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The impact of viewing and making art on verbal fluency and memory in people with dementia in an art gallery setting

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Abstract

Dementia is a progressive disease characterized by a widespread impairment of mental functioning including cognitive skills. Research has suggested that the arts can have positive effects in terms of physical and mental health for people with a dementia. The present study sought to identify the impact of art-making and art-viewing activities, within the context of a publicly accessible art gallery, on verbal fluency and memory. Thirteen participants diagnosed with early to mid-stage dementia participated, along with their caregivers, in 8-week long art-viewing and art-making groups at an art gallery in the United Kingdom. Audio recordings of sessions were transcribed and analysed using quantitative content analysis. Findings suggested that the interventions described did not negatively affect cognitive ability in the dimensions measured and the data hints that improvements are possible. . The results provide support for further controlled studies examining the impact of visual art, aesthetics, and art gallery-based programmes on cognition in people with dementia. Further research is required to address the methodological limitations presented in the current study.

Keywords: visual arts, dementia, cognition, language, art gallery, aesthetics

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In 2012 the World Health Organisation (WHO) estimated the number of people with a dementia worldwide to be 35.6 million. Due to the increasing longevity of the population this number is projected to more than triple by 2050 (WHO, 2012). Dementia therefore poses a significant challenge for society, with dementia care in the UK alone reported to cost £23 billion (\$38.6) per year (Alzheimer's Society, 2013). Dementia is a progressive disease, mainly affecting older adults and is characterized by widespread impairment in mental functioning and cognitive decline accompanied by disturbances of mood, behavior and personality (NICE, 2012; Ritchie & Lovestone, 2002). Symptoms may consist of memory problems, difficulty in concentrating, poor sense of time and place, impairment in speech production and comprehension, and difficulty in completing simple tasks. Language impairment is an early sign of dementia and can significantly affect functioning. A meta-analysis by Henry, Crawford and Phillips (2004) found both phonemic and semantic verbal fluency to be significantly impaired in those with dementia. Difficulties with communication can also contribute to behavior difficulties (Potkins et al., 2003). Despite the impact of dementia on cognitive skills, cognitive stimulation therapy is one of the few non-pharmacological interventions that are recommended (e.g. NICE, 2012).

Visual Art

Young, Camic and Springham (2015) systematically reviewed literature pertaining to the cognitive impact of arts based activities in people with dementia. The review concluded that singing and visual art in particular tended to have a positive impact on cognitive capabilities. For example, art viewing and discussion was shown to lead to increases in sustained attention, memory stimulation and increased communication in those with mild to moderate dementia. Art viewing followed by art making was shown to improve episodic memory and to lead to increased verbalisation during interventions in people with early and

moderate dementia, as well as leading to sustained engagement in activities and spontaneous communication. Arnheim (1974) has suggested that art-viewing may stimulate visual as opposed to verbal thinking processes and therefore visual stimulation may be beneficial where language impairment is present. In line with this, research has led to the promotion of art appreciation activities for people with dementia such as viewing art in a gallery setting. This is congruent with research reporting that aesthetic preferences can be preserved despite cognitive decline in both people with Alzheimer's and those with frontotemporal dementia (Halpern, Ly, Elkin-Frankston & O'Connor, 2008; Halpern & O'Connor, 2013). Graham, Stockinger and Leder (2013) also reported similar stability in aesthetic judgment of patients with early and late stage Alzheimer's when viewing portrait paintings. However, they found that stability for portrait photos (matched for identity with paintings) was not preserved in the Alzheimer's group, suggesting that this is a result of partially impaired facial processing systems. Leder, Belke, Oeberst and Augustin (2004), proposed a model highlighting the key cognitive processes involved in perceiving visual art. These included, the use of perception to analyse the artwork, the ability to integrate aspects of the art work with own experience and knowledge, cognitive mastery, and evaluation and interpretation. This model suggested that several distinct cognitive capacities are activated in the viewing of art which are translated into cognitive output in the form of emotional reactions to art (aesthetic emotion) and aesthetic judgments. In support of this, Flatt et al. (2014) conducted focus groups with older adults with early stage Alzheimer's and their caregivers who completed a three-hour art museum engagement activity. Key themes identified were cognitive stimulation, social connections and self-esteem. Cognitive stimulation suggested that mental stimulation was provided by the novel experience, learning new skills and opportunities for reminiscence.

