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Crook, N. and Adams, M. and Shorten, N. and Langdon, Peter E. (2015) Does the well-being of individuals with Down syndrome and dementia improve when using life story books and rummage boxes? A randomised single case series experiment. *Journal of Applied Research in Intellectual Disabilities*, 29 (1). pp. 1-10. ISSN 1360-2322.

DOI

<https://doi.org/10.1111/jar.12151>

Link to record in KAR

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This is the pre-peer reviewed version of the following article: Crook, N., Adams, M. & Langdon, P.E. (In Press). The effectiveness of life story books and rummage boxes on the well-being of individuals with Down Syndrome and dementia: a randomised single case series experiment. *Journal of Applied Research in Intellectual Disabilities*, which has been published in final form at [10.1111/jar.12151](https://doi.org/10.1111/jar.12151). This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

Does the well-being of individuals with Down syndrome and dementia improve when using life story books and rummage boxes? A randomised single case series experiment

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Peter E Langdon is funded by a National Institute for Health Research Postdoctoral Fellowship. This article presents independent research funded by the National Institute for Health Research (NIHR). The views expressed are those of the author(s) and not necessarily those of the National Health Service, the National Institute for Health Research or the Department of Health.

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Abstract

Background: This study investigated whether a personalised life story book and rummage box enhanced well-being and led to changes in behaviour for people with Down syndrome (DS) who have dementia.

Materials & Methods: A randomised single-case series design was used with five participants who had Down syndrome and a diagnosis of dementia. Participants were invited to take part in three conditions at random a) life story book, b) rummage box and c) no intervention condition.

Results: The two reminiscence conditions were significantly associated with enhanced well-being as compared to the no-intervention condition. However, for one participant, the life story book was associated with significantly higher well-being, while for another participant, the rummage box was associated with significantly higher well-being, suggesting some participants may prefer one method over another.

Conclusions: Personalised life story books and rummage boxes are associated with higher levels of well-being for people with DS and dementia.

KEYWORDS: dementia care mapping, reminiscence, cognitive stimulation therapy, learning disability, neurodevelopmental disorders

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The effectiveness of life story books and rummage boxes on the well-being of individuals with Down syndrome and dementia: a randomised single case series experiment

In 1876, Arthur Mitchell reported on sixty-two cases of men and women with Down syndrome (DS), concluding that "...death was attributed to nothing more definite than general decay – a sort of precipitated senility" (Fraser & Mitchell, 1876, p. 175). Later authors noted β -amyloid plaques and neurofibrillary tangles within the brains of people with DS (Neumann, 1967; Ohara, 1972; Olson & Shaw, 1969; Struwe, 1929), which have been reported in people as young as eight years (Leverenz & Raskind, 1998), and is thought to be caused by having three copies of the amyloid precursor protein (APP) located on chromosome 21 (Zigman, Silverman, & Wisniewski, 1996; Zigman & Lott, 2007).

Between the ages of 35 and 45 years, β -amyloid plaques increase and neurofibrillary tangles develop amongst people with DS (Wisniewski, Wisniewski, & Wen, 1985), while at the same time, and compared to the first part of the 20th century, the life expectancy for people with DS has increased considerably (Bittles, Bower, Hussain, & Glasson, 2007; Glasson et al., 2003; Penrose, 1949). Increasing life expectancy will be associated with an increased risk of age-related diseases, including dementia, although Zigman and Lott (2007) pointed out that although the risk of developing dementia amongst those with DS is highly elevated, it is not necessarily inevitable for all (Holland, Hon, Huppert, & Stevens, 2000; Holland, Hon, Huppert, Stevens, & Watson, 1998).

Recent advances in pharmacology, and our understanding of the aetiology of Alzheimer's disease, have led some to argue that large-scale drug trials investigating the effectiveness of preventative dementia drugs should be trialled with people who have DS (Ness et al., 2012). Although promising, effective drugs remain elusive, and

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the social care needs of people with intellectual disabilities (IDs) need to be met as the population grows older. Evidence from a recent review across five countries indicated that services need to develop better policies and strategies governing the provision of accommodation for older people with IDs in order to improve quality of life (Bigby, 2010), and while a recent qualitative study has suggested that staff working with people with DS and dementia tend to be highly committed to providing care, they need further guidance and support as care needs increase (Iacono, Bigby, Carling-Jenkins, & Torr, 2013).

