Multi-sensory potential of archives in dementia care

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Abstract

This paper aimed to review the potential for archival items to be used to support therapeutic interventions in dementia care, with a particular focus on olfactory stimuli. Archival research was used to identify objects and to re-create authentic historical product fragrances from Boots UK. Potentially therapeutic material and smells for people living with dementia were identified and olfactory profiles created. These were characterised by strong smells and items featuring well-known brands and distinctive packaging including carbolic soap and Old English Lavender talcum powder. A dataset of items has been created for use in future research studies.

Keywords: archives; dementia; multi-sensory; object handling; pharmacy

Introduction

Olfaction, or smell is perhaps the most potent of human senses yet the least understood. This may be due to its amorphous nature, and the relative lack of olfactory research that has taken place. Olfaction is closely linked to emotional processing and autobiographical memory. Known as odour-evoked memory, it is especially effective in triggering autobiographical memory i.e. memories of one's life, [1] lasting longer than other sensory memory, [2] and providing a better cue to recall than other stimuli. [3] This is often referred to as the Proustian Effect, [4] so called with reference to Proust's vivid description of the recall of childhood memories after smelling a tea-soaked madeleine in *À la Recherche du Temps perdu*:

> "But when from a long-distant past nothing subsists, after the people are dead, after the things are broken and scattered, still, alone, more fragile, but with more vitality, more unsubstantial, more persistent, more faithful, the smell and taste of things

> remain poised a long time, like souls, ready to remind us, waiting and hoping for their moment, amid the ruins of all the rest; and bear unfaltering, in the tiny and almost impalpable drop of their essence, the vast structure of recollection." [5]

Neuroscience provides clues as to why our olfactory sense is so powerful. Smells are first processed by the olfactory bulb, starting in the nasal passage and running to the brain. The olfactory bulb connects to the brain areas that are linked to emotion and memory: the amygdala and the hippocampus. Visual, auditory and tactile information do not pass through these areas. According to Gaines-Lewis ("As of January 15, 2015, Psychology Today listed on its website") this could explain why olfaction, more than the other senses, is so successful at triggering emotions and memories.

Smell and dementia

Anosmia, referring to loss of smell, can predict development of dementia. [6] Measures such as the Brief Smell Identification Test (B-SIT) [7] are used to screen individuals, with anosmia being associated with both mild cognitive impairment (MCI, with memory loss) and development of Alzheimer's disease. [8] Hyposmia, that is, a reduced ability to smell is also reported in those diagnosed with Alzheimer's Disease. [9]

Aside from a neurological interest in olfaction, the dementia care literature contains scant information on this important sense and how it may be stimulated. An exception is the use of aromatherapy that has shown promise as a psychosocial intervention. [10] Aromatherapy is an example of timalation, a term coined by Kitwood, [11] referring to sensory stimulation or interaction. Current guidance ("As of May 8, 2017, Dementia UK listed on its website") notes that smell may trigger negative symptoms such as confusion if memories are evoked. It is acknowledged that further pharmacological research is needed to understand the mechanisms behind the utility of aromatherapy and any potential contraindications. [12] More

broadly, multi-sensory activity is being examined in dementia research. Related studies have incorporated smell within multi-sensory activities e.g. museum object handling [13] and in Snoezelens. [14] Positive impacts have also been reported when smell is introduced in clinical environments e.g. reducing anxiety and improving mood in dental waiting rooms using the scents of orange and lavender. [15]

Further investigation of olfaction seems warranted, given the powerful association between smell and memory, the links between olfactory impairment and dementia, and evidence suggesting that smell can have a positive impact in care environments. This study sought to explore the potential for archival research to provide insights into re-creating authentic smells from the past to create olfactory stimuli of therapeutic value for use in dementia care settings, thus providing foundational knowledge to support further study.

Archival collections and olfaction: the Boots UK archive

The use of archives for memory stimulation is an accepted process for oral history practitioners. [16] More recently archives have been shown to be powerful agents in recovering forgotten memories, but they have generally been used as a means of interpreting the past rather than as *tools of memory.* [17] Museum-run memory projects, such as National Museums Liverpool programme *House of Memories,* have identified heritage images and objects as having therapeutic value. The BBC's *Reminiscence Archive,* which uses sound recording to stimulate memory, is a recent addition to the multi-sensory resources available. However more traditional paper archive collections have the potential to offer another route to creating authentic multi-sensory stimuli.