Zaidel (2010) reviewed studies of artists who had incurred brain damage and discussed three major theories which link art, cognition and neuroanatomy. The first suggests

that art is linked to multiple neural regions in the brain. The second indicates that, from an evolutionary perspective, art serves a function in courtship signals and mate selection whilst the third suggests that the symbolic nature of art is linked to brain changes, which support the development of language and hierarchical social groupings. Zaidel posits that the integration of the above theories suggest that artistic perception is stimulating as it engages multiple cognitive processes which involve a variety of brain regions. Research has also begun to report findings relating to the impact of art on cognition in people with dementia. A study by MacPherson, Bird, Anderson, Davis and Blair (2009) found that discussing artwork in a gallery provided cognitive and emotional stimulation for those with early to more advanced dementias. Rosenberg (2009) reported increases in self-esteem following art-viewing, as well as improved mood in both dementia and family caregiver groups. Furthermore, Ullán et al. (2013) found that people with dementia who took part in an art educational programme showed commitment to artistic activity and an interest in learning new things. The authors suggested that programmes such as this can contribute positively to well-being by providing enjoyment, learning and better self-image and consequently self-esteem. Further research has also reported increases in attention (Kinney & Rentz, 2005) and problem solving-skills (Fischer & Specht, 1999) as a result of arts based activities, although little research has focused specifically on whether art-viewing or art-making impacts cognition for those with dementia.

An exploratory pre-post, non-controlled study by Eekelaar, Camic and Springham (2012) integrated art-making and art-viewing within one intervention to investigate changes in cognition for those with dementia. People with dementia were visited at home and presented with high quality reproductions of two paintings and asked a series of questions about the art works; their responses were audio recorded. Following this they attended three

sessions in a public art gallery where they spent 30 minutes viewing art in the gallery and discussing 2-3 paintings, followed by one hour making art in a studio within the gallery in a session led by an art therapist and the art educator. Family caregivers also attended the session. Four weeks post-intervention, participants were interviewed again at home, asked to comment on two images of art and to give their feedback about the groups. Art-making sessions and pre and post interviews were audio recorded and quantitative content analysis was later used to analyse episodic memory and verbal fluency. A thematic analysis was also conducted on the interview data provided by caregivers revealing three themes: social activity, becoming their old selves and shared experience. This was one of the first studies to formally consider the cognitive impact of arts activities within an art gallery setting for this population. Overall, the study found that one aspect of cognitive ability, that of verbal fluency, improved over the course of three sessions; semantic clustering increased although verbal disfluencies decreased, but only slightly. The study also found that episodic memory increased over the course of the sessions and this was maintained at post intervention 4-week follow up. Thematic analysis also supported improvements in episodic memory and verbal fluency. Considering these equivocal, but potentially encouraging findings, further research is warranted. While Eekelaar et al. (2012) collected pre and post data, they only audio recorded the art-making component and not the art-viewing, missing an opportunity to compare two different activities. Like most of the studies above, they also included people with different types of dementia. Previous research by Pasquier, Lebert, Grymonprez & Petit (1995) found that those with dementia had significantly lower verbal fluency than controls, although there were no significant differences in verbal fluency in people with different types of dementia, indicating that any impact on verbal fluency may be consistent across the subtypes of dementia.

The current study

The current study aimed to build on the exploratory study conducted by Eekelaar et al. (2012) by increasing the number of gallery sessions from three to eight and by extending the audio recordings to the art-viewing component as well as the art-making component of each session. We also sought to address some of the methodological limitations mentioned above, with particular focus on whether a longer intervention (increasing the number of sessions from three to eight and length of sessions from 90 to 120 minutes), as suggested by Camic, Tischler and Pearman (2014), would impact cognition. Camic et al. hypothesized that given the encouraging findings of Eekelaar et al. increasing the duration and number of sessions may provide more time for participants to acclimatize to the group environment by feeling more socially included, allowing more time to practice cognitive skills, and to more fully explore creative activity. In the current study it was hypothesized that (H1) verbal fluency, (H2) semantic clustering and (H3) lifetime memory reporting, would increase across the series of eight sessions.

Method

Participants

Data was drawn from two similarly run groups based in a contemporary art gallery setting using opportunity sampling. The first group consisted of five individuals with dementia (four female) and their caregivers. The second group consisted of eight people with dementia (seven females). All participants were white British. The mean age of those with dementia in group one was 78.8, SD: 12.52, (range, 60-94) and in group two, 81.6, SD: 6.76, (range, 73-91), a t-test revealed that there was not a statistically significant difference between the mean ages of participants in each group ($t = 0.53, p = 0.38$). A family caregiver accompanied people with dementia in all but one instance. Inclusion criteria was not limited to a type of dementia (e.g. Alzheimer's or frontotemporal) but stipulated persons with

dementia to be aged 60 or over and in the mild-moderate range as assessed by a Mini Mental State Examination (MMSE) score between 10 and 24 (MMSE, Folstein, Folstein & McHugh, 1975). Participants with comorbid medical or psychiatric diagnoses were excluded from the sample. Ethical approval was granted by XXXX ethics panel (name removed during the review for anonymity) and followed British Psychological Society guidelines. The attrition rate was zero with all participants completing the series of eight sessions.

