in their role for the next six months. Therefore, part-time, casual, or those who plan to leave their position in the next six months will be excluded from the study.

The residents that you suggest for this research will need to have informed consent given by a significant other. It may also be possible that some of the residents be considered capable of giving assent to the research. This will be decided separately for each resident. Staff will have to give informed consent to participate within this research.

We would also like to invite you to participate within the current study. In the following section is a detailed explanation of the tasks that you will be invited to perform and the time that each will take.

**Project Procedures**
The procedures are designed to be practical and to fit within the daily routines of the residents, staff and manager. One hour observation sessions will occur up to twice a day, several days a week from approximately April until October. However, please note that the observation sessions will be at times in which residents are already encouraged to engage in activities. The procedure involves staff members spending between one and four minutes at the end of each one hour observation sessions recording estimates of the participating residents’ activity engagement during that time. This will be followed by the manager providing one minute of feedback to the staff member, with a focus on improvements in resident engagement.

During the study I may ask staff, the manager, and significant others to provide information regarding what leisure activities each resident respectively prefer/ have preferred in the past. These questions will take approximately twenty minutes to complete. From this I will create a list of possible leisure activities for the residents. I will then determine each resident’s relative preference for each activity. These analyses involve offering participants a variety of choices.

I also ask that you provide me with information relevant to the study on each of the participating residents. This may include things like demographic information, diagnosis, and their MMSE scores. Additionally, at the end of the study you will be invited to complete a questionnaire which will ask for your opinion on the appropriateness and acceptability of the study.

Throughout the research process, I will regularly talk with staff and the manager to report on the progress of the research. These times will also be an opportunity to discuss any potential issues that arise.

**Collected Information and Anonymity**
I will provide you (manager) with copies of the consent forms as they become available. Information that is collected throughout this study will be used for a Master’s thesis, possible publication in a peer reviewed publication, and possible presentation at professional academic conference(s). Collected data will be in the form of paper and computer files. The computer files will be kept on an external hard drive and the paper files will be stored in a folder, both of which will be stored in a locked filing cabinet at the researcher’s residence. Each participant’s name will be appointed a number that will be used when collecting and identifying relevant data. A list linking the numbers to the residents’ names will be stored in a separate locked filing cabinet to the data. The supervisor of this study (Dr. Oliver Mudford) will also have access to the data, as will secondary observers on occasion who will fill out confidentiality forms.

Data will be stored for the standard length of six years. Information and consent forms will be securely stored at the University for a period of six years. At the end of the six year period, related computer files will be deleted and the paper files will be shredded by secure shredding at the University.

**Potential Benefits**

For the residents, the benefits may involve increased levels of engagement with activities. This is believed to increase the quality of life for these residents. For the staff, increasing levels of resident activity engagement may be rewarding in its own right. Increased levels of engagement have been associated with lower levels of problem behaviour. Additionally, increasing the number of activities of daily living performed by the residents themselves results in fewer tasks for employees. The activity records will also provide the facility with good information regarding the progression of resident activity engagement across time.

**Potential Risks**

The risks from the procedure of this study are seen as minimal. Staff members will be the ones in contact with the residents during this intervention. For this reason it is unlikely that any harm will come to the residents as staff members are familiar with the residents and already have a respect for their well-being. Additionally, if any health concerns unrelated to the study arise, there will be trained staff on hand.

**Right to Participate and Withdraw**

We ask that you guarantee that no individual’s residence or, for staff, employment at Brian Wells Lodge be affected dependent on their decision to participate or withdraw from this study.
CONSENT FORM

THIS FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

Manager

**Project Title:** Identifying Preferred Activities to Increase Engagement in Residents with Dementia

**Researcher:** Regan Scally

I have read the Participant Information Sheet, have understood the nature of the research and why I have been selected. I have had the opportunity to ask questions and have them answered to my satisfaction.

