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Abstract:	This qualitative study explored a multi-sensory (including olfactory) intervention for people with dementia. Six themed boxes (e.g. Childhood) containing items chosen from the Boots archive designed to encourage conversation were used in weekly group sessions. Session participants were people with dementia and care staff from a local care home, a trained facilitator and archivists from Boots UK. Semi-structured interviews explored participants' experiences of the sessions. Interviews were analysed using Thematic Analysis. The three major themes Engagement (subthemes: Inclusiveness; Emotional involvement; Factors that supported engagement), What's in the box (subthemes: Contents stimulate memories; Mystery, variety and age of items; Value of olfactory stimuli), and A conversation starter (subtheme: Opportunity for self-expression) reveal the success of the intervention and the value of olfactory stimuli. Multisensory boxes including olfactory stimulation can be an engaging intervention with scope to refine it for people with dementia and their carers in the wider community.

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Abstract

This qualitative study explored a multisensory (including olfactory) intervention for people with dementia. Six themed boxes (e.g. Childhood) containing items chosen from the Boots archive designed to encourage conversation were used in weekly group sessions. Session participants were people with dementia and care staff from a local care home, a trained facilitator and archivists from Boots UK. Semi-structured interviews explored participants' experiences of the sessions. Interviews were analysed using Thematic Analysis. The three major themes Engagement (subthemes: Inclusiveness; Emotional involvement; Factors that supported engagement), What's in the box (subthemes: Contents stimulate memories; Mystery, variety and age of items; Value of olfactory stimuli), and A conversation starter (subtheme: Opportunity for self-expression) reveal the success of the intervention and the value of olfactory stimuli. Multisensory boxes including olfactory stimulation can be an engaging intervention with scope to refine it for people with dementia and their carers in the wider community.

Dementia is characterised by memory loss, impaired cognitive function and behavioural and psychological symptoms (BPSD), but it can also cause impairments in hearing, vision and olfaction (Behrman, Chouliaras, & Ebmeier, 2014). Olfaction has been relatively little explored in psychosocial research although it is closely associated with memory. Deficits in olfaction are not unusual in elderly people generally (Corbin & Eastwood, 1986), but while it remains unclear whether olfactory dysfunction is linked to dementia itself or is merely a marker for advanced age, it is important to explore the potential of olfactory stimuli in multisensory interventions for people with dementia .

Most published studies using olfactory stimuli in dementia have involved aromatherapy. A Cochrane review (Forrester et al., 2014) included seven randomised controlled trials (RCTs) of aromatherapy usually for the management of agitation in care home residents with dementia. Only two trials provided sufficient data for meta-analysis, one with results favouring aromatherapy (Ballard, O'Brien, Reichelt, & Perry, 2002) and the other showing no significant difference (Burns et al., 2011). Other non-RCT studies have also reported mixed findings (Forrester et al, 2014), mainly in relation to agitation, difficult behaviour and sleep.

Multisensory interventions combine activities with therapies, e.g. music, painting and reality orientation (Ozdemir & Akdemir, 2009), or use stimulation rooms (Snoezelen) (Sánchez, Millán-Calenti, Lorenzo-López, & Maseda, 2013). Such interventions often include olfactory elements. Multisensory interventions may be perceived as less cognitively demanding (Milev et al., 2008) than therapies such as reminiscence, as they involve passive stimulation and creative expression, rather than factual recall and memory retrieval. Again, research findings are mixed: for example a Cochrane review of Snoezelen (Chung, Lai, Chung, & French, 2002) found no evidence for its efficacy.

Research into olfactory and multisensory therapies has various shortcomings, including the difficulties of conducting adequate RCTs and choosing the most appropriate outcome measures. Despite the limitations of research findings, it is clear, at an individual and anecdotal level, that sensory-based activities can bring great pleasure, even if it is difficult to demonstrate longer term effects. Qualitative approaches may be more sensitive in detecting individual level effects.

This exploratory qualitative study had the following aims:

- Develop a set of themed multisensory boxes for a series of weekly groups in a care home
- Investigate multisensory (including olfactory) stimulation in the psychosocial care of people with dementia
- Explore the responses of people with dementia, and all participants at the sessions, to the multisensory boxes.

Method

Participants were (a) residents and (b) staff at a home specialising in dementia care; as well as (c) archivists from Boots UK who had been involved in constructing the multisensory boxes. Care home staff recommended residents to take part in the intervention. Residents who participated were aged 60 or over, with mild to moderate dementia, and English-speaking. . The main exclusion criterion was if a resident was incapable of participating in group activities, e.g. being too ill or restless.

The sessions were run by an experienced facilitator, a male artist with experience in working with dementia and arts-related activities. One of the Boots archivists who helped develop the boxes also attended each session.

Ethical approval was obtained from Nottingham University Medical School Research Ethics Committee before the start of the study (**G10072014**). Informed consent was obtained from those participants with capacity to give consent. In the absence of capacity, a personal or professional consultee was approached. All individual data were pseudonymised.