Design

The current study analysed audio-recorded data that was collected during two, eight-week interventions. Each weekly session was two hours in length and consisted of one hour of art-viewing followed by one hour of art-making. A control group was not used.

Procedure

The sessions were facilitated by an artist educator who had received dementia awareness training by a consultant psychiatrist and clinical psychologist prior to running the groups. The study was set in a contemporary art gallery during normal opening hours and each week involved discussion about a different piece of art from the gallery's temporary exhibitions. Materials provided during the art-making portion of the group included paint, pencils, block printing materials and charcoal. Participants were each provided with an art sketchbook and were encouraged to use this to make notes and draw. These were collected at the end of each session but were available for participants to take home following the final session. Participants were accompanied by family or paid caregivers who fully participated alongside those with dementia in art-viewing and in art-making components by taking part in discussions and making art. They also played a supportive role and offered encouragement as needed.

Structure of Sessions.

1. Introduction and discussion of objects: Participants were greeted in the studio and refreshments provided. In weeks 2 - 8 they were invited to bring with them “interesting objects” for the group to discuss. The group passed around the objects and discussed them in terms of their personal relevance, aesthetic features and function. Following discussion and handling of these objects, the groups moved to the gallery.
2. Structured art-viewing: In the gallery, participants were given time to observe a specific piece of art work. Following this, the facilitator prompted discussions by asking questions about the art (e.g. “how would you describe this art work in one word”, “what colors do you notice”, “how does this piece make you feel”). The discussion questions sought to elicit aesthetic, sensory and emotional responses without relying on previous knowledge of visual art; they were developed from previous studies (e.g. Eekelaar et al., 2012; MacPherson et al., 2009; Rosenberg, 2009) and in consultation with an advisory group of older adults and art gallery educators. Following this discussion, participants returned to the studio.
3. Art-making: Refreshments were made when all participants had returned to the studio. Participants were provided with various materials and encouraged to use different media such as paper, clay, paints and fabric. The facilitator demonstrated different techniques to participants (e.g. collage, colour mixing) and was then available throughout the art-making sessions to assist them, providing encouragement and making suggestions as necessary. At the end of each art-making session, one participant was encouraged to volunteer to act as curator. This involved choosing art

which had been made and displaying it for discussion. The group as a whole then participated in a question and answer period about the art they had created.

Analysis

Audio recordings of both art-making and art-viewing sections of the sessions were transcribed verbatim and analysed using quantitative content analysis (Krippendorff, 2004). Due to failed audio recordings, 6.25% of the data was missing. Holsti (1969) defined content analysis as a “technique for making inferences by objectively and systematically identifying specified characteristics of messages” (Holsti, 1969, p. 14). Weber (1990) suggests that content analysis, in contrast to the completion of standardised measures or direct interviews with participants, is beneficial as those communicating the message are unaware of the analysis, reducing the possibility of the measurement confounding the data. Content analysis is also seen to be useful due to its ability to allow quantitative exploration of qualitative data, adding to the ability to compare and interpret information gathered from participants (Krippendorff, 2004). In the present study group rather than individual data was analysed and although this is an unusual application of content analysis, this approach allowed group verbal activity to be measured in the naturalistic environment of the gallery as opposed to a clinical or laboratory setting where more control is possible but arguably, the essence of the gallery experience would be lost (Smith, 2014). The codebook developed in a previous exploratory study (Eekelaar et al., 2012) provided the coding frame (See Appendix). This approach to coding, recommended by Neuendorf (2002), uses previous research and theory to identify relevant text units. Another approach recommended by Neuendorf also considers the use of an inductive process, whereby codes that emerge during analysis are noted. Both approaches were used in the present study, consequently leading to minor adaptations of Eekelaar’s codebook. Transcripts were read and re-read to familiarize the researchers with the data followed by the initial application of coding categories by the first author. The

percentage of participant speech coded within each session was calculated for each code by the first author and verified by the second and fourth authors. Due to the lack of individual data being available, further statistical analysis was not possible. Data has therefore been presented graphically to allow assessment of patterns over time.