- I agree to let research be conducted at Bryan Wells Lodge between April and November 2014.
- I understand that participants of this study have the right to participate and to withdraw from participation, and doing so will have no effect on their residence (residents) or employment (staff) at Bryan Wells Lodge. PLEASE INITIAL BESIDE THIS ITEM.
- I understand that different information collected will be available to the researcher, his supervisor, and staff of Bryan Wells Lodge, potentially including knowledge of each resident’s most preferred activities. Additionally, secondary observers will also view confidential information but will complete confidentiality forms.
- I understand that information and consent forms will be securely stored at the University for a period of six years.
- I understand that a summary of the results will be made available to Selwyn Village management, significant others, and to any participants that request them.

Name _____________________________________

Signature ___________________________________

Date __________________________

Please provide your email address if you would like a summary of the results when they become available. (Optional) **Email** ___________________________________

**APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANT ETHICS COMMITTEE ON 19-MARCH-2014 FOR 3 YEARS, REFERENCE NUMBER 011364**
PARTICIPANT INFORMATION SHEET (STAFF)

Project Title: Identifying Preferred Activities to Increase Engagement in Residents with Dementia

Researcher Introduction

My name is Regan Scally and I am a Masters student at the University of Auckland. I am in the Applied Behaviour Analysis (ABA) programme of the School of Psychology. My supervisor for this study is Dr. Oliver Mudford, Director of the Applied Behaviour Analysis Postgraduate Programme of the School of Psychology at the University of Auckland.

Project Description

The primary aim of this study is to increase the levels of activity engagement of some of the residents at Brian Wells Lodge. The purpose of which will be to improve their quality of life. Studies have shown that people with dementia often have low levels of activity engagement. The activities being looked at within this study include daily living (e.g., eating, drinking, putting cups away) and leisure activities (e.g., singing, playing ball, bingo).

Invitation to Participate

The manager of Brian Wells Lodge consented to residents and staff being involved in this research if they wish. We would like to ask you to participate within this study. Your participation in this study will be appreciated and will hopefully help to improve the quality of life for the residents of Brian Wells Lodge. If you are interested in participating or have any questions about the study, please contact me within two weeks, my contact details are included below.

Project Procedures

The procedures are designed to be practical and to fit within the daily routines of the residents, staff and manager. One hour observation sessions will occur up to twice a day, several days a week from approximately April until October. However, please note that the observation sessions will be at times in which residents are already encouraged to engage in activities. The procedure involves participating staff members spending between one and four minutes at the end of each one hour sessions recording estimates of the participating residents’ activity engagement during that time. This will be followed by the manager providing one minute of feedback to the staff member, with a focus on improvements in resident engagement.

During the study I may ask staff, the manager, and significant others to provide information regarding what leisure activities each resident respectively prefer/ have preferred in the past. These questions will take approximately twenty minutes. From this I will create a list of possible leisure activities for the residents. I will then determine each resident’s relative preference for each activity. These analyses involve offering participants a variety of choices. Additionally, at the end of the study you will be invited to complete a questionnaire which will ask for your opinion on the appropriateness and acceptability of the study.

Throughout the research process, I will regularly talk with staff and the manager to report on the progress of the research. These times will also be an opportunity to discuss any potential issues that arise.

Collected Information and Anonymity

Information that is collected throughout this study will be used for a Master’s thesis, possible publication in a peer reviewed publication, and possible presentation at professional academic conference(s). Collected data will be in the form of paper and computer files. The computer files will be kept on an external hard drive and the paper files will be stored in a folder, both of which will be stored in a locked filing cabinet at the researcher’s residence. Each participant’s name will be appointed a number that will be used when collecting and identifying relevant data. A list linking the numbers to the residents’ names will be stored in a separate locked filing cabinet to the data. The supervisor of this study (Dr. Oliver Mudford) will also have access to the data, as will secondary observers on occasion who will fill out confidentiality forms. The manager will have access to copies of the consent forms so that she is aware of which participants have consented.

Data will be stored for the standard length of six years. Information and consent forms will be securely stored at the University for a period of six years. At the end of the six year period, related computer files will be deleted and the paper files will be shredded by secure shredding at the University.

