

## **Somerset Care Sundowning Study: A Report**

*Monday 28<sup>th</sup> September*

### *The study: A background*

Older adults with dementia or Alzheimer's disease often display symptoms of increased restlessness and confusion in the evening, when the sun is dipping behind the horizon. This psychological condition is colloquially referenced as *Sundowning*. Anxiety increases, aimless wandering is common and levels of distress are elevated (Ferencz et al., 2014). The condition most strongly affects those with mixed dementia and mid stage Alzheimer's (Oude Voshaar et al., 2015).

It seemed a reasonable hypothesis that:

H: Engaging with a calming influence would reduce the levels of anxiety associated with sundowning.

We had an opportunity to achieve this goal accurately, inexpensively and yet provide those suffering with Alzheimer's and dementia with pleasure.

### *Proposed solution*

The suggested solution involved running a study across two care home run by Somerset Care. The Frith home in Burnham-on-Sea where the interventions took place and Croft home in Williton. Croft was our control condition, chosen for its similarities to Frith; no interventions took place here but measurements common to both homes were taken. In this way we could gauge whether changes in measured variables were due to specific interventions (changes in Frith but not in Croft) or to common circumstances (similar changes in both homes).

Our work centred on a DVD series — *Calmer by Nature* — which features recordings of the British countryside. One of a pair of Calmer by Nature DVDs were played during two sundowning hours each evening, to see if they would (a) engage residents and (b) reduce their levels of anxiety. Two television lounges were always available to residents so that, should a resident wish to watch their favourite television programme this option was still available to them. The residents' television watching habits were monitored and their levels of anxiety checked. The study ran for three months between February and April 2015.

### *Residents' demographics*

*Table 1.* The residents

	Croft		Frith		Overall
Females	22		22		44
Males	4		8		12
Oldest	97		97		97
Youngest	78		70		70
Mean age (years)	85.92		84.13		84.96
Residents	26		30		56
	Wyndham Rd	Non Wyndham Rd	Beach	Sensory	
	13	12	14	14	
			Respite	Residents	
			14	13	

Croft divided older adults between those associated with Wyndham Road and those who were not. Meanwhile Frith recorded which older adults were to be found in two lounge areas — called the Beach and Sensory rooms — together with which individuals were registered for respite care and which were permanently resident in the home.

*Croft Register scales*

Only staff members at Croft were able to complete the residents' interaction questionnaire. We were able to identify two strong scales from the questions asked. These assessed *engagement* and *well-being*, and may be judged from the following tables.

*Table 2: Engagement Scale (Croft Only)*

<b>Item No.</b>	<b>Item</b>	<b>Inter Item Correlation</b>
1	Has been engaged with other residents	.68
2	Has been engaged with staff	.68

n = 2

r = .73

*Table 3: Well-being scale (Croft Only)*

<b>Item No.</b>	<b>Item</b>	<b>Inter Item Correlation</b>
3	Has been alert	.63
4	Has been physically well	.58
5	Has been in high spirits	.74
6	Has been content	.77

n = 4

 $\alpha = .87$ 

Given that only one of the care homes completed the interaction questionnaire, no comparisons between Croft and Frith were possible. However we were able to track the engagement and well-being scores for Croft for the whole of the experiment. The results are shown in Table 4.

*Table 4: resident interaction scores during the course of the experiment at Croft.*

Week	Scale	Mean	N
1	Engagement	5.06	26
	Well-being	5.25	26
2	Engagement	4.63	26
	Well-being	4.63	26
3	Engagement	4.98	24
	Well-being	5.02	24
4	Engagement	4.75	24
	Well-being	5.23	24
5	Engagement	5.32	22
	Well-being	4.92	22
6	Engagement	5.10	15
	Well-being	5.07	15
7	Engagement	4.25	2
	Well-being	4.00	2
8	Engagement	5.35	13
	Well-being	5.34	13
9	Engagement	5.75	2
	Well-being	6.00	2
10	Engagement	5.24	17
	Well-being	5.17	17
11	Engagement	0	0
	Well-being	0	0
12	Engagement	5.11	14
	Well-being	5.00	14
13	Engagement	5.50	21
	Well-being	5.51	21

*Statistical analysis*

A one way ANOVA was conducted to compare scores across the well-being and engagement scales over the course of the study (inadequate responses excluded weeks 6, 7, 8, 9 and 11 from the analysis).