Company Archives, whose records chart the product histories of everyday items, recognisable to individuals of all ages, can be mined to re-create consumer's experiences using advertising, packaging, purchasing and the sensory materiality of past products.

Archives can also be used to direct and inform resource materials, such as those used in dementia care, by revealing the popular and instantly recognisable brands, products and environments of the last century.

Established in 1849, Boots is a well-known household brand, the largest retail pharmacy in Britain since the 1890s. The Boots UK archive was established as a company resource in the 1950s and is based in the East Midlands. It holds an estimated 5000 boxes of material and around 800 boxes of museum objects, some of which predate the origins of the business and continue into the present day.

Now part of the multi-national Walgreen Boots Alliance, based in Illinois USA and encompassing pharmacy, health and wellbeing activity, the company's archive contains a vast range of information, images and items related to everyday health and beauty products, optical (Dollond and Aitchison), photographic and pharmaceutical equipment. The archive contains Christmas catalogues, price lists, Art Deco glass fragrance bottles, packaging, store photographs and advertising from all eras making it a unique multi-sensory resource. In 2015 the archive received funding from the Wellcome Trust to catalogue its collection, promoting access for scholarly research and public engagement.
The online archive see [http://archives.walgreensbootsalliance.com] was launched in 2017 and to date 27 000 items and over 5,000 digital images have been included.

Of particular interest to olfactory research, the Boots UK archive holds formulations for scents, medications, ointments and cosmetics, many of which have distinctive smells, often unchanged over many decades. These may provide stimuli for people with memory loss by introducing familiar smells from the past.

The Boots Archive was used in a previous study [18] to both inform and create thematic multi-sensory resources. Catalogues, sales records and advertisements were used to identify the popular products and scents for the decades in focus (1930s-1980s). Thematic 'memory

boxes' were assembled, that included a variety of objects with multi-sensory properties. For example a box on the theme of childhood contained a decongestant chest rub with a strong scent of eucalyptus and menthol, and TCP, an ointment for grazes that is characterised by the distinctive smell of phenol, one of its active ingredients. These items were then complemented with large-scale images of product labels, catalogues and advertisements, their design and use of language representative of an era. Archivists worked with academics to suggest popular products and scents and to help develop the themes which would lend themselves to resources within the collection.

A selection of photographs were also included within the sessions to support memory connections, using evocative interior and exterior store images to illustrate changes in high street shopping. Photographs were included to spark conversations related to changes in social customs, fashions or even as the basis for creative storytelling. With this purpose, archives can be used in the same way that museums use artefacts to generate participation, to be shared as 'social objects…..the engines of socially networked experiences, the content around which conversation happens' ("As of 2010, The Participatory Museum listed on its website"). Archival photographs can act as visual prompts: 'photography intersects at points of evidence, memory and storytelling'. [19] More research is needed to determine, if used as a memory device, whether generic images, such as an unfamiliar high street location, are as effective as images of familiar towns and stores.

The pilot study, using Boots archival items demonstrated the value of archives for people living with dementia in a care home setting. [20] The study reported that the items from the archive were recognised or created curiosity, with both responses likely to be of cognitive benefit, and further research was recommended as these items had been chosen without looking across the collection systematically. It was suggested that responses to the smells stimulated meaningful conversation e.g. focusing on family, careers and relationships. This

indicates that such activities support the personhood of those living with dementia, an integral factor in optimal dementia care. [21] It was also noted that the containers used were important e.g. screw top jars, tins and glass perfume bottles. These encourage engagement by adding sensory elements that incorporate tactile and visual stimuli. Documents such as advertising and labels were used as 'social objects' to stimulate meaningful conversations for example discussions on gender-based advertising.

The present study has used long forgotten recipes and formulations from the Boots Archive to provide key information to unlock some everyday smells from the past to be assessed for their therapeutic potential for people with dementia. These formulations were then re-created e.g. by specialist perfumers using the closest possible modern day synthetic equivalents to create authentic specimens that could be used safely, similarly to a newly purchased bottle of perfume.

Method

Initial discussions with company archivists led to the identification of hundreds of items and documents that were examined as part of the study. The discussions focused on dementia, findings from the previous pilot study, [22] and the potential use of olfactory stimulation in care settings. Over a six month period, items and documents were examined by one author at the company's archive department, located in Nottinghamshire, England. The archives were used to inform the history of an item, its development, its composition, usage (historically and currently), how it was marketed, and any possible psychosocial associations were considered and documented. For example an object would be handled, its formulation or ingredients and dates of manufacture recorded, and images selected and photographed. These may include advertising materials or catalogues. Finally any reference within the archive to the item's development or use by pharmacists or perfumers was noted.