There is evidence that psychological interventions for people with dementia can be helpful. For example, there is some limited evidence that cognitive behavioural therapy can help treat depression (Scholey & Woods, 2003; Teri & Gallagher-Thompson, 1991; Teri, Logsdon, Uomoto, & McCurry, 1997), and anger amongst those with dementia (Wisner & Green, 1986), while a Cochrane Review published in 2012 has indicated that cognitive stimulation therapy (CST) provides cognitive benefits for people with dementia. These positive effects include improvements in communication and quality of life, on top of any benefits brought about by medication. The review recommended that all people with mild to moderate dementia should have access to CST (Woods, Aguirre, Spector, & Orrell, 2012)

CST involves participating in a variety of activities, usually within a group setting, which improve general cognitive and social functioning. Aspects of Reality Orientation (RO) and Reminiscence Therapy (RT) are incorporated and help to orient people to their current environment and trigger memories by using materials, such as objects and photographs, sometimes drawn from a personal collection of items. Such interventions are recommended by the National Institute for Health and Care Excellence (2012) in the United Kingdom for people with dementia, but there is little

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evidence for the effectiveness of CST, which includes RT, when used with people with IDs.

Several studies have used life story work (e.g. developing a personalised story book about a person's life which includes photographs) with people who have IDs in order to aid communication (Hewitt, 2000), help remember the past (Porter, 1998), make the transition to the community from hospital (Hewitt, 1998; Middleton & Hewitt, 1999), and grieve following bereavement (Read, 1996). Van Puyenbroeck and Maes (2008) reviewed sixteen studies that involved some form of RT, although most were qualitative, and some were simply narrative or descriptive comments on the process of conducting RT with people with IDs. They commented that the existing literature has not considered the potential benefits RT may have upon the subjective well-being of people with IDs. However, they then went on to evaluate six reminiscence groups with older people with IDs, reporting no improvements in subjective well-being (Van Puyenbroeck & Maes, 2009).

In order to consider the potential benefits of RT further, we decided to evaluate aspects of RT, in the form of life story books or rummage boxes, compared to a no-intervention control condition, with five people who had a diagnosis of DS and mild to moderate dementia. A single-case series design was adopted in order to provide some initial data on whether these interventions are likely to be beneficial for people with Down syndrome before larger studies take place. The specific hypotheses were a) both life story books and personal rummage boxes would be associated with higher levels of well-being than the no-intervention control condition, and b) personal rummage boxes will be more effective than life story books as they are multi-sensory and their use is not as dependent upon communication skills and cognitive abilities.

Method

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Participants. Five participants with a diagnosis of dementia were recruited from services for people with IDs in the east of England. Participant characteristics are found in Table 1.

TABLE 1 ABOUT HERE

Design. In order to generate some initial evidence about whether aspects of RT are likely to be helpful for people with Down syndrome who have dementia, a randomised single case series design was used. All participants were invited to take part in three experimental conditions each lasting 30 minutes in duration a) life story book, b) rummage box, and c) no-intervention, where no structured activity took place, but participants were free to make use of their environment as they wished, which could involve interacting with others. Initially, all participants took part in two baseline periods of the no-intervention condition before moving to the intervention phase which involved taking part in each of the three experimental conditions on three occasions (nine occasions in total). The conditions were delivered over consecutive days. The order in which conditions occurred was randomised for each participant.