Potential Benefits

For the residents, the benefits may involve increased levels of engagement with activities. This is believed to increase the quality of life for these residents. For the staff, increasing levels of resident activity engagement may be rewarding in its own right. Increased levels of engagement have been associated with lower levels of problem behaviour. Additionally, increasing the number of activities of daily living performed by the residents...
themselves results in fewer tasks for employees. The activity records will also provide the facility with good information regarding the progression of resident activity engagement across time.

**Potential Risks**
The risks from the procedure of this study are seen as minimal. Staff members will be the ones in contact with the residents during this intervention. For this reason it is unlikely that any harm will come to the residents as staff members are familiar with the residents and already have a respect for their well-being. Additionally, if any health concerns unrelated to the study arise, there will be trained staff on hand.

**Right to Participate and Withdraw**
We have been assured that your employment at Brian Wells Lodge will not be affected dependent on their decision to participate within this study. It is also your right to withdraw from the study at any time, which will result in all data relating to you being destroyed.
CONSENT FORM (STAFF)

THIS FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

**Project Title:** Identifying Preferred Activities to Increase Engagement in Residents with Dementia

**Researcher:** Regan Scally

I have read the Participant Information Sheet, have understood the nature of the research and why I have been selected. I have had the opportunity to ask questions and have them answered to my satisfaction.

- I agree to participate in the research being conducted at Brian Wells Lodge between April and November 2014.
- I understand that as a participant of this study, I have the right to participate and to withdraw from participation, and doing so will have no effect on my employment at Brian Wells Lodge.
- I understand that different information collected will be available to the researcher, his supervisor, and staff of Brian Wells Lodge, potentially including knowledge of each resident’s most preferred activities. Additionally, secondary observers will also view confidential information but will complete confidentiality forms.
- I understand that information and consent forms will be securely stored at the University for a period of six years.
- I understand that a summary of the results will be made available to Selwyn Village management, significant others, and to any participants that request them.

**Name**

___________________________________

**Signature**

___________________________________

**Date**

______________________

Please provide your email address if you would like a summary of the results when they become available.

(Optional) **Email**

___________________________________

APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN PARTICIPANT ETHICS COMMITTEE ON 19-MARCH-2014 FOR 3 YEARS, REFERENCE NUMBER 011364
PARTICIPANT INFORMATION SHEET (Significant Other)

**Project Title:** Identifying Preferred Activities to Increase Engagement in Residents with Dementia

**Researcher Introduction**
My name is Regan Scally and I am a Masters student at the University of Auckland. I am in the Applied Behaviour Analysis (ABA) programme of the School of Psychology. My supervisor for this study is Dr. Oliver Mudford, Director of the Applied Behaviour Analysis Postgraduate Programme of the School of Psychology at the University of Auckland.

**Project Description**
The primary aim of this study is to increase the levels of activity engagement of some of the residents at Brian Wells Lodge. The purpose of which will be to improve their quality of life. Studies have shown that people with dementia often have low levels of activity engagement. The activities that will be looked at within this study will include those related to daily living (e.g., eating, drinking, putting cups away) and leisure (e.g., singing, playing ball, bingo).

**Invitation to Participate**
The manager of Brian Wells Lodge consented to residents and staff being involved in this research if they wish. As you are a family member/significant other of a resident currently living at Brian Wells Lodge you are invited to volunteer your significant other to participate in this study. If you are interested, please contact me within two weeks, my contact details are included below. I am happy to answer any questions that you may have about the study. By volunteering your significant other in this study, they may benefit from increased engagement with activities and therefore have an improved quality of life.

**Project Procedures**
The procedures are designed to be practical and to fit within the daily routines of the residents, staff and manager. One hour observation sessions will occur up to twice a day, several days a week from approximately April until October. However, please note that the observation sessions will be at times in which residents are already encouraged to engage in activities. The procedure involves participating staff members spending between one and four minutes at the end of each one hour observation sessions recording estimates of the participating residents’ activity engagement during that time. This will be followed by the manager providing one minute of feedback to the staff member, with a focus on improvements in resident engagement.