These records were refined after further discussion with archivists and a clinician researcher specialising in dementia. Two Boots UK archivists were interviewed after they introduced archival objects to people living with dementia at two events. The first was a public engagement event 'The Imagination Café', a week-long showcase of an arts and dementia research project called 'Dementia and Imagination'. Use of archival items at the Imagination Café aimed to explore the potential therapeutic use of museum objects and reproduction archives with attendees, including people living with dementia. The second event took place at a residential care home as part of a Boots UK campaign to raise awareness of the archive and its potential use in the care of those living with dementia. A group of carers and residents took part in a discussion session using archival items are stimuli. The interviews with archivists were informal and were not recorded. They aimed to gather additional data to refine the selection of olfactory objects with high therapeutic potential.

Results

A database of high therapeutic items for sensory stimulation, with a focus on olfaction, was developed. To provide a useful guide on how to use such items in practice, case studies of individuals of different ages, genders and at differing stages of dementia were developed to create olfactory profiles. The individuals were fictional but represent composites, based upon real people that the authors have met during their work. The aim was to devise a refined list of items for use in future research and to inform therapeutic activities in dementia care.

To illustrate, three of these olfactory profiles are presented in Table 1: a) Doris, b) Esme and c) Don. Profiles include a product name (if relevant), a description, the olfactory ingredients, i.e. the product's primary smell/s, and an archive image (courtesy of Boots UK). Each profile contains example items that were considered relevant and of interest to a person living with dementia and that were available from Boots UK in their early adulthood,

thus utilising the so-called *reminiscence bump.* [23] This refers to the tendency for older adults to recall memories from adolescence and early adulthood. Included items had distinctive smells, were associated with an olfactory experiences e.g. hair-dressing, or had congruent tactile and visual appeal, such as branding or design that promoted interest and attention. Many items with sensory qualities likely to be therapeutic were identified. For the purposes of this paper only olfactory-rich items are included.

[Table 1. near here]

Archivist interviews

Feedback from archivists indicated that the items were interesting to people living with dementia and potentially therapeutic. For example, it was noted that a male living with dementia examined and explored a shave-soap stick, using sight and touch. This led to discussions about what the object might be and what its purpose was, prompting animated conversation on the subject of male grooming, preferred garments and places to go out.

A female living with dementia who was largely mute according to carers, became animated and spoke lucidly when presented with a recognisable fragrance (perfume) which had been re-created using a formulation from the archive and some faux jewellery. Her husband advised that her reaction was remarkable and that she had been a jeweller, perhaps explaining why these items had such an impact. This example underlines the importance of combining olfactory with other stimulus, in this case object handling, creating a multi-sensory as well as personalised experience for someone living with dementia.

Another male living with dementia was restless and agitated, yet he displayed interest and engagement when exploring photographic equipment and shaving products. He became notably calmer as he demonstrated his knowledge of photography, including naming different

components and techniques, whilst sharing anecdotes about family holidays, grooming routines, and loved ones that he would photograph.

It was noted that packaging e.g. tins, jars and boxes, created interest and helped to identify different smells presented. This encouraged item handling and further discussion, thus enhancing communication. Fragrances in modern atomisers held little interest or clues as to their contents which underlined the importance of contextualizing smells and the need for congruent, interesting or familiar packaging design or branding to create visual and tactile, as well as olfactory interest especially for items that might appear unfamiliar.

Of particular interest to the company archivists was the reaction of former colleagues to the multi-sensory stimuli. There is a wealth of research on professional identity and the importance of workplace identity in people's lives. [24] One of the participants was known to have had a long and distinguished career with Boots and his reaction to the archive material proved to be dramatic. From being distant, slightly confused and unengaged, on being shown a company annual report that contained the familiar names of former colleagues, his mood changed. Although he interacted with some of the pharmacy objects used in his early career, it was the archival documents that held his attention and sparked the clearest memories and strongest emotions. Where previously archival material had been selected for its visual and olfactory appeal, in this instance the subject matter and the inclusion of names of former colleagues was significant. Well-chosen archival material with direct relevance to an individual has the potential to create cognitive connections with people, perhaps in ways in which random inanimate objects cannot. Evidenced by the survival of corporate material such as staff magazines, photographs and old training materials, and in the personal papers of former employees, an organisation's corporate memory is shared by those who helped to create it. In this way company archives, which have direct relevance to the working life of an individual, can be used to inform and to re-connect with individuals living with dementia.