Groups were held weekly in the care home for 6 consecutive weeks. Each session lasted 1-2 hours and focused on a series of themed boxes, named Mementos from Boots. The multisensory materials used in the boxes were supplied by the archive collection of Boots UK. Boots is an international retailer with roots as a high street chemist in the UK. The company's archive contains a large range of documents and artefacts related to the trade over much of the 20th Century. In collaboration with Boots' archivists, the facilitator and researcher (SG) chose items to stimulate multiple senses and meaningful interactions between people with dementia and their carers. Six themed boxes were created: Daily Routine; Parenthood; Illness; Childhood; On the Town; and Christmas. At least one olfactory item was included in each box (Table 1).

--Table 1 about here--

During the sessions, the facilitator introduced the box and passed round the items. Whilst objects were handled, the facilitator asked questions about the contents and encouraged conversation between the participants. This continued until all the items had been examined. The researcher (SG) attended each session, and made field notes recording the group's participation and engagement.

After each of the six sessions, semi-structured interviews were conducted with the facilitator, and one of the archivists who had attended. Interviews with two staff carers and two residents were conducted midway through the sessions, using a semi-structured schedule to explore issues

including emotional responses, engagement, items used, and facilitator role. Interviews were audio-recorded and transcribed.

Interview transcripts were analysed using Thematic Analysis as this approach derives data and themes that are grounded in participants' experiences and reflections (Braun & Clarke, 2006). Analysis proceeded iteratively, and was refined in collaboration with another qualitative researcher (CB). Themes were defined and named, following accepted guidance (Boyatzis, 1998). Inter-rater reliability of coding was also assessed: 79% inter-rater reliability was achieved: scores >70% are considered acceptable (Boyatzis, 1998).

Results and Discussion

Over the six weekly sessions 19 participants took part: 13 residents (5 men, 8 women), 3 staff (female), 2 archivists (female) and the facilitator (male). Residents attended between two and all six sessions, and each staff member attended between four and six sessions. Interviews were completed with two residents, two staff carers, the two archivists and the facilitator.

Findings

Three major themes with seven supporting or underpinning subthemes were identified (Table 2).

--Table 2 about here--

Engagement

All the participants were extremely positive about the sessions and the Mementos from Boots boxes. One resident, although initially reluctant to participate, described improved well-being:

"I think that I felt a lot better"

and

"I'd like to come next week" (Sally, resident)

Staff participants also enjoyed the sessions:

"It's been lovely for me too" (Pamela, staff)

Inclusiveness

High engagement resulted from the inclusive nature of the Mementos from Boots intervention. Other activities and interventions for people with dementia may require more active involvement, e.g. singing or arts projects (Bannan & Montgomery-Smith, 2008). Participants could contribute here regardless of ability and participate at varying levels, depending on how they felt:

"in another activity you might go round the room singing, but not everybody wants to do that and it depends what mood you're in. And even if you're not in a great mood you can still sit and observe in this activity and listen to people" (Samantha, staff)

This inclusiveness is important, as it leads people with dementia to feel part of a group, strengthening relationships and improving mental wellbeing. Other research has stressed how interventions need to be accessible to people with varying levels of cognitive decline (Baker et al., 2001).

Emotional involvement

The intervention involved people at an affective level, with interviewees describing a full spectrum of emotions:

"I found it emotional and I found it uplifting and I found it… warm and welcoming are the words that I would use" (Kathy, archivist)

The researcher's field notes also provide evidence of the resident and staff participants' active engagement during the sessions. Residents and staff were interacting with each other, with the facilitator, and also responding and engaging with items from the Mementos from Boots boxes.

Factors supporting engagement

Engagement was underpinned by having a skilled facilitator, staff actively engaging in the intervention and multiple sessions. The importance of a good facilitator was mentioned here:

"They just have to be the right things, delivered by someone who's experienced in doing it" (Kathy, archivist)

and has been noted elsewhere too (Kasl-Godley & Gatz, 2000).

Other studies have reported how arts activities can improve the quality of care provided by care home staff (Bailey, Cook, & Machin, 2013) Here, staff actively assisted participants during the sessions, and became immersed in the intervention themselves:

"the staff were excellent… I like the extent to which they're participating sort of on an equal footing with everyone else who's in the room and they're enjoying it and that's good." (Jacob, facilitator)

Running a series of linked sessions also appears to have been valuable:

"they sort of become more and more accustomed to what we're doing and some of them do remember from the previous week, so that means that their engagement is more significant and that's just as a consequence of relaxing into the structure that we've provided"(Jacob, facilitator).

What's in the Box?

This theme refers to the contents of the boxes and their multisensory elements.

The value of olfactory stimuli

Participants discussed the benefits of olfactory stimulation:

"a couple seemed to get a good feel for what they were smelling, they could definitely smell something, which I thought was quite impressive "(Kathy, archivist)

Although olfaction is often regarded as impaired in people with dementia (Kjelvik, Sando, Aasly, Engedal, & White, 2007), this was evidence that fragrance was important for the residents. However, people with dementia could not always identify smells:

" we assumed that lots of smells would be very instantly resonant and a lot of them are not really responding in the way we had anticipated. So last week for instance it took …. eight or nine people before anyone said 'toothpaste'. The same happened with baby cream – it took a long long time and that's not an argument for not doing it, I think it's an argument for doing it more, but it's interesting that they don't really respond in the way we anticipated" (Jacob, facilitator)

He speculated that visual information might also be needed for identification:

"it's hard, if everything is in the same jar, it's a bigger ask for them to visualise that scent's usual context" (Jacob, facilitator)

The intensity of the olfactory stimulus appeared important:

"Carbolic soap definitely sparked something, umm possibly because it was the strongest smell" (Eleanor, archivist).