During the study I may ask you, staff and the manager to provide information regarding what leisure activities your significant other respectively prefers/ have preferred in the past. These questions will take approximately twenty minutes to complete. From this I will create a list of possible leisure activities for the residents. I will then determine each resident’s relative preference for each activity. At the end of the study I will invite you to complete a questionnaire asking for your opinion on the appropriateness and acceptability of the study.

**Collected Information and Anonymity**
Information that is collected throughout this study will be used for a Master’s thesis, possible publication in a peer reviewed publication, and possible presentation at professional academic conference(s). Collected data will be in the form of paper and computer files, both of which will be stored in a locked filing cabinet at the researcher’s residence. Each participant’s name will be appointed a number that will be used when collecting and identifying relevant data. A list linking the numbers to the residents’ names will be stored in a separate locked filing cabinet to the data. Dr. Oliver Mudford (supervisor) will also have access to the data, as will secondary observers on occasion who will fill out confidentiality forms. The manager will have access to copies of the consent forms so that she is aware of which participants have consented.

Data will be stored for the standard length of six years. Information and consent forms will be securely stored at the University for a period of six years. At the end of the six year period, related computer files will be deleted and the paper files will be shredded by secure shredding at the University.

**Potential Benefits**
For the residents, the benefits may involve increased levels of engagement with activities. This is believed to increase the quality of life for these residents. For the staff, increasing levels of resident activity engagement may be rewarding in its own right. Increased levels of engagement have been associated with lower levels of problem behaviour. Additionally, increasing the number of activities of daily living performed by the residents
themselves results in fewer tasks for employees. The activity records will also provide the facility with good information regarding the progression of resident activity engagement across time.

**Potential Risks**
The risks from the procedure of this study are seen as minimal. Staff members will be the ones in contact with the residents during this intervention. For this reason it is unlikely that any harm will come to the residents as staff members are familiar with the residents and already have a respect for their well-being. Additionally, if any health concerns unrelated to the study arise, there will be trained staff on hand.

**Right to Participate and Withdraw**
It is your right to volunteer or withdraw your significant other from the study at any stage. Withdrawing your significant other will result in all data from their participation being destroyed. Selwyn Village management has also assured me that participation or withdrawal from this study will not affect your significant other’s position at Brian Wells Lodge.
CONSENT FORM
Family member/ Significant other
THIS FORM WILL BE HELD FOR A PERIOD OF SIX YEARS

Project Title: Identifying Preferred Activities to Increase Engagement in Residents with Dementia
Researcher: Regan Scally
I have read the Participant Information Sheet, have understood the nature of the research and why I have been selected. I have had the opportunity to ask questions and have them answered to my satisfaction.

- I am the significant other to ____________________________ who is a resident at Bryan Wells Lodge and agree for them to participate in this research between April and November 2014.

- I understand that as a significant other of a participant in this study, I have the right to provide consent and to withdraw them from participation, and doing so will have no effect on their position at Bryan Wells Lodge.

- I understand that different information collected will be available to the researcher, his supervisor, and staff of Bryan Wells Lodge, potentially including knowledge of each resident’s most preferred activities. Additionally, secondary observers will also view confidential information but will complete confidentiality forms.

- I understand that information and consent forms will be securely stored at the University for a period of six years.

- I understand that a summary of the results will be made available to Selwyn Village management, significant others, and to any participants that request them.

Name __________________________________________

Signature __________________________________________

Date __________________________________________

Please provide your email address if you would like a summary of the results when they become available.
((Optional) Email __________________________________________
Appendix C: Mini-Mental State Examination (Folstein et al., 1975)

<table>
<thead>
<tr>
<th>Maximum Score</th>
<th>Score</th>
<th>ORIENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>( )</td>
<td>What is the (year) (season) (day) (month)?</td>
</tr>
<tr>
<td>5</td>
<td>( )</td>
<td>Where are we: (state) (country) (town) (hospital) (floor)?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REGISTRATION</th>
</tr>
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<tbody>
<tr>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>ATTENTION AND CALCULATION</th>
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<tr>
<td>5</td>
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</table>

