VARIABILITY IN RESPONSE OF OLDER PEOPLE WITH DEMENTIA TO BOTH SNOEZELEN AND REMINISCENCE

Sarah Baillon (BSc, MPhil), Research Associate

University of Leicester Dept of Health Sciences, Division of Psychiatry for the Elderly,
Leicester General Hospital

Erik van Diepen (MRCPsych, MRCP) Consultant Psychiatrist and Honorary Senior
Lecturer (with the Department of Medical Education, University of Leicester)

Leicestershire Partnership NHS Trust, The Evington Centre, Leicester

Richard Prettyman (MB, ChB, MRCPsych, MRCP) Consultant Psychiatrist

Leicestershire Partnership NHS Trust, The Bennion Centre, Leicester

Nan Rooke (RMN, RGN) Practice Development Nurse and Ward Manager

Leicestershire Partnership NHS Trust, The Evington Centre, Leicester

Julie Redman (RMN) Practice Development Nurse and Ward Manager

Leicestershire Partnership NHS Trust, The Evington Centre, Leicester

Rowena Campbell (BSc) Senior II Occupational Therapist

Leicestershire Partnership NHS Trust, The Evington Centre, Leicester

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Author for correspondence:

Miss Sarah Baillon, Psychiatry for the Elderly, University of Leicester, Leicester General
Hospital, Gwendolen Road, Leicester, LE5 4PW.

Tel. 0116 2584597

Fax. 0116 2731115

email: sfb5@le.ac.uk

Abstract

Snøezelen and reminiscence are interventions commonly used by occupational therapists in dementia care. Snøezelen is reported to have a positive affect on patient's mood and their behaviour, and in particular on agitated behaviour. A study was designed to assess the effects of Snøezelen on agitated behaviour in dementia. Reminiscence therapy was selected as a suitable comparison intervention, so that the benefits of Snøezelen other than those attributable to receiving one-to-one attention from staff could be evaluated. There was found to be considerable variation in the direction and magnitude of change in individual participant's agitated behaviour and heart rate during and after the sessions. This article considers the possible explanations for these individual differences and the practical implications of this research are considered.

Introduction

Snøezelen is an intervention that is now commonly available for people who have dementia. It is a concept that originated in the Netherlands in the 1960s as a leisure and recreation resource for people with learning disabilities, for whom age-appropriate activities are restricted due to their multiple physical and cognitive limitations (Cleland and Clark, 1966). There are many similarities between learning disabilities and dementia when it comes to the challenge of finding appropriate stimulating activities for patients to participate in. In both fields the patients are likely to suffer from multiple sensory and physical impairments, as well as impaired cognitive functioning, and often have limited opportunities for individual choice and control. This parallel was noted in the 1980s, and the potential value of Snøezelen for people with dementia was identified, and evaluation of benefits for this group are beginning to be explored.

Snoezelen provides an environment in which stimulation of all the senses can occur under the patient's control, within an atmosphere of safety. Typically a Snoezelen room has bubble-tubes, projected light effects, music, an aromatherapy oil diffuser and tactile objects for the user to experience. The patient is free to explore and enjoy the stimulation that is available to them, without the expectation or requirement for them to achieve anything. Through careful and selective use of the sensory equipment the Snoezelen environment provides simple and uncomplicated stimulation to patients who may experience their everyday environment as being under-stimulating or beyond their comprehension (e.g. Paire and Karney, 1984).

Although originally developed as a recreational activity, increasingly claims are being made as to the therapeutic benefits of Snoezelen, both in learning disabilities and in other health care fields. Various published research (see below) and anecdotal reports (e.g. McKenzie, 1995) have suggested that Snoezelen can have a positive effect on patients with dementia and on related behaviour problems. However, valid empirical research in this area is limited, particularly in relation to this patient group (see Chung and Lai, 2002). Much of the existing research is plagued by methodological problems such as having very small samples and lack of control interventions.