Reliability

Weber (1990) notes that in order “to make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent. In order to determine reliability of the codebook, initial coding was conducted on 100% of the data by the first author and inter-rater reliability was then ascertained from a random sample of 20% of this data by the fourth author, who was not aware from which session data had been drawn from. Both coders were familiar with the codebook and coding system used. Inter-rater agreement was calculated using Cohen’s kappa coefficient and determined to be 0.97, indicating an excellent level of agreement compared with a recommended acceptable level of agreement of 0.8 (Landis and Koch, 1977). Analysis of each utterance in random order would have been preferable in order to decrease the impact of any possible bias to the coding. Coding bias was, however, unlikely to have been significant as the data does not show clear trends.

Results

Disfluencies

Data was coded as disfluent if a sentence or segment of speech contained false starts, revisions, prolongations, hesitations, and/or repetitions. The data for art-making and art-viewing components of the intervention were analysed separately (Figure 1). In the first session, within the art-viewing component, disfluencies were 18.92%, in the final art viewing session this fell slightly to 17.72%. In the art-making component, data for session one was

missing, but in session two, disfluencies occurred 10.14% which decreased to 7.95% in session 8. Therefore, the decrease in disfluent speech was more considerable in the art making than the art viewing segments of the intervention although both suggest that the intervention led to less disfluent speech. This supports the first hypothesis that verbal fluency increased across the course of the intervention. As can be seen in figure 1, there was variation in the percentage of disfluencies between sessions and although an overall decrease in both art viewing and art-making segments was found, this decrease does not present in a linear fashion. In order to calculate the significance of the difference observed between the art viewing and art making segments, chi squared calculations were completed. This demonstrated that in sessions three, six and eight there was a significant difference between the percentage of disfluencies coded. (Session three: $\chi^2(1, N= 79)= 20.57$, $p= 0.000$. Session Six: : $\chi^2(1, N= 284)= 11.43$, $p= 0.001$, Session eight: $\chi^2(1, N= 95)= 6.982$, $p= 0.008$.)

Examples of segments of disfluent speech in different sessions are presented below:

Session 1: *"Yes it was bombed in a, a lot of different places"*

Session 2: *"I would have said they are trees, like tw, twigs."*

Session 4: *"Well I can say I, I, I can say that, I can perhaps allow myself to say that looks like a baby"*.

"It is er, a lovely piece of, what, what I would call it, decoration, but how, what, wh, wh, how, what how maybe far?"

Session 5: *"I wouldn't want to meet it in a dark, on a dark night in a dark alleyway."*

Session 6: *"It is lovely the way somebody somewhere has got this, this tree and has put it with this tree, because that represents that, so they are joined together to*

become one and of course that which is in, out there, will help them all come together."

Figure 1 here

Semantic clustering

Data were coded as semantic clustering when two or more semantically linked words or concepts were used with a maximum of one word separating them. Again, data from art-making and art-viewing components were analysed separately (Figure 2). In session one, in the art-viewing component, 10.66% of data was coded as semantically clustered, this increased to 40.61% in the final session, an overall increase of 29.95%. In the art-making segments, data was missing from session one but in session two 17.52% of data was coded as semantically clustered, this rose to 36.23% in the final session, a rise of 18.71%. This supports the second hypothesis that semantic clustering increased over the course of the sessions. As can be seen in figure 2, however, these increases were not linear and there is considerable variation between sessions.

Figure 2 here

Lifetime memory

Data was coded as lifetime memory if it made reference to a memory from the individual with dementia's life, for example; *"My father worked down the mines and he was a clever man"* (Figure 3). In the art-viewing segment of the sessions, in session one 12.05% of data was coded as lifetime memory, in the final session, this had increased to 19.23% an overall increase in reporting of lifetime memories of 7.18%. In the art making segments, data was missing from session one but in session two, 0% of data was coded as lifetime memory, indicating participants did not recall any memories, in session 8 however, 4.08% of data

included recall of lifetime memory. This supports the third hypothesis that reporting of lifetime memory increased over the course of the sessions. These increases were not linear in nature and variation between sessions was also present.

Figure 3 here

Discussion

The study looked at the impact of viewing and making art in a gallery setting on verbal fluency, measured as the amount of disfluencies and semantic clustering in speech, and on reporting of lifetime memories..