<table>
<thead>
<tr>
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<tr>
<td>3</td>
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<table>
<thead>
<tr>
<th>LANGUAGE</th>
</tr>
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<tr>
<td>9</td>
</tr>
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</table>

Total Score ( )

Assess level of consciousness along a continuum

<table>
<thead>
<tr>
<th>Alert</th>
<th>Drowsy</th>
<th>Stupor</th>
<th>Coma</th>
</tr>
</thead>
</table>

INSTRUCTIONS FOR ADMINISTERING THE MINI-MENTAL STATE EXAMINATION

ORIENTATION

1) Ask for the date. Then ask specifically for parts omitted, e.g., “Can you also tell me what season it is?” One point for each correct.

2) Ask in turn “Can you tell me the name of this hospital?” (town, county, etc.). One point for each correct.

REGISTRATION

Ask the patient if you may test his memory. Then say the names of 3 unrelated objects, clearly and slowly, about one second for each. After you have said all 3, ask him to repeat them. This first repetition determines his score (0-3) but keep saying them until he can repeat all 3, up to 6 trials. If he does not eventually learn all 3, recall cannot be meaningfully tested.

ATTENTION AND CALCULATION

Ask the patient to begin with 100 and count backwards by 7. Stop after 5 subtractions (93, 86, 79, 72, 65). Score the total number of correct answers. If the patient cannot or will not perform this task, ask him to spell the word “world” backwards. The score is the number of letters in correct order. E.g., dlrow = 5, dlorw = 3.
RECALL

Ask the patient if he can recall the 3 words you previously asked him to remember. Score 0-3.

LANGUAGE

*Naming:* Show the patient a wrist watch and ask him what it is. Repeat for pencil. Score 0-2.

*Repetition:* Ask the patient to repeat the sentence after you. Allow only one trial. Score 0-1.

*3-Stage command:* Give the patient a piece of plain blank paper and repeat the command.
Score 1 point for each part correctly executed.

*Reading:* On a blank piece of paper print the sentence “Close your eyes”, in letters large enough for the patient to see clearly. Ask him to read it and do what it says. Score 1 point only if he actually closes his eyes.

*Writing:* Give the patient a blank piece of paper and ask him to write a sentence for you. Do not dictate a sentence, it is to be written spontaneously. It must contain a subject and verb and be sensible. Correct grammar and punctuation are not necessary.

*Copying:* On a clean piece of paper, draw intersecting pentagons, each side about 1 in., and ask him to copy it exactly as it is. All 10 angles must be present and 2 must intersect to score 1 point. Tremor and rotation are ignored.

Estimate the patient’s level of sensorium along a continuum, from alert on the left to coma on the right.
Appendix D: Montreal Cognitive Assessment (Nasreddine et al., 2005)

The Montreal Cognitive Assessment (MoCA) was designed as a rapid screening instrument for mild cognitive dysfunction. It assesses different cognitive domains: attention and concentration, executive functions, memory, language, visuoconstructional skills, conceptual thinking, calculations, and orientation. Time to administer the MoCA is approximately 10 minutes. The total possible score is 30 points; a score of 26 or above is considered normal.
1. Alternating Trail Making:

   Administration: The examiner instructs the subject: "Please draw a line, going from a number to a letter in ascending order. Begin here [point to (1)] and draw a line from 1 then to A then to 2 and so on. End here [point to (E)]."

   Scoring: Allocate one point if the subject successfully draws the following pattern:
   1 − A − 2 − B − 3 − C − 4 − D − 5 − E, without drawing any lines that cross. Any error that is not immediately self-corrected earns a score of 0.

2. Visuoconstructional Skills (Cube):

   Administration: The examiner gives the following instructions, pointing to the cube: “Copy this drawing as accurately as you can, in the space below”.

   Scoring: One point is allocated for a correctly executed drawing.
   • Drawing must be three-dimensional
   • All lines are drawn
   • No line is added
   • Lines are relatively parallel and their length is similar (rectangular prisms are accepted)
   A point is not assigned if any of the above-criteria are not met.