Although the research is still in the initial stages, there is encouraging evidence for archivists to consider alternative and therapeutic uses for their corporate collections. Archival material can be digitally recreated without significantly detracting from the materiality of the original. Digital images can be widely distributed and if necessary, enlarged for ease of usage. They present minimal handling issues and offer the potential for prolonged and repeated exploration.

Discussion and conclusions

This study documents an important collaboration with the Boots Archive that has created a research-driven resource, grounded in the latest psychosocial studies in dementia care. This has identified a range of archival items that can offer multi-sensory stimulation for people living with dementia, in particular focussing on olfaction, given its powerful link to emotional processing and autobiographical memory. The olfactory profiles create a resource that can be used by other researchers and practitioners to help select objects for further study or to provide stimulation to those living with a dementia.

Feedback from archivists indicated that meaningful conversation was initiated using the items in line with previous findings. [25] Meaningful conversation refers to communication focussed on personal content, enabling a person living with dementia to participate fully, facilitating their ability to offer information that is valuable. The use of visual aids or prompts are encouraged ("As of May 2015, the Social Care Institute for Excellence listed on its website") to promote good communication in dementia care suggesting that archival items could be beneficial. This type of interaction is also likely to facilitate better care as carers can discover more about an individual's history, their needs, wants and personal preferences.

The positive reports from archivists demonstrate the utility of multi-sensory items to create stimulation as well as to possibly manage or diminish Behavioural and Psychological Symptoms of Dementia (BPSD) such as agitation, aggression, or wandering. [26] Multi-sensory stimulation has been recommended for managing such symptoms. [27]

Critical to any therapeutic intervention is that items, objects or activities have meaning for each individual taking part. This is aligned with the need for bespoke dementia care that is personalised and integrating the VIPS model (Values people, Individual need, Perspective of person with dementia, Supportive social psychology). [28] It was noted that not all items from the olfactory profiles evoked a response, in which case other items and smells can be introduced as appropriate. The variety of items held by the Boots UK archive offers the potential to create many olfactory and other multi-sensory profiles in future.

The study demonstrates the role of archives in developing and facilitating innovative care provision in dementia care settings, using images to enhance museum and everyday objects that are often readily available or familiar. Boots UK has committed to using its archive for research and public benefit via cataloguing, by establishing a scientific advisory board, and through promoting associated projects. For example to coincide with Dementia Action Week ("As of 2018, Alzheimer's Society listed on its website"), the company launched an awareness campaign that featured this programme of research, resulting in a leaflet 'Living with Dementia' in all stores and an online presence on the Boots UK website see [www.boots.com/health/dementia-friends] that includes a film introducing care home residents interacting with archive items. Further study in other archives is warranted as commercial collections for well-known brands could introduce wider themes and additional aromas, and investigation of paper-based materials including maps and ledgers.

Feedback indicated that context and process were important in how items and smells were received. Items should be used in a purposeful way and methods such as storytelling

employed to provide a structure for consideration of olfactory stimulus. For example Timeslips [29] is one such therapeutic approach, originating in the USA that certifies individuals to work creatively with older adults. Packaging and branding are also important as they provide visual prompts offering clues and alluding to olfactory elements e.g. the familiar branding of 'Real Devonshire Violets', unscrewing the jar lid for Cremolia, or the retractable packaging that reveals a shave-soap stick. These issues require further refinement and investigation.

The study is novel as it is the first known research to explore the olfactory potential of museum objects and archive-inspired smells for those living with dementia. It represents a collaboration with a well-known household brand, offering opportunities for widespread impact via health education in store and online.

The study was limited as only a small range of items could be examined, relative to the scale of the Boots UK archive. This was aligned with the aims and scope of the funding supporting the study (a research bursary). Further research could scrutinise the active ingredients that provide olfactory stimulation, exploring possible cognitive and other behavioural impacts. The interview data was not collected systematically and would benefit from more robust investigation. This study did not seek feedback from people with dementia and nor did it test archival items empirically thus providing future opportunities for research. It is acknowledged that hyposmia or anosmia may limit the impact of any olfactory programmes developed. [30]

Archives contain thousands of sources offering a rich resource for many different types of stimulating interactions that could be utilised in health and social care settings. Archives not only speak to our sense of identity but provide enrichment by making histories tangible, [31] and should therefore be viewed as an important resource for therapies in dementia care.