Verbal fluency

Disfluencies. When art-viewing and art-making components are evaluated separately, both resulted in a decrease in disfluency from the first to final session, overall suggesting that the intervention had been successful at decreasing levels of participant disfluency, particularly in the art making component. However, as shown in figure 1, there is considerable variance in disfluencies reported in each session. When looking at figure 1, it can be seen that the variation between sessions is high and it may be the case that the complexity of conversations about art varied between sessions, leading to this difference as more complex conversations may be likely to produce more disfluent speech. The art-making sessions, were less formal, frequently involving briefer conversations, taking place whilst focusing on completing the art-making task and between one or two individuals rather than including the whole group. Therefore, conversation in this component arguably became less anxiety provoking for individuals across the course of the sessions as they became familiar with each other, allowing a more substantial decrease in disfluency. Chi squared

was calculated for all 8 sessions individually in order to assess the difference between disfluencies in the art making and art viewing component of the intervention at each time point. A significant result, indicating there was a significant difference between disfluencies reported in the art making and art viewing components of the intervention, was obtained in three out of the 8 sessions. This suggests that the different components (e.g. including the art viewed and/or made during those sessions) may have impacted differently on cognitive functions.

Semantic clustering. Decline in language function includes a loss of semantic skills (Garrard, Patterson, Watson & Hodges, 1998). The current study showed an increase in semantic clustering of 29.95% from the first to last art-viewing session and of 18.71% in the art-making component suggesting a positive impact on verbal fluency over time. However, it is important to note the fluctuations in semantic clustering over the course of the sessions (Figure 2). This may again be due to the different subject matter discussed in the groups, with some weeks arguably being more demanding. However, without closer inspection of the content of each session and the complexity of this, it is difficult to provide definitive conclusions.

Overall, data collected with regard to disfluency and semantic clustering, presented encouraging findings, relating to the positive impact of such interventions on verbal fluency in people with a dementia.

Lifetime Memory. Overall, reporting of lifetime memories rose in the art viewing segments of sessions by 7.18% when comparing the first with the last week. In the art-making component, this also increased by 4.08%. More lifetime memories overall were produced in the art-viewing component of the groups. This may be due in part to participants being encouraged to bring in interesting objects from home to discuss in the art gallery

segment. The sharing of these objects, at times, acted as a prompt to discuss memories associated with the artefacts. It may also be possible that discussion of the visual art presented in the gallery stimulated individuals memories leading to increased reporting of these memories over time. This increase is interesting as the art groups were not set up specifically to provide a space for or focus on reminiscence, however, it seems that memory processes had been stimulated for individuals, which is also in line with individuals qualitative appraisals.

Limitations

The current study reports the cognitive impact of art-making and art-viewing on people with a dementia over a series of eight art gallery-based sessions. The study builds on the work of Eekelaar et al. (2012) by extending the number of sessions and allows a comparison of the art-making and art-viewing segments. However, the study had several methodological limitations, which could usefully be addressed by future research. Quantitative content analysis was used to analyse the experience of a group process in a public gallery during opening times in order to allow a naturalistic investigation and to normalize this process for participants. This led to limitations including not being able to video record sessions because of confidentiality and consent issues with members of the general public present. Having chosen to audio record sessions made it not possible to identify all individual participants from the recordings; therefore, participant data was grouped, which did not allow analysis on an individual level and did not allow inferential statistics to be calculated. This also meant that the data might have been vulnerable to being skewed by more or less vocal participants, although careful listening of the recordings did not support this concern. The grouping of the data from two separate, although similarly run, groups also means that potential differences between groups were not addressed. Future research may consider conducting multiple recordings with sophisticated recording

equipment and identifying individuals in these recordings immediately after the recording is made. Being able to provide individual data would also help to address the limitation of the current study in that further statistical analysis of the data was not possible. The measurement of lifetime memory reporting could arguably be confounded by the possibility of confabulation by participants. This would be a possible limitation in any group of this kind. However, in these particular groups caregivers were present in the sessions to corroborate memories and there was no evidence in caregiver recordings of disagreement with reports from participants. In exit interviews, caregivers commented positively on the impact of the groups and when asked, again supported participant reports.

The approach to recruitment used in this study resulted in a largely self-selected sample. People with a prior interest in the arts may have been more likely to respond to the advert and may have been more likely to benefit from the intervention. However, the audio-recordings revealed that several individuals had not previously considered themselves to have an interest in the arts, suggesting that the benefits of such an intervention may be applicable to a wider population. This study presented data from art-making and art-viewing components of the intervention separately, in order to allow consideration of any differences in outcomes achieved from each. It is acknowledged however, that this makes data vulnerable to a recency effect, as the art-making component always followed art-viewing. Although this was unavoidable as the art-making activities were dependent on the prior art-viewing, this may have led participants feeling more relaxed and confident in the art-making component, or may conversely lead to fatigue effects.