Measures. Dementia care mapping (DCM; Bradford Dementia Group, 2005; Brooker, 2005) was used as the primary outcome measure. DCM is an observational tool and method of delivering and evaluating person centred care (Brooker, 2005; Kuhn, Ortigara, & Kasayka, 2000). It is considered to be a measure of quality of life as it measures subjective well-being and activity levels amongst people who have dementia. Fossey et al. (2002) reported that DCM has good internal consistency, test-retest reliability and concurrent validity, correlating well with measures of quality of life. Others have successfully used DCM to evaluate care and support practices

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within services for people with IDs (Finnamore & Lord, 2007; Jaycock & Persaud, 2004; Jaycock, Persaud, & Johnson, 2006; Persaud & Jaycock, 2001).

Within DCM, well-being is measured using a Mood-Engagement Value on an ordinal scale that ranges from -5 to +5, where +5 represents a rating of being very happy and absorbed or deeply engrossed in an activity, while -5 represents marked distress, with crying or yelling. Activities are rated across 23 behavioural category codes (e.g. Articulation = Interacting with others verbal; Kum and Go = Walking, standing or moving independently) which measure types of activities that are observed. Therefore, following the principles of DCM, behaviour was recorded using the Behaviour Category Code (BCC), while mood and engagement was recorded using a Mood-Engagement Value (ME). Within the current study, behaviour and well-being ratings of individuals were recorded at one point in time using fixed 1 minute intervals.

Indicators of mood were taken from facial expression, body language, posture, content and tone of verbal and non-verbal interaction. Following the principles of DCM, engagement was defined as the extent to which a person is connected to people, activities or objects around them. Following the completion of observations, a person's Well/Ill-Being (WIB) Score was calculated which is the sum of ME scores divided by the total relevant time frames. The WIB score was used as the measure of subjective well-being within this study. DCM was carried out by staff with appropriate training who were not briefed regarding the purpose of the interventions. Interrater reliability was calculated for each of the three conditions and overall with a person experienced in using DCM. Values were as follows: a) life story book, $k = .96$, b) rummage box, $k = .94$, c) no-intervention, $k = .88$, and d) overall, $k = .91$.

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Procedure. A favourable ethical opinion was gained from Cambridge 3 National Health Service (NHS) Research Ethics Committee. Following this, NHS services for people with IDs were approached and asked to help recruit participants with DS and mild to moderate dementia. This study complied with the Mental Capacity Act, 2005, which provides a legal framework for recruiting participants into research studies who may not have the capacity to give or withhold consent. In order to help ensure that participants were afforded opportunities to express their views about participation, adaptations were made to the way information about the study was shared. For example, a short demonstration of reminiscence was given by exploring an object related to the person's early life together with the potential participant. Green and red coloured cards were also provided to participants as an aid to indicate agreement or disagreement. However, together with staff members, and following attempts to explain the study, it was decided that none of the participants invited to take part in this study had capacity to consent to decline or agree to take part. Therefore, in accordance with the Mental Capacity Act, 2005, a consultee was identified by asking the participant and the staff member to identify a relative who knew the person well who would be able to take on this role. Where this was not possible, a nominated consultee who had no connection to the research project was identified (e.g. a member of the care team). Information sheets detailing the study were provided to consultees, and they were asked to indicate whether or not they thought the participant would like to take part. The consultees for each the five participants indicated that they thought the participants would like to take part in this study.

Consultees or other family members were asked to share photographs and personal memorabilia which were used to create personalised life story books and rummage

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boxes for each participant. The researcher (NC) had been provided some historical information about each item for each participant in order to help facilitate interaction. Each condition took place within a communal area during the day time within the person's day centre. During reminiscence, the researcher delivered the intervention and the consultee, or a member of staff, was present; together, if they felt that the participant did not want to take part, the intervention would have been stopped, although this did not happen for any participants.

Data Analysis. WIB scores across the conditions were presented graphically for inspection for each participant. The frequency of BCCs were also calculated and presented within Tables for visual inspection. A randomisation test which is equivalent to the Kruskal-Wallis test was used to compare participant scores across the three conditions by calculating four contrast statistics comparing WIB scores across conditions. The first contrast compared both reminiscence conditions together to the no-intervention condition, while the second and third contrast tested whether the life story book and the rummage box were significantly different from the no-intervention condition separately. The final contrast compared the two reminiscence conditions to each other.