Results indicate the engagement scale did not vary significantly across this period:

Wilks' Lambda = .065  $F(1,27) = 4.13, p = .209$

However the well-being scale did show significant difference across the period under observation: Wilks' Lambda = .005  $F(1,27) = 58.17, p = .017$

### *Interpretation*

Why well-being should have increased towards the end of the study is an area for conjecture. Without being able to compare the data between homes we are left to wonder whether, for example, the advent of spring improved mood as the study progressed. Perhaps Croft introduced different entertainment or food options. It may be worthwhile checking to see if any new ideas or systems were introduced. Such changes may explain the increase in well-being noted amongst the residents.

### *IQAD scores*

Professor Nancy Pachana of the University of Queensland gave us permission to use the questionnaire she had helped to develop to assess anxiety amongst older adults with Alzheimer's/dementia (Sobral et al., 2015). The Informant Questionnaire for Anxiety in Dementia (or IQAD) was used at both Croft and Frith. The results are shown in Table 5.

*Table 5: Differences in IQAD scores between Frith and Croft*

<i>Week</i>	<i>Mean IQAD score</i>		<i>t stat</i>	<i>df</i>	<i>Significance p=</i>
	<i>Croft (N)</i>	<i>Frith (N)</i>			
1	25.36 (25)	21.60 (26)	2.98	31.13	.006
2	25.42 (19)	20.36 (26)	3.91	18.43	.001
3	26.15 (13)	20.15 (25)	4.56	12.07	.001
4	23.00 (3)	20.64 (27)			
5	25.50 (6)	21.37 (27)			
6	29.00 (1)	21.30 (27)	Croft data field too small		
7	28.00 (1)	21.56 (27)			
8	24.00 (3)	21.78 (27)			
9	23.50 (12)	21.56 (26)	.728	11.93	.481
10	24.17 (18)	21.67 (27)	1.26	19.96	.223
11	24.04 (23)	21.56 (26)	1.78	35.24	.083
12	24.11 (18)	22.04 (26)	1.37	27.87	.182
13	23.23 (22)	22.26 (26)	.60	32.88	.552

It is noticeable that anxiety levels were significantly lower in Frith care home than they were at Croft during the first three weeks of the experiment. In week one, for example, note the significant difference in scores between Frith ( $M = 21.60$ ,  $SD = 3.94$ ) and Croft ( $M = 25.36$ ,  $SD = 4.34$ );  $t(31.13) = 2.98$ ,  $p = .006$ .

Due to small responses, data fields from Croft make little statistical sense during weeks four to eight. However from weeks nine to 13 — when the number of recorded responses return to earlier levels — there is no significant difference in anxiety levels between the homes. Table 6 gives a good indication of why this may be.

*Table 6: Differences in television watching habits within Frith care home (N = 28)*

Week	Mean television watching		t stat	df	Significance P=
	Nature DVD	Standard television			
1	2.04	1.00	1.95	27	<b>.062</b>
2	2.65	1.19	2.53	27	<b>.017</b>
3	1.92	.77	3.26	27	<b>.003</b>
4	1.81	2.04	.75	27	.462
5	1.23	1.92	1.34	27	.192
6	1.23	1.04	1.57	27	.876
7	1.08	1.38	.77	27	.447
8	.81	1.65	1.62	27	.118
9	.96	1.77	1.40	27	.174
10	.81	2.04	3.61	27	<b>.001</b>
11	.73	2.00	3.01	27	<b>.006</b>
12	.77	2.31	3.12	27	<b>.005</b>
13	.77	2.19	4.21	27	<b>.000</b>

*Interpretation:* This table reports the frequency with which each resident, on average, was seen, per week, in each of the two television lounges during the two evening hours of sundowning. One television lounge was showing a *Calmer by Nature* DVD, the other was showing standard television programmes.