Several studies have indicated that Snoezelen may have a positive effect on the mood of people with dementia, showing an increase in subjective ratings of happiness, enjoyment and relaxation, and a decrease in sadness, fear and boredom (e.g. Moffat *et al.*, 1993; Pinkney, 1997; Johnstone and Finnegan, 2000; Baker *et al.*, 2001). Research has also indicated that Snoezelen may increase patients' attentiveness to their environment (Moffat *et al.*, 1993; Spaul *et al.*, 1998; Baker *et al.*, 2001), increase appropriate communication (Baker *et al.*,

2001), improve well-being (Sansom *et al.*, 2002) and reduce the occurrence of socially disturbed and challenging behaviour (Kragt *et al.*, 1997; Spauld *et al.*, 1998; Johnstone and Finnegan, 2000; McDonald, 2002).

Reminiscence is another activity that is widely used in dementia care. People with dementia usually have better preserved remote memory than recent memory and as such, an activity focused upon events from their past seems a suitable activity, and it's popularity in part can be put down to the fact that it is an activity that is simple yet not childish. Recollecting past events and experiences is enjoyable for patients and serves to reinforce to them who they are, where they come from and to put current events into perspective. Reminiscence encourages interaction and communication, often initiated by the patient, and helps staff to develop a rapport with the patient and learn more about that person's history and personality (Baines *et al.*, 1987.). Reminiscence is relaxed, pleasurable and entertaining (Holden and Woods, 1995), it can be an individual or group activity and as structured or as informal as staff wish.

Benefits attributed to reminiscence therapy include improvements in depression, life satisfaction and self-esteem, as well as benefits in cognitive and functional behaviour. However, empirical evidence of these benefits is scarce and inconclusive (Head *et al.*, 1990; Woods *et al.*, 1992; See Spector *et al.* (2000) for a review.). Whilst it is likely that reminiscence does fulfil a useful function for the elderly with dementia, in terms of providing an enjoyable, social pastime that promotes communication and understanding of the individual (Thornton and Brotchie, 1987), there is a general lack of coherent empirical evidence to support the use of reminiscence as a therapeutic tool (Spector *et al.*, 2000).

Disturbed behaviour, such as wandering, agitation and aggression, is a common symptom in dementia – occurring in all types of dementia and becoming more common as the severity of dementia increases. These are often the most difficult symptoms for carers to cope with (Rabins et al, 1982) and such symptoms contribute significantly to the burden and distress reported by both ‘informal’ family carers and care staff (e.g. Kaufer et al, 1998; Wood et al, 1999). Pharmacological treatments of these symptoms are of limited efficacy (only 18% more effective than placebo) and side effects are common, particularly in the elderly who are more susceptible to the adverse effects of these medications (Schneider, 1996; Lanctot *et al.*, 1998). Therefore non-pharmacological interventions, which may alleviate this type of problematic behaviour, are of great clinical importance.

Research-based evidence of the positive effect of Snoezelen on agitated behaviour is very limited, with no published research (at the time that this study commenced, in 1997) that has focused specifically on patients who exhibit significant agitated behaviour. We felt it was important to study the impact that Snoezelen has on the agitated behaviour of patients who have dementia, using a comparison intervention to control for the effects of increased staff attention (i.e. reminiscence). It was felt that reminiscence would be a more appropriate control intervention than activity sessions, which are task orientated, and place demands upon the participant to understand the activity and to achieve a goal, and would perhaps be beyond the capabilities of many of the participants in this research.

The concept of evaluating Snoezelen and reminiscence in this clinical population was validated by the current authors in an earlier pilot study (van Diepen et al, 2002). Statistical analysis of the group effects in the present study has been reported in another paper (Baillon et al, 2004). A further interesting aspect of the results of this study was the considerable

variation in the responses of the individual participants. As Snoezelen and reminiscence are interventions commonly used by occupational therapists working in dementia care, we felt it would be interesting to describe these differences in an appropriate journal. This paper therefore, focuses on the individual participants' responses to the two interventions, and the practical implications of the results.