Results

Participant 1: Elaine. Figure 1a indicates that both reminiscence conditions may have been beneficial for Elaine, compared to the no-intervention condition, although higher mean WIB scores were noted for the life story book. The analysis revealed that both reminiscence conditions led to significantly higher ($p < 0.05$) mean WIB scores than the no-intervention condition. Both the life story book ($p < 0.05$) and the rummage box ($p < 0.05$) separately led to higher mean WIB scores than did the no-

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intervention condition, while there was no significant difference ($p > 0.05$) between the two reminiscence conditions.

Turning to BCCs, the life story book stimulated “Intellectual” activity, while the rummage box led to more attachment to “Objects” being coded (Table 2). Both reminiscence conditions led to more communication with the researcher than the no-intervention condition as indicated by the “Articulation” codes. During the no-intervention phases, “Leisure” activities were coded more frequently, and the predominant activity observed was self-initiated colouring. Dancing was also observed briefly, while disengagement was also observed as indicated by the “Cool” code.

FIGURE 1 ABOUT HERE

Participant 2: Suzy. During the second initial baseline condition there was an increase in Suzy’s mean WIB score which was associated with engagement with a member of the care team. Suzy had the highest mean WIB scores during the rummage box condition, followed by the life story book, and finally the no-intervention condition (Figure 1b). There was a dip in mean WIB score during the third presentation of the life story book, which continued with the following two no-intervention conditions, but recovered when the rummage box was presented, and reduced again, when the final no-intervention phase was presented (Figure 1b). The dip in WIB score during the third presentation of the life story book may have been associated with Suzy wishing to continue to hold on to a magazine that she had previously before the beginning of the life story book condition. There was no significant difference ($p > 0.05$) between the combined reminiscence conditions and

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the no-intervention condition for Suzy. Examining the two reminiscence conditions separately revealed that while the life story book did not lead to a significant increase in mean WIB scores ($p > 0.05$), the rummage box did ($p < 0.05$), as compared to no-intervention. However, there was no significant difference between the two reminiscence conditions ($p > 0.05$).

Examining the BCCs revealed that during the no-intervention condition, most of the time was coded as “Doing for Self”, where Suzy smoothed her hair or straightened her clothing; she also passively watched others (“Borderline”) and looked at magazines (“Leisure”; Table 2). The most frequent behaviours observed during the life story book sessions were self-care skills (“Doing for Self”), eating (“Food”); Suzy brought and ate a cereal bar during the sessions) and leisure activities (“Leisure”). The rummage box sessions encouraged the highest level of verbal and non-verbal communication with others (“Articulation”) and displaying attachment to an object (“Objects”) across all three conditions. The reminiscence activities stimulated behaviours absent during the no-intervention conditions, such as “Intellectual” activities and displaying attachment to inanimate “Objects”. Activities initiating engagement with the senses (“Timalation”) also increased during the reminiscence sessions. Certain behaviours present during the no-intervention condition were absent during the reminiscence, such as passive engagement (“Borderline”), withdrawal (“Cool”), sleep (“Nod land of”), being “Unresponded to” when attempting to communicate, and interaction with oneself, such as talking to herself (“Yourself”). There were also fewer activities associated with self-care during the reminiscence sessions (Table 2).

TABLE 2 ABOUT HERE

Participant 3: Neil. The highest mean WIB score was demonstrated during the life story book condition, followed by the rummage box condition and then the no-intervention condition for Neil (Figure 1c). His level of well-being remained relatively consistent for the two baseline sessions and initial no intervention session. This value then rose with the introduction of the rummage box session, peaking in the third session with the life story book and remaining high with the delivery of the rummage box in session four. Neil's mean WIB score then dropped during the no-intervention condition and rose again with the life story book, only to decrease again during the no-intervention condition. Well-being increased again during the final two life-story book sessions. The mean WIB score obtained during the delivery of the second life story book condition was considerably lower than the other two conditions; care staff at the day centre reported that Neil appeared tired that week as he had been to respite the previous week. The combined reminiscence conditions led to a significant increase ($p < 0.05$) in mean WIB scores in comparison to the no-intervention condition. The life story book and the rummage box separately led to a significant increase ($p < 0.05$) in mean WIB scores in comparison to no-intervention, but the two reminiscence conditions did not differ significantly from each other ($p > 0.05$).