Thus, for example, during Week 5 each resident appeared on average 1.23 times in the room showing the *Calmer by Nature* DVD between 5pm and 7pm. Meanwhile each resident appeared on average 1.92 times in the room showing standard television programmes during the same period. Naturally, some residents will have spent much more time in one room than another. Some will not have appeared at all in either room; these data show the *average* number of appearances across all residents.

*Statistics:* Notice how during the first three weeks there was a marked preference for the television lounge that played the Calmer by Nature DVDs. At the height of the DVDs' popularity in week 2, each resident was seen in the lounge 2.65 times, the highest figure in any of the study's 13 weeks across both conditions.

Notice also how the DVD viewing figures tail off from week 3. This table gives us quantitative evidence that the DVDs appeal palled as the study developed. Thus at the start of the investigation residents showed a clear preference for the nature DVDs ( $M = 2.04$ ,  $SD = 0.69$ ) compared to the standard television ( $M = 1.00$ ,  $SD = 0.57$ );  $t(27) = 1.95$ ,  $p = .062$ .

In the middle of the study there was no statistically significant difference between the viewings in either room. Look at week 7 as an example when the average number of residents watching the nature DVDs ( $M = 1.08$ ,  $SD = 0.64$ ) was similar to those watching standard television ( $M = 1.38$ ,  $SD = 0.68$ );  $t(27) = .77$ ,  $p = .447$ .

Yet by the final week residents seem to have eschewed Calmer by Nature ( $M = .77$ ,  $SD = 0.53$ ) and returned to their old favourites ( $M = 2.19$ ,  $SD = 0.97$ );  $t(27) = 4.21$ ,  $p < .001$ . Indeed one resident was heard to say "can we turn that bloody thing off?"

*What now?*

So where does this leave us? There are a couple of important points here

First the qualitative evidence seems to support the quantitative data. That is that playing nature DVDs has a calming effect on residents. Indeed the data show that some residents stuck with the nature DVDs right through the experiment. Thus while the overall averages declined, specific loyalties did not.

Second this overall calming effect appears to be transitory. There seems no *general* long term fix to be had by playing nature DVDs in order to reduce sundowning. Indeed the data suggest that overplaying the DVDs had a negative effect so that residents would avoid them. Nevertheless we do seem to have found something with a topical, general short term — and possibly individual long term — benefit.

#### *Long term impact and the next step*

This study precipitates the clear question ‘can we turn what is mostly a short term effect into something longer lasting, even something permanent?’ Hypothetically at least the answer is ‘yes’. There are two routes to explore.

1. The evidence from this study suggests that changing the offered viewing material is likely to regenerate interest in what is going on.
2. Evidence from wider psychological research dovetails with this study in suggesting that playing clips that speak to residents’ identities are also likely to be engaging. Engaging with people’s identities is also likely to have a longer lasting impact (Haslam, 2004).

Thus one clear route forward would be to allow residents a choice of viewing material developed *with them* as far as possible (this is likely to mean involving primary



carers too; Ferencz et al., 2014). The viewing material would then speak to how residents see themselves. The effect may be engaging, sociable and long lasting.

Immediately this offers the useful potential of providing a meaningful solution that should address many issues associated with Alzheimer's and Dementia. We would have a short term sundowning/anxiety fix using general calming material — and *Calmer by Nature* has been seen to have a clear effect here. This would be coupled with a longer term more permanent, crafted and nuanced identity based solution.

### *References*

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