Method

Setting and participants

This study was carried out in three separate locations in Leicester. Half the participants were recruited from two specialist units for the care of older people with mental health problems (primarily attending the day hospitals at each unit), and the remainder were residents in a charity-run nursing home for older people who have mental health needs. All patients from those units were considered for inclusion in the study if they had a diagnosis of dementia, and were rated by staff as having significant agitation. Patients were not included if they had a pacemaker, had a significant hearing impairment, had visual acuity of less than 3/6 or did not speak English. Any participant who developed evidence of delirium or had any change in their usual psychotropic or cardiovascular medication, immediately before or during the trial, was withdrawn. As the participants were unable to give informed consent, written assent was obtained from their next of kin. The project was approved by the local research ethics committee.

Procedure

Each participant was randomly allocated to one of two groups, using sealed-envelope selection. One group received three Snoezelen sessions over the first two weeks, had one week with no research intervention, and then received three reminiscence sessions over two

weeks. The other group received reminiscence therapy in the first two weeks and Snoezelen in the final two weeks (see Figure 1). The pilot study had previously shown that there was no significant cumulative effect of either intervention, and so it was felt that three sessions of each intervention would suffice. Sample size was determined as a result of a power calculation based on data from the pilot study (see Baillon et al, 2004).

FIGURE 1 HERE

Both the Snoezelen and reminiscence sessions lasted up to 40 minutes, unless the participant expressed the desire to leave, in which case the session ended immediately. Both interventions were one-to-one and each participant had the same member of staff (JR, NR or RC) accompanying them for all sessions. Although in both interventions the structure of sessions depended upon the individual participant, the content of both Snoezelen and reminiscence sessions were according to guidelines to ensure that the different interventions retained those features that make them distinct from the other (see Appendix). It was felt to be important that the sessions (both Snoezelen and reminiscence) be representative of the way such sessions are carried out with this patient group during normal clinical practice. For example, during the Snoezelen sessions equipment was selected according to the participants' observed preferences, and during the reminiscence sessions materials were used that were relevant to the individuals' own interests and previous hobbies.

At baseline participants were rated for dementia severity (CDR) and cognitive impairment (MMSE). The participant's behaviour was coded (using the ABMI) for three minutes before, immediately after and at 15 and 30 minutes after each session. Their mood and behaviour during the session was rated (using a slightly modified version of the Interact short) immediately after each session by the therapist, who also made detailed notes about the

session. The participant's heart rate was recorded from 15 minutes before each session until 30 minutes after the session.

Before each participant commenced the research interventions their allocated member of research staff spent some time with them and with their keyworker in order to get to know them. All participants, from both groups, had one introductory Snoezelen session (with no research measures taken) to ensure they did not dislike the room, and to enable the staff member to get to know their preferences.

Measurements

The measures used were the same as those used in the pilot study (van Diepen et al, 2002).

The *Mini Mental State Examination (MMSE)* is an 11-item scale that is widely used to assess cognitive function (Folstein et al, 1975). The MMSE has a maximum score of 30, indicating good cognitive function.

The *Clinical Dementia Rating (CDR)* is a measure of dementia severity, in which performance on six categories of cognitive function are rated on a five point scale (Hughes et al, 1982). The ratings of the six categories are summed to give a score between 0 and 18, with a higher score indicating greater impairment (Berg et al, 1988).

The *Agitation Behaviour Mapping Instrument (ABMI)* is designed to record the frequency of agitated behaviour during three-minute episodes by direct observation (Cohen-Mansfield, 1986; Cohen-Mansfield et al, 1989). Inter-rater reliability was assessed between the staff for the pilot study of this research (van Diepen et al, 2002) and was established to be satisfactory.

This scale was scored by allocating one point for each discrete occurrence of an agitated behaviour and 10 points for a continuously agitated behaviour.

The *heart rate* was measured at one-minute intervals using a heart rate monitor. This is a comfortable and unobtrusive device designed for use by athletes. Participants were not required to wear the device if they did not wish to, or if they appeared to be experiencing discomfort or distress from it.