The frequencies of BCCs made across the three conditions for Neil are found in Table 2. Neil engaged in "Vocational" activities most frequently during the no-intervention condition, and this mainly involved knitting hats, a skill that he had been taught as a child. The second most frequent activity during this condition was "Leisure" activities, which involved looking at magazines with a member of staff. The life story book stimulated more verbal and non-verbal communication

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(“Articulation”) and “Intellectual” activities than the other conditions, whilst the rummage box condition encouraged the display of attachment to inanimate “Objects”. Reminiscence, in particular the rummage box condition, encouraged the display of a wider range of behaviours that were absent during the no-intervention condition. These included engaging in “Intellectual” activities such as reading numbers on a bingo card, “Expressive” activity, such as putting on a sailor’s cap that he had previously worn on a boating holiday, “Sexual Expression” demonstrated through kissing a picture of his favourite female singer and direct engagement of the senses (“Timalation”) by spraying his favourite can of deodorant.

Participant 4: Robert. The life story book condition led to higher mean WIB scores than the rummage box and no-intervention conditions, where similar mean WIB scores were observed for Robert (Figure 1d). His baseline sessions showed considerable range, and his low mean WIB score obtained during session two was likely to have been a reflection Robert feeling unwell that day and needing to go home early. His mean WIB score increased with the initial administration of the rummage box before declining markedly during the no-intervention condition, and remained low during the second no-intervention condition, and during the re-presentation of the rummage box. The WIB score rose dramatically during the fifth session when Robert was introduced to his life story book for the first time. His level of well-being then cyclically fell and rose, falling during the no intervention and rummage box conditions and rising again during two life story book sessions (Figure 1d). An interesting finding was that WIB scores appeared not to differ greatly between the rummage box and unstructured time periods. Statistical analysis confirmed these observations; the combined reminiscence conditions did not differ significantly ($p > 0.05$) from the no-intervention condition, while mean WIB scores

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were significantly higher ($p < 0.05$) during the life story book, but not the rummage box condition ($p > 0.05$), again, as compared to no-intervention. The life story book led to a significantly greater increase ($p < 0.05$) in mean WIB scores in comparison to the rummage box condition for Robert.

Care staff explained that Robert tended to prefer watching activities rather than directly participating, and they wondered whether the unstructured nature of the rummage box task coupled with the focus of attention being directed towards him may have reduced his willingness to engage in the task. The frequency of BCC codes that Robert displayed across the three conditions can be seen in Table 2. During the no-intervention conditions, Robert mainly engaged in verbal and non-verbal interaction with others (“Articulation”), followed by being engaged in his environment but passively watching (“Borderline”) and finally drinking or eating (“Food”). He also spent some time withdrawn (“Cool”) or finding himself “Unresponded to” despite seeking social interaction. The reminiscence conditions showed that Robert chose to “Quit” or disengage with the rummage box and life story book work during a large proportion of the time available. Excluding the time that Robert chose to disengage, the life story book was mainly characterised by “Intellectual” activity followed by verbal and non-verbal communication with others (“Articulation”). Similarly, the rummage box condition initiated verbal and non-verbal interaction with others (“Articulation”), followed by “Leisure” activities which consisted of playing a game and looking through old football programmes. Reminiscence encouraged the expression of activities previously absent during the no-intervention condition such as engagement in “Intellectual” activities, relating to inanimate “Objects” and creative activities (“Expressive”), such as doing impressions of famous comedians and musicians.