How best to present olfactory stimuli remains unclear. A standard container may lack visual information that could help trigger recognition of the smell. It may therefore be helpful to include packaging. Further research in this area is warranted.

Contents stimulate memories

Respondents discussed how the Mementos from Boots boxes stimulated memories in various ways, obviously of potential use in dementia care:

"Oh it brought back lots of memories" (Sally, resident)

Also, the sessions were:

"stimulating their memories of times gone by, and I think they can remember perhaps more in the past than they can at present time" (Pamela, staff)

The Mementos from Boots boxes encouraged indirect recall of past events through the presentation of familiar objects. However, the Mementos from Boots sessions put less direct emphasis on remembering, in contrast to reminiscence therapy (James & Fossey, 2013) for example, where the focus is upon recall. In that sense, the Mementos from Boots sessions may be less cognitively demanding but more suitable for a severely impaired group.

Mystery, variety and age of items are important

The inclusion of objects which were not immediately identifiable was an important feature of the Mementos from Boots boxes. These items captured the participants' interest and imagination:

"they were quite intriguing beautiful objects that people wanted to investigate and as you noticed with William [resident], his investigation wasn't necessarily just about its function as a powder compact, it was because it was a beautiful object" (Jacob, facilitator)

This theme was supported by the researcher's field notes which recorded that residents explored more and engaged for longer with the more unusual items.

A conversation starter

A notable effect of the Mementos from Boots sessions was how the participants were encouraged to talk:

"There's more conversation. I feel more conversation amongst the older people is key" (Samantha, staff).

This increase in verbal communication was striking:

"I think I was surprised at how much conversation was generated and how on topic it kept" (Eleanor, archivist).

(Hope, 1998) reported a positive impact on the spontaneity and coherence of speech produced by a multisensory intervention. Care home residents with dementia often have severe language impairments and may have limited opportunities to express themselves; this intervention also provided a platform for more meaningful interactions:

"I think things like this work, because it gives people space in which to speak, listen, be listened to and to listen, and that's really valuable, and they feel better as a consequence of that space." (Jacob, facilitator)

Strengths and limitations

This study reports the effects of a series of purposely designed, themed, multisensory boxes in a care home setting. The sessions were well attended and the contents of the boxes were important in engaging participants, with robust effects observed within the groups as reflected in the themes we derived from our data.

The research included a single time-limited group. We have not investigated behaviour change outside the group, so whether there is any persisting effect is not known. However, this was beyond the scope of this study. The number of interviews with participants, especially people with dementia, was limited. However support for themes was found in all the participants' comments and the study field notes. The facilitator was skilled and experienced, someone less skilled may not have achieved the same results; this raises a challenge as to how a similar intervention could be delivered more widely and warrants further investigation.

Conclusions

Multisensory Mementos from Boots boxes, with a focus on olfactory stimulation, can be an engaging, enjoyable and effective psychosocial intervention for people with dementia. The olfactory stimuli attracted much interest in the sessions partly because identifying them was a challenge. People with dementia are not necessarily anosmic and they are able to engage with interventions across sensory domains.

There is scope both for future use of Mementos from Boots multisensory boxes in care homes, and using the findings of this study to refine the intervention to benefit other people with dementia and their carers.

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Table 1: Session themes and box contents

Week	Theme	Example items	Olfactory items
1	Daily Routine	Sponge, hairbrush, shavers, poster and photos	Toothpaste, Cremolia soap, talcum powder
2	Parenthood	Feeding bottle, feeding bowl, bibs, oral pacifier	Baby soap, baby lotion, baby powder
3	Illness	Chamber pots, thermometer, inhaler, hot water bottle, medicine tins	Crushed aspirin, vapour rub
4	Childhood	Children's books, dolls, toy trolleys, owl puppet, spinning top, first aid kit, building blocks, leather satchel	TCP, Germolene, cough mixture, liquorice, crushed Parma Violets, crushed pear drops
5	Out on the Town	Hats, scarves, ties, handbag, deodorant bottle, powder compact	Floral perfumes, brilliantine hair cream
6	Christmas	Tissue paper, Christmas mug, soap gift set, decorations, party hooters, bells, gift vouchers, Christmas cards, Boots catalogues, mince pies	Cloves, cinnamon, candle

Table 2: Themes and subthemes

Theme	Sub themes
Engagement	Inclusiveness
	Emotional involvement
	Factors that supported engagement
What's in the Box?	Contents stimulate memories
	Mystery, variety and age of items are important
	Value of olfactory stimuli
A conversation starter	Opportunity for self-expression