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**Selective Forgetting of Self-Threatening Statements: Mnemic Neglect for Dementia Information in People with Mild Dementia**

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**Key Points**:

* The Mnemic Neglect Effect (MNE) involves selective forgetting of information that threatens the self. The MNE occurs among healthy adults, but it is unknown whether it occurs among people with dementia.
* Sixty-two people diagnosed with mild dementia recalled 24 dementia-related statements. We experimentally varied whether the statements (1) referred to the self or another person, and (2) were high or low in negativity.
* Participants manifested the MNE: they recalled fewer high-negativity statements when these statements referred to the self than another person. Recall of low-negativity statements was not affected by whether these statements referred to the self or another person.
* The MNE occurs for people who are living with dementia. Selective forgetting of highly negative and self-referent (dementia-related) information serves to protect the self against threat.
* **Word count: 3,998**

**Abstract (249/250 words)**

**Objective.** We tested whether people with dementia manifest selective forgetting for self-threatening information, the Mnemic Neglect Effect (MNE). This selective forgetting is observed among healthy adults in the recall, but not the recognition, of self-threatening feedback.

**Methods**. Sixty-four statements about dementia were rated for their level of negativity by 280 staff and students at University of the West of England. The 12 statements rated as most negative and the 12 statements rated as least negative were then read to 62 people with dementia. Participants were randomised to one of two conditions with the statements referring either to self or to another person. High-negativity and self-referent statements had strong threat potential. Participants recalled the statements and then completed a recognition task, which consisted of the 24 previously-read statements and 24 new statements.

**Results.** Participants manifested the MNE: they recalled fewer high-negativity (compared to low-negativity) statements, but only when these referred to the self rather than another person. This pattern occurred independently of levels of depression or anxiety. Participants also made more self-protective intrusion errors when the statements referred to the self than another person. Participants did not differ in their recognition of statements.

**Conclusion.** The MNE occurs among people with dementia. The selective forgetting of highly negative, self-referent statements serves to protect the self against the threat that dementia represents. Given the similarities between the MNE and the clinical phenomenon of repression, the findings may mark psychological processes that are implicated in the acceptance (or lack thereof) of a dementia diagnosis.

**Keywords**:dementia, Alzheimer’s disease, self-concept, memory, awareness, threat

**Selective Forgetting Self-Threatening Statements: Mnemic Neglect for Dementia Information in People with Mild Dementia**

**Introduction**

Dementia is a syndrome caused by a cluster of illnesses, the most common of which is Alzheimer’s disease. All forms of dementia are characterised by the progressive and gradual deterioration of cognitive abilities, although the nature and severity of these deficits differ depending on the specific diagnosis. Alzheimer’s disease is marked by progressive impairment in episodic memory, manifesting as forgetting, as well as problems with recognition and language. Other forms of dementia include dementia with Lewy Bodies, associated with visual hallucinations, and fronto-temporal dementia, associated with poor executive function (e.g., decision making, planning).

Although some dementia symptoms can be treated, there is no cure. As dementia progresses, not only do symptoms worsen, but they also become widespread, so that ultimately almost all domains of an individual’s functioning are impaired. The personal consequences of this global decline include increasing difficulty in carrying out many activities that are taken for granted in everyday life, a cumulative dependency on others, and profound changes in social relationships.

A common theme across psychological approaches to dementia has been to position it as a threat to the self 1, 2, 3 or to facets of the self, such as well-being 4, 5, 6 and relationships 7, 8, 9. If dementia represents a threat to the self, then the social psychological literature on self-protection, that is, on psychological mechanisms that underlie the processing and recall of self-threatening information (e.g., negative feedback), are likely to be relevant in understanding how people with dementia respond to the most threatening aspects of it.

A prominent theoretical formulation of feedback processing and recall is the mnemic neglect model. At the heart of this model is the mnemic neglect effect (MNE), which is defined as selective forgetting of self-threatening feedback 10. Specifically, participants recall poorly experimenter-provided feedback (in the form of statements or behaviours they are likely to enact) that is self-threatening compared to feedback that is not so. Although participants encode both types of feedback, they process self-threatening (compared to non-self-threatening) feedback in a relatively shallow manner, which in turn impedes retrieval. However, initial encoding of the feedback is sufficiently strong to ensure good recognition of it—both self-threatening and non-self-threatening. In addition, recognition is dissociated from recall: whereas the former refers to a discrimination task that is largely based on feelings of familiarity, the latter involves the conscious retrieval of details from memory 11.

The MNE has been robustly observed in laboratory and naturalistic settings 10.

It functions to protect the self. That is, participants engage in selective forgetting in an attempt to protect the self from the psychological discomfort that self-threatening information entails. People with dementia often come across information related to their illness, much of which may well threaten their sense of self. It is possible, therefore, that they exhibit the MNE for dementia-related information. This is the research question we addressed in the current study.