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Participant 5: Joanna. Joanna's mean WIB score for each session can be seen in Figure 1e. The figure illustrates that both reminiscence conditions led to higher mean WIB scores than the no-intervention condition. Her WIB scores were similar across both baseline conditions and rose sharply with the introduction of the life story book, before declining during a no-intervention session. Her mean WIB score rose again with the administration of the rummage box and remained high during the following life story book and rummage box session, but declined during the final life story book session. Joanna's mean WIB reduced during the following no-intervention condition before rising again during the final rummage box session. Her level of well-being reduced again during the final no-intervention condition (Figure 1d). Statistical analysis indicated that both reminiscence conditions led to significantly greater mean ($p < 0.05$) WIB scores than did no-intervention. Significantly higher ($p < 0.05$) mean WIB scores were observed for both the life story book condition and the rummage box as compared to no-intervention, while there was no significant difference between the two reminiscence conditions ($p > 0.05$).

The behaviour most frequently recorded during the no-intervention condition was "Vocational" work-like activity, followed by passive engagement in her surroundings ("Borderline") and engaging in verbal and non-verbal communication with others ("Articulation"; Table 2). Joanna had previously worked as a volunteer within the day centre that she now attends, and continued to take great pride and satisfaction from carrying out those work activities she could still master. The life story book condition stimulated mainly "Intellectual" activity and verbal and non-verbal interaction with others ("Articulation"). The rummage box condition also encouraged communication with others ("Articulation"). A relatively high number of self-care ("Doing for Self") and creative activities such as miming and dancing ("Expressive")

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were observed during the rummage box condition in relation to the other conditions.

There was a similar diversity of behaviours across all three conditions (Table 10).

Finally, combined data for all participants (Figure 1f) indicated that the two reminiscence conditions were associated with higher WIB scores, as compared to the no intervention condition; visually, there appeared to be little difference between the life story book and the rummage box condition.

Discussion

The results of this study indicated that life story books and rummage boxes were associated with higher levels of well-being, as compared to no-intervention, and therefore the first hypothesis was supported. However, this was not consistent across all participants as Suzy had higher well-being scores when using the rummage box, compared to the life story box, while for Robert, the reverse was the case. Moreover, although there were some differences noted for Suzy and Robert, overall both reminiscence conditions were associated with higher levels of well-being, and therefore the second hypothesis that the use of rummage boxes would be associated with higher well-being than life story books was not supported. Both reminiscence conditions tended to be associated with an increase in communicative, expressive, and intellectual behaviours, including behaviours which evidenced attachment to objects, as noted within the behaviour categories coded during DCM.

It is important to comment on some of the behaviours observed during the reminiscence conditions, which tended to suggest that participants enjoyed taking part. For example, Robert, when looking at a photograph of his family during the life story book condition, circled the photograph with his finger and said, “They’re all mine”. Elaine was noted to spend time after the life story book session talking about her mother; something that staff said was a behaviour they observed frequently before

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her dementia progressed. Some participants became tearful during the life story book condition, especially when viewing photographs of family members who had died.

During the rummage box condition, some participants were initially hesitant to take part and the researcher had to take the lead in order to encourage engagement. However, participants responded, although Robert was less willing to engage in this condition, and a variety of behaviours were observed. For example, one participant impersonated famous artists, and some participants appeared to remember objects that they had been given earlier in their life which were then used. For example, Neil recognised his silver medal he won during the Paralympics, placed it around his neck, and showed it to others, saying “I’m very proud of that”.

Overall, the findings suggest that taking part in RT was associated with improved well-being during the tasks, and led to a change in behaviour, amongst people with Down syndrome and dementia. These results are not dissimilar from that reported involving people with dementia who do not have premorbid IDs (Woods et al., 2012), and supports the view of Van Puyenbroeck and Maes (2008), who thought that RT may improve the subjective well-being of people with IDs. However, in a later study, Van Puyenbroeck and Maes (2009) reported no significant improvements in subjective well-being following RT groups with older people with IDs. However, they did report that support workers noted some improvements in self-confidence and life satisfaction amongst participants taking part.