Implications for further research

This study has further demonstrated that art galleries can offer stimulating and evocative environments for people with cognitive impairments such as dementia. Future

research should consider controlled designs incorporating a usual activity control group in order to separate intervention specific factors from other variables such as social contact or leaving the home. Coding data immediately after sessions would allow identification of individual participants thus providing the opportunity for more robust tests of statistical significance to be carried out. Alternatively, the use of video recording would allow for easier identification of participant verbal responses as well as other non-verbal indicators (e.g. eye gaze and facial movement); this would necessitate, however, that the gallery not be open to casual visitors during sessions due to consent and confidentiality concerns. Also worth considering is the measurement of further cognitive skills in addition to verbal fluency, semantic clustering and memory.

Conclusion

The current study used novel ways to measure verbal fluency and memory in the naturalistic environment of a public art gallery for people with a dementia, and over a longer number of sessions than previous research has assessed. Although the study did not set out to attribute changes to any one factor, it does support the utility of using publically accessible art galleries for cognitive stimulation interventions with this population. The results need to be interpreted cautiously but they do provide additional support that on the whole, art-viewing and art-making in a gallery setting do not negatively affect cognitive ability in those with dementia, rather, the data hint towards the potentially positive impact of these interventions on verbal fluency and the stimulation of lifetime memories, although further exploration is necessary.