A modified version of the *Interact Short* scale (Baker and Dowling, 1995; Baker et al, 1997) was used to rate aspects of the mood and behaviour of participants during the sessions. The *Interact* is an observation rating scale developed specifically for evaluating the effects of Snoezelen in dementia care. The scale comprises items relating to the mood and behaviour of a patient, which are rated on a five-point scale ranging from ‘not at all’ to ‘nearly all the time’. A revised version of the *Interact* was used in this study. This was based upon the 12-item short form of the scale, with an additional one item (‘spoke sensibly’) from the longer version of the scale, which was felt to be relevant when rating reminiscence sessions. The additional scoring of direction of change for each item was also retained from the longer version of the scale. As the *Interact Short* is usually analysed on an item-by-item basis the extra item did not effect the validity of the scale

Analysis

The data were analysed using SPSS for Windows (vers 11.0), according to the method described by Altman (1999) for the analysis of crossover trials, and these results have been published elsewhere (Baillon et al, 2004). Where the data involved repeated serial measurements (i.e. ABMI and HRM) summary variables were calculated (Matthews *et al.*,

1990). For example, the change in frequency of agitated behaviour on the ABMI and change in mean heart rate between specific five-minute time periods were analysed. In order to avoid multiple analyses of the individual items of the Interact scale the analysis was limited to summary variables of the number of Interact items rated as showing positive change, no change, or negative change.

To investigate the effect of the research interventions specifically on those participants with severe dementia, the data for only those participants with an MMSE score less than 10 (i.e. severe cognitive impairment) were analysed separately.

Results

A total of 20 patients participated in the project and completed the schedule of sessions and measures. Five others dropped out of the project owing to illness, failure to co-operate, and moving to residential care (two). One participant did not wish to return to the Snoezelen room (despite having greatly enjoyed the introductory session) as it triggered unpleasant memories for him.

It is evident from Table 1, which gives the characteristics of the participants who completed the study, that they varied greatly in terms of their age and degree of cognitive impairment. Twelve participants were diagnosed with Alzheimer's disease, six with vascular dementia, one with alcohol-related dementia and for one the type of dementia was unspecified.

TABLE 1 HERE

Observed agitated behaviour

As the frequency of agitated behaviour was observed at four different time points summary variables were calculated of the change in mean ABMI score between the time points (e.g. pre-post). For the purpose of this paper we will concentrate on the change in ABMI from before to immediately after the session. Analysis of the summary variables did not show that there was any statistically significant difference between the two interventions in terms of change in frequency of agitated behaviour either immediately after or 15-minutes after the sessions (see Baillon et al, 2004).

However it was evident from examination of participants' data that individuals were greatly varied in their response to the two interventions (see Figure 2). There was considerable individual variation in the direction and magnitude of change in frequency of agitated behaviour for the participants. In 14/20 cases there was a decrease in agitated behaviour immediately after the Snoezelen, and in 6/20 there was a decrease following reminiscence. Only 6/20 participants showed an increase in agitation immediately after Snoezelen, whereas 11/20 showed an increase after reminiscence. When comparing how individuals responded to both interventions - 8/20 showed a decrease in agitation after Snoezelen but not after reminiscence, whereas 2/20 participants showed a decrease after reminiscence but not after Snoezelen and 6/20 showed a decrease after both interventions.

FIGURE 2 HERE

Heart rate

Heart rate data was available for all except two participants. Both these participants wore the heart rate monitor for a trial period but then would not agree to wear the monitor again for the

research sessions. The remaining 18 participants wore the monitor for all sessions. Data was missing for some sessions due to the heart monitor transmitter belt slipping too low on the participant's chest to record data, or due to interference from the participant. In total data was missing for five Snoezelen and three reminiscence sessions. Data from one participant (A7), who had atrial fibrillation, was excluded from the comparative analysis but is included here.

Heart rate data was analysed by calculating the mean heart rate for a five-minute period before the research session (three-eight minutes before), five minutes before the end of the research session (excluding the final two minutes) and five minutes after the research session (three-eight minutes after). The change in mean heart rate from before to during, and before to after, the session was then calculated.

For both interventions there was a decrease in mean HR by the end of session, with the Snoezelen sessions showing greater carryover of the effect post-session. Although the overall differences between the interventions were not statistically significant, there was large individual variation in the amount and direction of change in heart rate (see Figure 3), as with the agitated behaviour.