Although the findings of the current study indicate that RT is associated with improved well-being of people with Down syndrome and dementia, there are some problems with this study that need to be recognised. First, it is not possible to blind staff, participants, the researcher, or those undertaking DCM within these types of studies; this will always be the case as direct observation is required. Although those

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who completed DCM were independent to the study, and inter-rater reliability was high, it remains possible that bias may have influenced some of the ratings assigned. Second, novelty may have had an impact upon well-being scores, as none of the participants had previously engaged with life story books or rummage boxes. However, even if novelty led to an increase in well-being, this in itself is not necessarily problematic, but may mean that the effects reduce over time. Third, the study took place within day centres, where there were other people present, including staff members. Occasionally, while taking part within an experimental condition, some participants sought to share information with other staff members or consultees, which may have affected ratings of well-being and behaviours. Fourth, this study employed a single-case experimental methodology, and as a consequence, firm conclusions about causality cannot be inferred, but rather, the findings indicate an association between RT and well-being and behaviour while taking part in the tasks. It may also be possible that there were carry-over effects across conditions, but considering that the order of the conditions was randomised, this appears to have been unlikely, although cannot be entirely ruled out. Finally, well-being was measured during task engagement within this study, and it remains possible that other structured activities could also bring about similar improvements in well-being during task engagement. Related to this, there was no follow-up, and it may be the case that well-being scores dissipate with time following continued engagement with the same objects and contents within the rummage boxes and life story books.

Finally, the findings are relevant to clinical and social care practice, but before recommendations can be made about the suitability of RT for people with Down syndrome, larger randomised controlled trials would be needed. However, considering the findings from the current study within the context of the evidence

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supporting RT with people with dementia (Woods et al., 2012), it would seem appropriate to suggest that RT is likely to be beneficial for people with Down syndrome, although such a recommendation could only be confirmed once large randomised control trials were completed, which allow for longer follow-up and further investigation into the effects of RT delivered at an individual or a group-based level.

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Table 1

Participant Information

Pseudonym	Age	Duration of Dementia Diagnosis	Co-morbidity	British Picture Vocabulary Age- Equivalent Score
Elaine	58	1 year	Hypothyroidism, hearing impairment	2 years, 9 months
Suzy	63	2 years	Hypothyroidism	2 years, 4 months
Neil	60	2 years	Hypothyroidism, peripheral arterial disease	3 years, 3 months
Robert	60	2 years	Hypothyroidism, hearing impairment, visual impairment, cryptogenic organizing pneumonia	3 years, 4 months
Joanna	55	3 months	Visual impairment, alopecia	4 years, 5 months