We reasoned that dementia-related information can be a potent source of self-threat. Self-threat, though, will vary. In particular, dementia-related information may range from high to low on negativity. High-negativity information is diagnostic or accurate of the illness and emphasizes the serious consequences of it for well-being (e.g., “*The illness means that you may forget the names of friends or family*”, “*As the illness gets worse, so you will increasingly come to rely on others*”), whereas low-negativity information is relatively non-diagnostic of the illness and refers largely to encouraging or manageable consequences of it for well-being (e.g., “*People with your illness can be distracted away from their problems*”, “*The illness means you will still be able to learn to do new activities*”). Further, dementia-related information may refer to one’s self (e.g., when provided directly by a medical practitioner during an assessment) or to another person (e.g., when contained in a pamphlet or dispensed generically by a medical practitioner). Thus, the most threatening dementia-related information includes aspects of the illness that are highly negative and refer to one’s self.

We adopted an exploratory approach to addressing whether the MNE will be observed among people with dementia. According to the mnemic neglect model, the MNE will emerge in the case of self-threatening (vs. non-self-threatening) dementia-related feedback: people with dementia, in an act of self-protection, will recall poorly self-threatening (compared to non-self-threatening) information. Alternatively, it is possible that people with dementia, given the salience of their symptoms and the prevalence of changes in their lifestyle, will be hypervigilant 12, 13 toward new and threatening dementia-related information. As such, they will process such information deeply and recall it relatively well: the MNE will be reversed (or at least cancelled out).

We tested a sample of 62 people with dementia. We presented them with 24 dementia-related statements that varied in level of negativity (high vs. low). For half of participants the statements referred to the self (self-referent), whereas for the other half they referred to a hypothetical gender-neutral person named Chris. (In the rare cases where the participant, a relative, or friend was named Chris, we changed the hypothetical person’s name to the gender-neutral name Jo). We also assessed participants’ levels of depression and anxiety. Subsequently, we instructed participants to recall the 24 statements and then recognize them (in comparison to a new set of 24 statements). Evidence for the MNE would be obtained, if participants recalled poorly the threatening (i.e., high-negativity, self-referent) statements, controlling for levels of depression and anxiety. As per prior research on the mnemic neglect model 10, we did not expect differences in recognition.

**Method**

*Materials*.We generated 64descriptive statements of dementia from material widely available within the UK (e.g., information leaflets published by the Alzheimer’s Society and the NHS Choices web-site[[1]](#footnote-1)) and intended to be read by people with dementia. Two-hundred and eighty staff and students from University of the West of England responded to an online Qualtrics survey ([www.qualtrics.com](http://www.qualtrics.com)) and made two ratings of each statement (1 = *not at all*, 6 = *extremely*) according to (1) how diagnostic of dementia it was, and (2) the extent to which it reflected serious consequences of dementia for well-being. As responses to the two questions were positively correlated (Appendix 1), we combined them into an index. This enabled us to select the 12 statements with the highest scores (high negativity) and the 12 statements with the lowest scores (low negativity; Appendix 1).

*Participants and Design.* Between February and October 2015, we recruited 70 people with dementia from three sites in the South West of England: two National Health Service (NHS) Mental Health Trusts and one independent memory clinic for NHS patients (Table 1, Figure 1)[[2]](#footnote-2). Participants were eligible to take part, if a diagnosis of probable Vascular Dementia 14, Alzheimer’s disease 15, or mixed dementia (based on clinical judgements of the psychiatric or medical teams) had been made within the previous 18 months[[3]](#footnote-3). All participants had mild levels of cognitive impairment, as demonstrated by scores on cognitive screening tests completed during the previous three months. Depending on the site from which participants were recruited, these were a cut-off score of 13 16 on the Montreal Cognitive Assessment (MoCA) 17, a cut-off score of 50 18 on the Addenbrooke’s Cognitive Examination-III (ACE-III) 19, and a minimum score of 15 on the Mini-Addenbrooke's Cognitive Examination (M-ACE) 20. Participants were also assessed by a member of their clinical team as having the capacity to consent to take part in the study.

We used a 2 (negativity: high, low) x 2 (referent: self, other) mixed design, with the first independent variable being within-subjects and the second being between-subjects. We randomly assigned participants to the levels of the between-subjects variable, self-referent and other-referent.