Participants who were physically agitated (e.g. wandering) immediately before the session (e.g. A4, B12) showed a marked decrease in HR, partly due the fact that they would usually be seated during the session, and/or that they were less agitated. Participants who were not physically agitated at the time of the start of the session (e.g. B6) often showed an increase in HR possibly reflecting increased stimulation. Also, it was clear that for a few individuals the

Snøezelen sessions brought about a reduction in heart rate, whereas the Reminiscence did not (i.e. A1, A3, A11 and B8), and vice versa for others (i.e. A5, B1, B10, B11).

FIGURE 3 HERE

Mood and behaviour during the sessions

The 13 items of the Interact scale do not combine to give a summary score. Therefore analysis of this data was carried out by comparing the number of items rated as showing positive, negative or no change. Analysis of these summary measures did not show any significant differences between the interventions, but examination of Figures 4 and 5 (which show the mean number of sessions for which each item of the scale showed positive or negative change) may indicate those areas in which Snøezelen may have greater benefit than reminiscence for this group (e.g. happiness, fear, relating other people, attention to the environment, agitation, enjoyment and relaxation).

FIGURE 4 HERE

FIGURE 5 HERE

Analysis of the ‘severe dementia’ subgroup

There were 16 participants with an MMSE score less than 10. Analysis showed a significantly higher number of items with positive change on the Interact scale for the Snøezelen sessions (Mann-Whitney $U=6.0$, $P=0.01$, 95.8% CI 1.0 to 6.3), and a consequent lower number of items with ‘no change’ (Mann-Whitney $U=8.5$, $P=0.01$, 95.8% CI -6.0 to -1.1), compared to reminiscence sessions. There were no significant differences in the change in agitated behaviour and heart rate for this group.

Discussion

Analysis of the group responses to the two interventions in this cross-over study indicated that both Snoezelen and reminiscence have a positive effect on the mood and behaviour of people with dementia, as is indicated by the items on the Interact scale showing positive change. However, this study failed to show that Snoezelen was any more effective than reminiscence in reducing agitated behaviour, in terms of actual observed behaviour following the sessions and producing a reduction in heart rate. It may be the case that Snoezelen has advantages over reminiscence in terms of alleviating agitation but this research may have failed to provide empirical evidence of an effect due to the relatively small number and heterogeneous nature of the participants. Therefore further research, involving larger numbers of participants, will be necessary to investigate the effects of Snoezelen on agitation over and above those derived from staff attention.

Anecdotally, the feeling of staff involved with the project was that the way people responded to sessions varied for each individual and sometimes for the same individual from day to day. This feeling was very much reflected in the data which clearly showed how varied (both in magnitude and direction) the response of participants was – both in terms of the change that Snoezelen and reminiscence brought about in their agitated behaviour, and in their heart rate.

Interpretation of the changes in ABMI and HR are difficult to make. In particular the HR data needs to be interpreted with care since not only does increased HR reflect increased agitation, but it can also be a result of positive stimulation or increased physical activity (as well as physical illness and medication, although these should not have been factors with the participants during the research sessions). Shapiro et al (1997) measured heart rate in a study

of the effects of Snoezelen in children with learning disabilities. They found that there was an increase in heart rate in those children who were usually passive, but became more active during Snoezelen and found a decrease in heart rate in the hyperactive children who became calmer during sessions.

Changes in agitated behaviour are also not straightforward to interpret. It was apparent that for several participants their level of agitation gradually increased through the course of the day - increasing throughout the morning in anticipation of lunchtime, and particularly increasing during the afternoon in anticipation of three o'clock when transport arrived to take them home. Therefore although some participants did not show a reduction in agitation following sessions, their level of agitation may have increased less than it may have done had they not had the intervention.

Analysis of the Interact data for those participants with severe dementia suggested that Snoezelen has an advantage over reminiscence for that type of patient. However, analysis from the ABMI and heart rate did not demonstrate a differential effect of the two interventions for people with severe dementia. Other research has also suggested that Snoezelen has added benefits for people with advanced dementia (Baker et al, 1998).