3. Visuoconstructional Skills (Clock):

   Administration: Indicate the right third of the space and give the following instructions: “Draw a clock. Put in all the numbers and set the time to 10 past 11”.

   Scoring: One point is allocated for each of the following three criteria:
   • Contour (1 pt.): the clock face must be a circle with only minor distortion acceptable (e.g., slight imperfection on closing the circle);
   • Numbers (1 pt.): all clock numbers must be present with no additional numbers; numbers must be in the correct order and placed in the approximate quadrants on the clock face; Roman numerals are acceptable; numbers can be placed outside the circle contour;
   • Hands (1 pt.): there must be two hands jointly indicating the correct time; the hour hand must be clearly shorter than the minute hand; hands must be centred within the clock face with their junction close to the clock centre.
   A point is not assigned for a given element if any of the above-criteria are not met.

4. Naming:

   Administration: Beginning on the left, point to each figure and say: “Tell me the name of this animal”.

   Scoring: One point each is given for the following responses: (1) lion (2) rhinoceros or rhino (3) camel or dromedary.

5. Memory:

   Administration: The examiner reads a list of 5 words at a rate of one per second, giving the following instructions: “This is a memory test. I am going to read a list of words that you will have to remember now and later on. Listen carefully. When I am through, tell me as many words as you can remember. It doesn’t matter in what order you say them”.
   Mark a check in the allocated space for each word the subject produces on this first trial. When the subject indicates that (s)he has finished (has recalled all words), or can recall no more words, read the list a second time with the following instructions: “I am going to read the same list for a second time. Try to remember and tell me as many words as you can, including words you said the first time.”
   Put a check in the allocated space for each word the subject recalls after the second trial. At the end of the second trial, inform the subject that (s)he will be asked to recall these words again by saying, “I will ask you to recall those words again at the end of the test.”
Scoring: No points are given for Trials One and Two.

6. Attention:

Forward Digit Span: Administration: Give the following instruction: “I am going to say some numbers and when I am through, repeat them to me exactly as I said them”. Read the five number sequence at a rate of one digit per second.

Backward Digit Span: Administration: Give the following instruction: “Now I am going to say some more numbers, but when I am through you must repeat them to me in the backwards order.” Read the three number sequence at a rate of one digit per second.

Scoring: Allocate one point for each sequence correctly repeated, (N.B.: the correct response for the backwards trial is 2-4-7).

Vigilance: Administration: The examiner reads the list of letters at a rate of one per second, after giving the following instruction: “I am going to read a sequence of letters. Every time I say the letter A, tap your hand once. If I say a different letter, do not tap your hand”.

Scoring: Give one point if there is zero to one errors (an error is a tap on a wrong letter or a failure to tap on letter A).

Serial 7s: Administration: The examiner gives the following instruction: “Now, I will ask you to count by subtracting seven from 100, and then, keep subtracting seven from your answer until I tell you to stop.” Give this instruction twice if necessary.

Scoring: This item is scored out of 3 points. Give no (0) points for no correct subtractions, 1 point for one correction subtraction, 2 points for two-to-three correct subtractions, and 3 points if the participant successfully makes four or five correct subtractions. Count each correct subtraction of 7 beginning at 100. Each subtraction is evaluated independently; that is, if the participant responds with an incorrect number but continues to correctly subtract 7 from it, give a point for each correct subtraction. For example, a participant may respond “92 – 85 – 78 – 71 – 64” where the “92” is incorrect, but all subsequent numbers are subtracted correctly. This is one error and the item would be given a score of 3.

7. Sentence repetition:

Administration: The examiner gives the following instructions: “I am going to read you a sentence. Repeat it after me, exactly as I say it [pause]: I only know that John is the one to help today.” Following the response, say: “Now I am going to read you another sentence. Repeat it after me, exactly as I say it [pause]: The cat always hid under the couch when dogs were in the room.”

Scoring: Allocate 1 point for each sentence correctly repeated. Repetition must be exact. Be alert for errors that are omissions (e.g., omitting "only", "always") and substitutions/additions (e.g., "John is the one who helped today; substituting "hides" for "hid", altering plurals, etc.).