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Figure 1

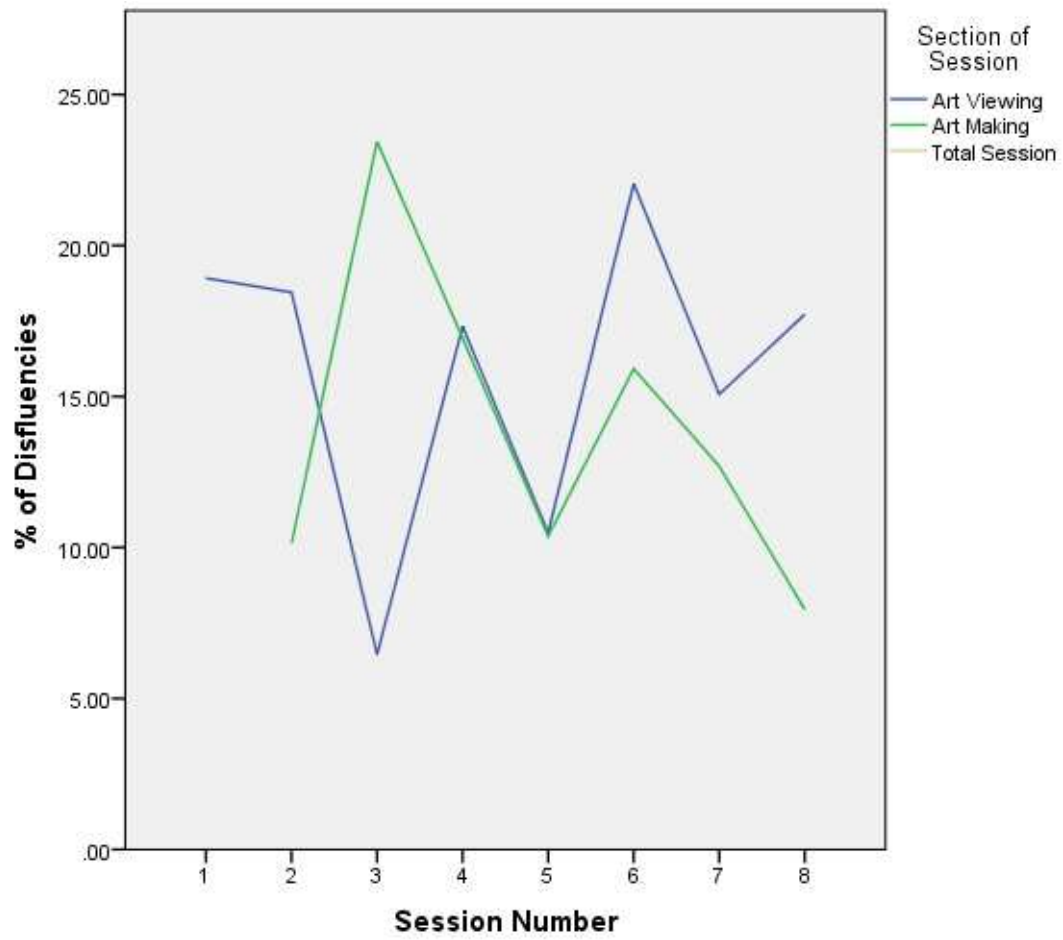


Figure 1. Disfluencies across eight time points

Figure 2

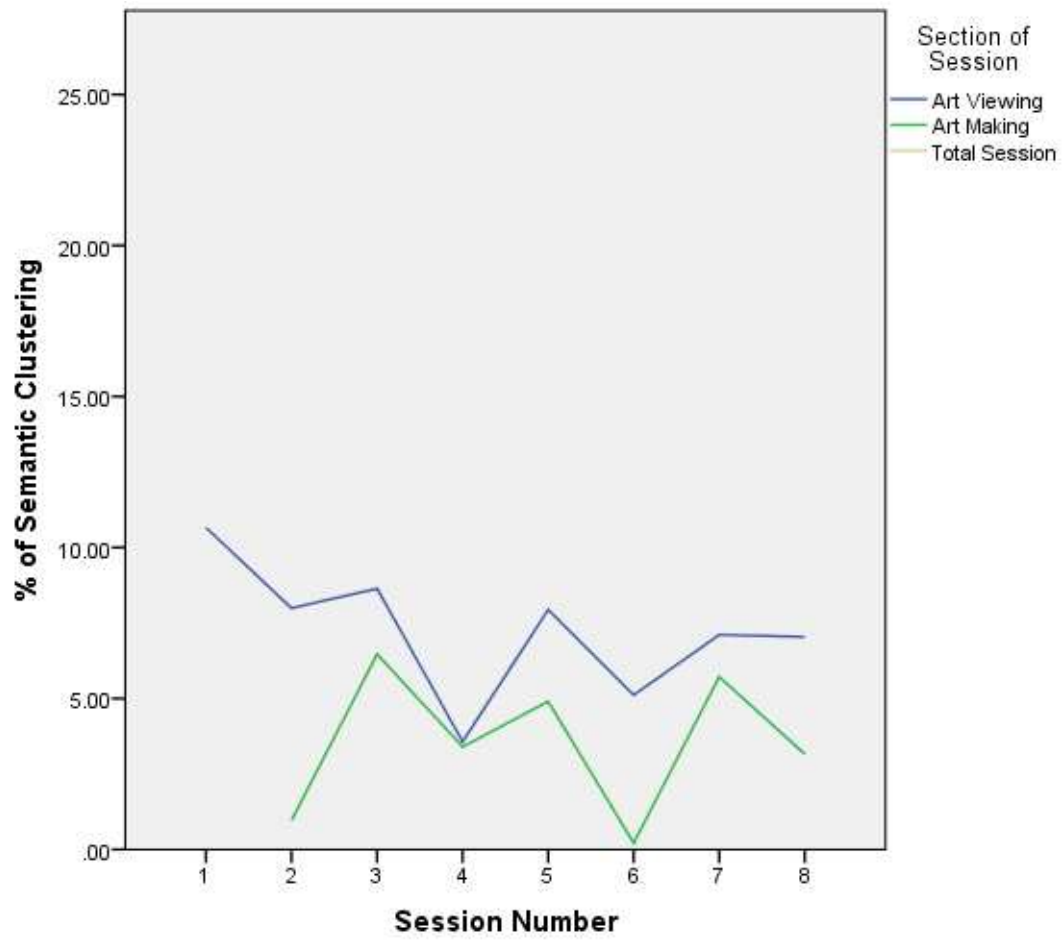


Figure 2. Semantic clustering across eight time points..