The use of archival items may be viewed as a type of 'small C' creative practice, i.e. incorporating everyday activities and objects that have potential for widespread benefit. [32] Archives represent a valuable resource worthy of further exploration and development to inform bespoke multi-sensory services for those living with dementia. The findings have been used to inform a doctoral studentship that will design and test an intervention using archival items that provide olfactory stimulation.

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Notes

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1. Chu and Downes, Proust Nose Best, 511-518.

2. Miles and Jenkins, Recency and Suffix Effects, 195-205.

3. Chu and Downes, Odor-evoked Autobiographical Memories, 111-116 and Chu and Downes, Long Live Proust, 41.

4. van Campen, *The Proust Effect.*

5. Proust, *Swann's Way*, 47.

6. Adams et al., Olfactory Dysfunction Predicts, 140-144 and Lafaille-Magnan et al., Odor Identification, 327-335.

7. Doty, Marcus and Lee, Development of 12-item, 353-356.

8. Roberts et al., Association Between Olfactory Dysfunction, 93-101.

9. Martin, *The Neuropsychology of Smell.*

10. Jimbo et al., Effect of Aromatherapy, 173-179.

11. Kitwood, *Dementia Reconsidered.*

12. Scuteri et al., Aromatherapy and Aromatic Plants, 9416305.

13. Camic, Hulbert and Kimmel, Museum Object Handling, 787-798.

14. Chung et al., Snoezelen for Dementia, CD003152.

15. Lehrner et al., Ambient Odors of Orange, 92-95.

16. Freund and Thomson, *Oral History and Photography*, Foreword.

17. Bastian, *Memory Research/Archival Research*, 269-287.

18. Griffiths et al., Mementos from Boots, 793-801.

19. Freund and Thomson, *Oral History and Photography*, Foreword.

.20 Griffiths et al., Mementos from Boots, 793-801.

21. Kitwood, *Dementia Reconsidered.*

22. Griffiths et al., Mementos from Boots, 793-801.

23. Rubin, Rahhal and Poon, Things Learned in Early Adulthood, 3-19.

24. Pratt, Rockmann and Kaufmann, Constructing Professional Identity, 235-262.

25. Griffiths et al., Mementos from Boots, 793-801.

26. Cerejeira, Lagarto and Mukaetova-Ladinska, Behavioral and Psychological Symptoms, 73.

27. Burns et al., Sensory Stimulation in Dementia, 1312-1313.

28. Brooker, *Person-Centred Dementia Care.*

29. Fritsch et al., Impact of Timeslips, 117-127.

30. Vance, Implications of Olfactory Stimulation, 17-25.

31. Williams, *Managing Archives.*

32. Bellass et al., Broadening the Debate on Creativity, 1471301218760906.

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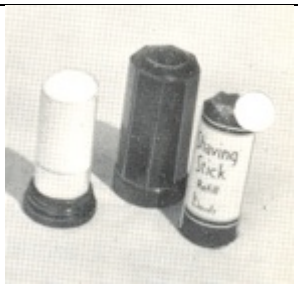
Table 1: Olfactory Profiles – example archive items

a) Doris aged 80, items from c 1957			
Product/item	*Description*	*Active olfactory ingredient/s*	*Image*
Silksheen	Hair shampoo	Castor oil; Perf. Prep. Serial No. 744	
Cremolia	Skin cream	Oil of African geranium; Oil of bergamot; neroli (from bitter orange tree blossom)	
Old English Lavender dusting powder	Talcum powder/for beauty or after bathing	Oil of cloves; rosemary; geranium; spike lavender; lime	
b) Esme (aged 90), items from c 1948			
Product/item	*Description*	*Active olfactory ingredient/s*	*Image*

Cold cream	Cream make up remover, also moisturises skin	Oil of geranium; Terpineol (has a lilac fragrance)	
Real Devonshire Violets	Talc and perfume	Musk; rose; iris; jasmine (however smells like violet)	
Carbolic soap	Antiseptic soap bar	Coal tar; phenol	
c) Don (aged 75), items from c 1972			
Product/item	*Description*	*Active olfactory ingredient/s*	*Image*

Shaving stick	White soap stick in black packaging. For use with a shaving brush (wet shave)	Oil of spike lavender; oil of French lavender; oil of lavandin; Opoponax (sweet myrrh); oil of citronella; geranium	
Brilliantine	Scented oil for grooming the hair	geranium	
Albany shave cream	For use in wet shaving	Oil of vetivert; geranium; oil of patchouli; oil ylang ylang; oil of cedar wood; oil of guaiacwood