8. Verbal fluency:

Administration: The examiner gives the following instruction: “Tell me as many words as you can think of that begin with a certain letter of the alphabet that I will tell you in a moment. You can say any kind of word you want, except for proper nouns (like Bob or Boston), numbers, or words that begin with the same sound but have a different suffix, for example, love, lover, loving. I will tell you to stop after one minute. Are you ready? [Pause] Now, tell me as many words as you can think of that begin with the letter F. [time for 60 sec]. Stop.”

Scoring: Allocate one point if the subject generates 11 words or more in 60 sec. Record the subject’s response in the bottom or side margins.

9. Abstraction:

Administration: The examiner asks the subject to explain what each pair of words has in common,
starting with the example: “Tell me how an orange and a banana are alike”. If the subject answers in a concrete manner, then say only one additional time: “Tell me another way in which those items are alike”. If the subject does not give the appropriate response (fruit), say, “Yes, and they are also both fruit.” Do not give any additional instructions or clarification. After the practice trial, say: “Now, tell me how a train and a bicycle are alike”. Following the response, administer the second trial, saying: “Now tell me how a ruler and a watch are alike”. Do not give any additional instructions or prompts.

7. Sentence repetition:

Administration: The examiner gives the following instructions: “I am going to read you a sentence. Repeat it after me, exactly as I say it [pause]: I only know that John is the one to help today.” Following the response, say: “Now I am going to read you another sentence. Repeat it after me, exactly as I say it [pause]: The cat always hid under the couch when dogs were in the room.”

Scoring: Allocate 1 point for each sentence correctly repeated. Repetition must be exact. Be alert for errors that are omissions (e.g., omitting “only”, “always”) and substitutions/additions (e.g., “John is the one who helped today;” substituting “hides” for “hid”, altering plurals, etc.).

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Optional:

Following the delayed free recall trial, prompt the subject with the semantic category cue provided below for any word not recalled. Make a check mark ( √ ) in the allocated space if the subject remembered the word with the help of a category or multiple-choice cue. Prompt all non-recalled words in this manner. If the subject does not recall the word after the category cue, give him/her a multiple choice trial, using the following example instruction, “Which of the following words do you think it was, NOSE, FACE, or HAND?” Use the following category and/or multiple-choice cues for each word, when appropriate:

FACE: category cue: part of the body multiple choice: nose, face, hand
VELVET: category cue: type of fabric multiple choice: denim, cotton, velvet
CHURCH: category cue: type of building multiple choice: church, school, hospital
DAISY: category cue: type of flower multiple choice: rose, daisy, tulip
RED: category cue: a colour multiple choice: red, blue, green

Scoring: No points are allocated for words recalled with a cue. A cue is used for clinical information purposes only and can give the test interpreter additional information about the type of memory disorder. For memory deficits due to retrieval failures, performance can be improved with a cue. For memory deficits due to encoding failures, performance does not improve with a cue.
11. Orientation:

Administration: The examiner gives the following instructions: “Tell me the date today”. If the subject does not give a complete answer, then prompt accordingly by saying: “Tell me the [year, month, exact date, and day of the week].” Then say: “Now, tell me the name of this place, and which city it is in.”

Scoring: Give one point for each item correctly answered. The subject must tell the exact date and the exact place (name of hospital, clinic, office). No points are allocated if subject makes an error of one day for the day and date.

TOTAL SCORE: Sum all subscores listed on the right-hand side. Add one point for an individual who has 12 years or fewer of formal education, for a possible maximum of 30 points. A final total score of 26 and above is considered normal.
Appendix E: Observation Recording Sheet

Date: Type of session: Start Time: Staff member (if applicable):
Observer: Session number: Finish Time: Manager (if applicable):

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
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<td>/ W</td>
<td>+</td>
<td>-</td>
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<tr>
<td>Activity:</td>
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<tr>
<td>Staff Contact</td>
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<td>Praise Verbal Model Choice</td>
<td>Praise Verbal Model Choice</td>
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<td>Affect:</td>
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Appendix F: Social Validity Questionnaire

**Project Title:** Identifying Preferred Activities to Increase Engagement in Residents with Dementia  
**Researcher:** Regan Scally

Please complete this questionnaires and then place in the box beside. Please do not write your name on this as it is intended to be anonymous.