Figure 3

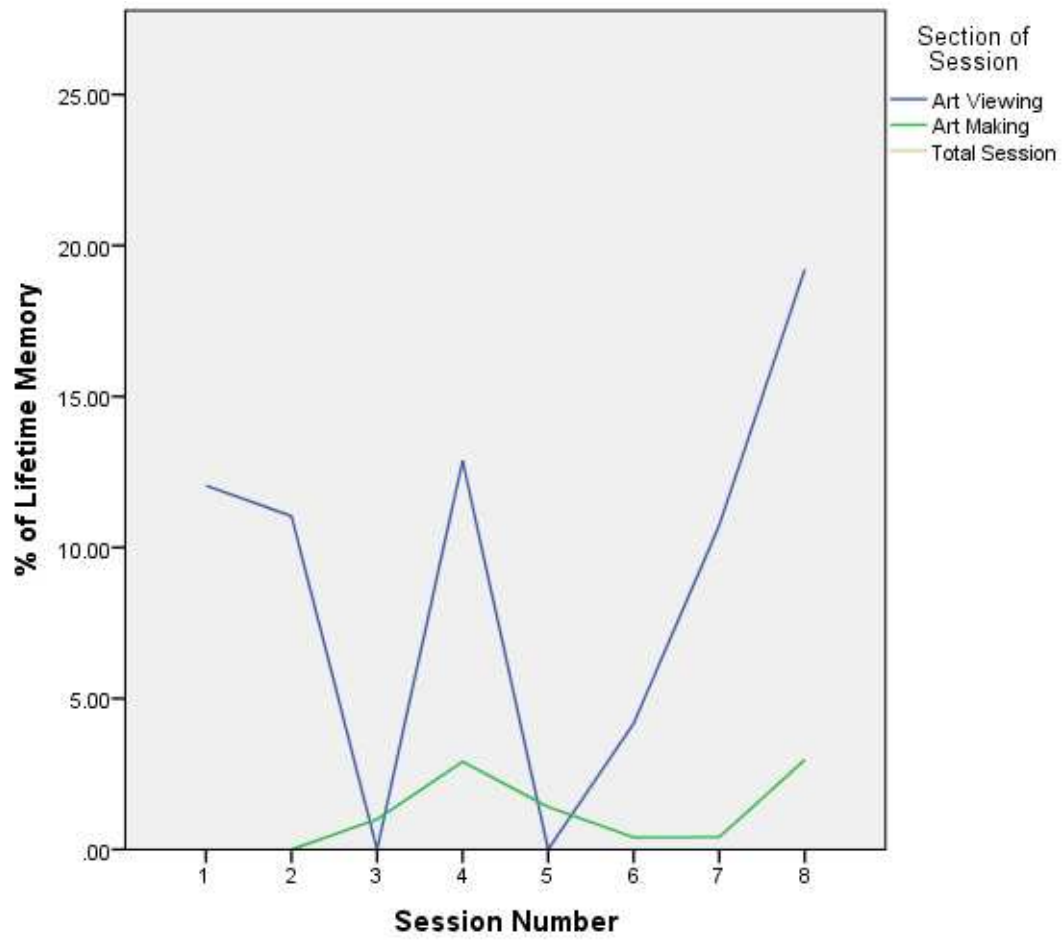


Figure 3. Lifetime memory across eight time points.

Appendix: Codebook examples

1. DISFLUENCIES

Description

Statements where speech is characterised by whole or part-word or phrase repetitions, false starts, revisions or prolongations, all of which are defined by Ellis & Rittman, (2009) as abnormal disfluencies.

Inclusion criteria

Statements which contain any of the above characteristics of disfluency.

Example text:

'It doesn't, it doesn't simplify, it, it, how can I say it, it may be that a child's being held by a mum or a father'

'All I am saying is, I am not making a fuss about it, I am, I am just saying that, that, is what happened'

Exclusion criteria

Extracts of text which do not contain any of the above characteristics of disfluency.

Example text:

"I don't mind hedgehogs I used to live with one in my garden"

2. SEMANTIC CLUSTERING

Description

Statements in which semantically-related words or phrases depicting semantically related concepts are produced rapidly one after another.

Semantics is defined by Harispe, Ranwez, Janaqi and Montmain (2013) as interpretation of any 'lexical units, linguistic expressions or instances, semantically characterized according to a specific context'. Therefore, statements in which more than one concept or word could be interpreted as semantically related are included.

Inclusion criteria

Any statement from PWD where two or more semantically-linked words or concepts are uttered in quick succession with at the most one word separating them.

Example text:

'He looks a bit disgusted, he looks puzzled, and disgusted'
'Oh it's my husbands, he died about 6-7 years ago now'
'Pen and ink'

Exclusion criteria

Strings of words or concepts which are separated by more than one word, or are not semantically linked.

Example text:

'As far as I know yeah...er, ot, other than that last one I think'
'Doesn't do much walking, but the hair is wrong'

3. LIFETIME MEMORY

Description

Content of speech includes reference to a memory about the life of PWD.

Inclusion criteria

Any statement from PWD that includes recalling specific events, activities, people, or animals from the person's life.

Example text:

'Reminds me of my dad when he used to clean out his pipe, it went down to the bottom and he twizzled it round and it came out all mucky'
'My father worked down the mines and he was a clever man'

Exclusion criteria

Any statement that recalls more recent memories from the previous art sessions (as these would be coded as *memory of previous session*).

Example text:

'I came here last week'