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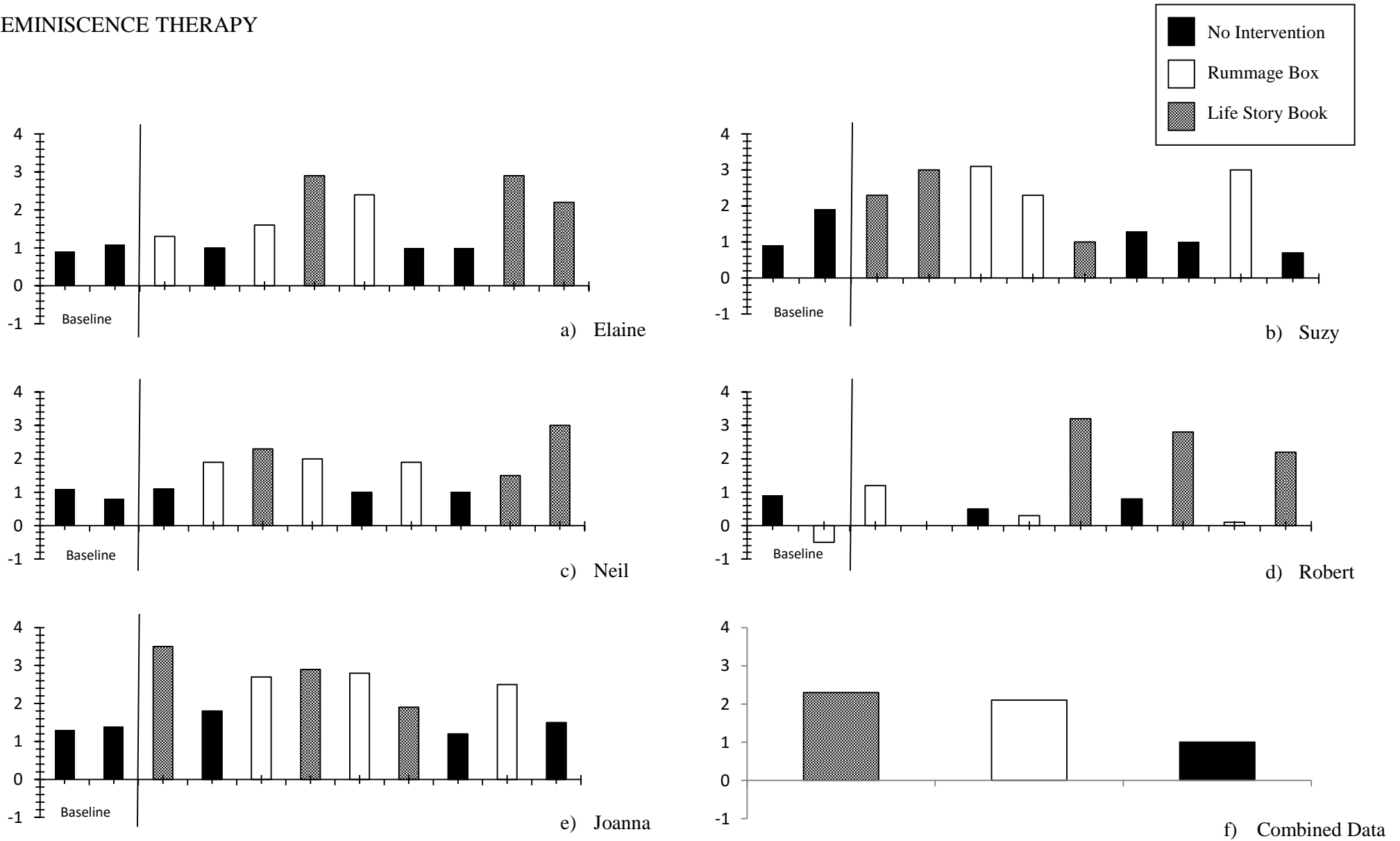


Figure 1: Mean Well/Ill Being (WIB) scores for each participant and all participants (combined data) across the three conditions.

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Table 2

Frequency (%) of Behaviour Category Codes (BCC) displayed across the three conditions for each participant

BCC	Elaine			Suzy			Neil			Robert			Joanna		
	LSB	RB	BL	LSB	RB	BL	LSB	RB	BL	LSB	RB	BL	LSB	RB	BL
Articulation	20	18		7	23	10	43	20	1	21	19	26	30	49	13
Borderline			6			19		1				18			21
Cool			2			3						1			
Doing for self	17	10	16	23	20	38	8	3	7	9	3	4	4	17	10
Expressive			2					1		6	7		4	13	6
Food	17		15	23			2	2	3	6	6	17	17		7
Intellectual	39	9	14	7	4		33	4		23			10	13	2
Kum and Go					10	1	2	1	6	1		2	1		6
Leisure		5	43	23		19		14	30	3	12			2	
Nod Land Of						4	2								
Objects	3	54		4	24		2	37			2		1	3	
Quit										24	47		1		
Sexual Expression							2		1						
Timalation	4	5		11	17	2	4	1							2
Vocational								13	52		1	1	1	1	33
Unresponded To						1						8			
Withstanding			2	1	1	1		1		2					
Excretion										4	3	4			
Yourself						1						9			
Total Number of Different BCC's shown	6	6	8	8	7	11	9	12	7	10	9	11	9	7	9

NB: LSB = Life Story Book; RB = Rummage Box; BL = Baseline