**Please Circle:**  
Significant other  
Caregiver  
Manager

Thank you for your participation in the research at Brian Wells Lodge over the past year. This questionnaire is an opportunity for you to anonymously provide your opinion on the research. Once you have completed the questionnaire please place it in the box labelled “Social Validity questionnaire – Regan Scally”.

Please circle where you believe to be most appropriate for each of the following statements:

1. Increasing engagement is an acceptable goal within dementia services.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

2. The procedure used was an appropriate method for increasing engagement.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

3. Finding out each individual’s preferred activities was an appropriate part of the procedure.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

4. Displaying each resident’s preferred activities was an appropriate part of the procedure.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

5. Placing all of the preferred items on an activity trolley was an appropriate part of this procedure.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

6. Having staff record resident engagement was an appropriate part of this procedure.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

7. Having a manager provide feedback to a staff member regarding resident engagement was an appropriate part of the procedure.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

8. The procedure was effective in increasing the engagement of residents.
   - Strongly agree 1  
   - Agree 2  
   - Neutral 3  
   - Disagree 4  
   - Strongly Disagree 5

9. The procedure was easy to do (ONLY FOR STAFF WHO DIRECTLY PARTICIPATED).
10. I will continue to use this procedure to increase resident engagement (ONLY FOR STAFF WHO DIRECTLY PARTICIPATED).

Any further comments:
### Appendix G: Activity Recording Sheet

Manager: ___________ Staff Member:__________________ Time:___:___ Date:___/___/2014

<table>
<thead>
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<th>Name</th>
<th>Please tick activities engaged in</th>
<th>Estimated percentage of engagement</th>
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</tr>
<tr>
<td></td>
<td>Music ☐ Ring Toss ☐ Bingo ☐</td>
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</tr>
<tr>
<td></td>
<td>T.V. ☐ Reading ☐</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ball throw ☐ Puzzle ☐</td>
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<tr>
<td></td>
<td>Conversing.☐ Bowls ☐ Exercise ☐ In group: Watching ☐ Talking ☐ Other (please specify)</td>
<td>Never engaged</td>
</tr>
<tr>
<td></td>
<td>Music ☐ Ring Toss ☐ Bingo ☐</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T.V. ☐ Reading ☐</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ball throw ☐ Puzzle ☐</td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX H: Written Communication

### Residents’ Preferred Activities

<table>
<thead>
<tr>
<th>Resident 1</th>
<th>Resident 5</th>
<th>Resident 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Newspaper</td>
<td>1. iPod shuffle®</td>
<td>1. Jumbo Playing Cards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resident 6</th>
<th>Resident 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Movie</td>
<td>1. Cardboard Puzzle</td>
</tr>
<tr>
<td>2. Cardboard Puzzle</td>
<td>2. Book of Garden Pictures</td>
</tr>
<tr>
<td>5. Jumbo Playing Cards</td>
<td>5. Movie</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resident 8</th>
<th>Resident 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Connect Four®</td>
<td>2. Jumbo Playing Cards</td>
</tr>
<tr>
<td>5. The Bible</td>
<td>5. Movie</td>
</tr>
</tbody>
</table>

### Offering Residents A Choice

<table>
<thead>
<tr>
<th>Reason:</th>
<th>Description:</th>
<th>Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents may become bored if they only engage with the same five activities. It is important that they are able to choose to engage with different activities some days.</td>
<td>Ask them directly whether they want to engage with a preferred activity or a different activity, while you hold the activities in front of them.</td>
<td>Action: Hold up the two activities. Words: Hi [resident 1]. Would you like to read the newspaper today (preferred activity) or play this harmonica (different activity).</td>
</tr>
</tbody>
</table>