Because people's reactions to Snoezelen can be varied great care should be taken when individuals are introduced to a Snoezelen environment for the first time - occasionally people may respond negatively to the environment. The staff involved in the study found the 'introductory' Snoezelen sessions very useful in establishing the participant's preferences before the commencement of the research. The opportunity to build rapport with the participant and develop sensitivity to their reactions was important to help prevent negative

outcomes and promote the most enjoyable experience possible for them. On the whole negative responses to the interventions were rare and often occurred on days when the participant's were particularly agitated prior to the session – on these occasions they are perhaps less receptive to intervention and little can be achieved by either activity.

On a practical note, in all three locations where the research took place, the Snoezelen room was centrally located in the unit and therefore some distance from the care environment. Participants were therefore required to leave their familiar care setting (by wheelchair, if they were of restricted mobility) and travel along at least one or two corridors to reach the Snoezelen room. This in itself can be an anxiety-provoking action for someone already agitated or prone to becoming so. In addition in both day hospitals participants had to pass reception where they were dropped off and collected by their transport. Conversely the reminiscence sessions took place somewhere much closer to hand, in a sitting room or quiet room within their usual care setting. This difference between the two interventions was unfortunate but unavoidable.

It is clear from this study that people with dementia, including those with severe impairment, derived benefit from both Snoezelen and reminiscence sessions, and the effect that these interventions had upon individuals' agitated behaviour was greatly variable and complex to interpret. Data from this research suggested that people with severe dementia may derive more benefit from Snoezelen than reminiscence, but further research will be necessary to establish if this is the case, as the research reported here was of insufficient power to provide conclusive evidence of such an effect. Unfortunately it was not feasible to design the study to enable blinding of the raters to the intervention that the participants had received. This, ideally, should be a feature of any future comparative research.

This research has shown that both Snoezelen and one-to-one themed reminiscence can at the very least, be enjoyable and positive activities for this type of patient. They can offer additional choice of interventions appropriate for such patients, where many activities commonly used in other fields of care, or with less impaired patients, are unsuitable.

Staff working with the older people who have dementia should bear in mind that individuals are varied in their responses to each intervention, and may respond better to one than the other. In addition, sensitive introduction of Snoezelen to individuals, and careful observation of their reactions should promote a positive experience for both them and the person accompanying them.

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Snoezelen is a registered trademark of ROMPA International.

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Appendix – Guidelines for research sessions

Snoezelen – will utilise any of the equipment available in the Snoezelen room, but will avoid the use of materials that have a definite reminiscent purpose (e.g. familiar objects) including the use of music that would clearly have strong reminiscent qualities. Atmospheric classical or new age music may be used, depending upon the participant's known or indicated preferences. It is not necessary to stick to the same format or the same equipment for each session. Stimuli presented to the participant in Snoezelen sessions will largely be unpatterned and unstructured.

Reminiscence – will utilise pictures or objects likely to evoke memories for the participant concerned, and may use music either to compliment the theme of the session or as a focus for the session, provided that it is likely to have reminiscent qualities for the participant. Stimuli presented in these sessions will be patterned and structured.

Figure 1 **Cross-over design**

Table 1 **Characteristics of the participants**

	ID	GENDER	AGE	CDR	MMSE
GROUP A	A1	M	59	17	9
	A2	F	83	15	9
	A3	F	86	16	5
	A4	M	85	15	6
	A5	F	63	18	0
	A6	M	78	9	19
	A7	M	86	11	14
	A9	F	79	18	0
	A10	M	72	8	5
	A11	M	66	15	14
GROUP B	B1	M	72	18	1
	B4	F	66	18	0
	B5	F	78	18	3
	B6	F	82	18	5
	B7	F	53	12	13
	B8	M	66	18	0
	B9	F	62	17	0
	B10	F	81	16	0
	B11	F	59	18	0
	B12	F	75	18	0
WHOLE GROUP	Mean	8 M-12 F	72.6	15.7	5.2
	Median		73.5	17.0	4.0

Figure 2 Mean change in ABMI score pre to post session

Figure 3 Change in heart rate pre-session to during-session for each individual

Figure 4 **Mean positive ratings of items on the Interact Scale**

Figure 5 **Mean negative ratings of items on the Interact Scale**