*Measures.* We measured anxiety with the Geriatric Anxiety Inventory 21 (GAI; a 20-item self-report questionnaire designed to assess levels of anxiety in an older population) and depression withthe 15-item Geriatric Depression Scale (15-GDS) 22. People with dementia who had either a significant history of pre-morbid psychiatric problems or were anxious/depressed (more than three standard deviations above the mean, and exceeding clinical cut-off points for severe levels of anxiety or depression) were not eligible for inclusion. Figure 1 provides a flow chart of participant recruitment. In the *other-referent condition*, three participants withdrew from the study after allocation, with a fourth participant being excluded due to extremely high levels of anxiety (15 or higher out of a maximum score of 20 on the GAI) and depression (12 out of 15 on the GDS). A further four participants completed the recall but not the recognition task. In the *self-referent condition*, one participant withdrew before completing the recall task, with two others being withdrawn due to high levels of anxiety and depression. Also, one participant completed the recall but not the recognition task. Finally, a protocol violation by the on-site researcher assistant (i.e., the participant was allocated to the other-referent condition, but the case record form suggested that the participant was treated as being in the self-referent condition), led to the removal of this participant’s data from analyses. Consequently, we entered data from 62 participants into the recall analysis, and from 57 participants into the recognition analysis.

*Procedure[[4]](#footnote-4).* We followed closely (but see below) the standard mnemic neglect protocol validated in prior studies with healthy adults 23, 24. Participants were tested by research assistants (three female, one male). The research assistants were blinded to participant condition allocation until after the consent procedure. In the self-referent condition, participants were instructed to “*Imagine that these descriptions relate to you*”, whereas, in the other-referent condition, they were instructed to “*Imagine that the descriptions relate to a person named Chris*.” The wording of the 24 statements varied slightly depending on whether they were self-referent (e.g., “*The impact of the illness depends on your emotional resilience*”) or other-referent (“*The impact of the illness depends on Chris’ emotional resilience*”). The order in which statements were read was identical in the self-referent and other-referent conditions.

In order to accommodate participants’ reduced cognitive capacity, we made two changes to the standard mnemic neglect protocol 25, 26. First, instead of presenting participants with a continuous stream of statements, the research assistants read out the statements in four sets of six, with each set containing three high-negativity and three low-negativity statements. Second, instead of positioning the free recall task after all of the 24 statements had been read out, the research assistants asked participants to recall as many statements as possible at the end of each set of six statements.

Next, participants completed a recognition task. The research assistants read aloud 48 statements comprising 24 “*old*” statements (those that participants had already heard) and 24 “*new*” statements (ones that participants had not previously heard and which we derived from the list of statements that had initially been rated for negativity). We include the new statements in Appendix 2. Participants were then asked whether or not they had heard each statement read to them. Finally, participants were offered a mood repair session (watching a brief comedy video) before finally being debriefed.

**Results**

*Recall*.We coded the recalled statements on the basis of a predefined gist criterion, in which we counted statements as correctly recalled if the text conveyed their general meaning 25, 26. For example, the statement “*The illness can make X feel depressed*” would be counted as correct, if there was a reference to beingdepressed or sad, grieving or upset.

We entered the number of statements recalled into a 2 (negativity: high, low) × 2 (referent: self, other) Analysis of Variance (ANOVA). The mnemic neglect model predicts an interaction between negativity and referent: recall will be lower when the high-negativity (vs. low-negativity) statements refer to the self rather than other. Indeed, this interaction was significant, *F*(1, 60) = 5.36, *p* = 0.024. Participants recalled high-negativity statements poorly when these statements referred to them (*M* = 2.42, *SD* = 1.43) rather than to Chris (*M* = 3.26, *SD* = 1.53), *t*(60) = -2.23, *p* = 0.029, *d* = 0.57. However, participants did not differ in their recall of low-negativity statements referring either to them (*M* = 1.74, *SD* = 1.51) or to Chris (*M* = 1.52, *SD* = 1.29), *t*(60) = 0.64, *p* = 0.53, *d* = -0.16. The MNE thus emerged among people with dementia for dementia-related statements. Moreover, this interaction remained significant after controlling for (i.e., entering in the analyses as covariates) depression, *Finteraction*(1, 59) = 5.03, *p* = 0.029, and anxiety, *Finteraction*(1, 59) = 5.475, *p* = 0.023. Finally, we obtained a significant main effect for negativity, *F*(1, 60) = 27.67, *p* < 0.001: overall, participants manifested better recall for high-negativity (*M* = 2.84, *SD* = 1.53) than low-negativity (*M* = 1.63, *SD* = 1.40) statements. There was no main effect for referent, *F*(1, 60) = 1.16, p = 0.286.

*Intrusion errors.* Participants made a total of 36 repetition errors (i.e., recalling a statement twice) and valence reversal errors. A valence reversal error was defined as one in which the recalled statement reversed or negated the meaning of the original statement that had been read aloud. For example, instead of the low negativity, other-referent statement “*the illness doesn’t mean that Chris has to stop doing the things that they enjoy*”, one participant recalled “*the illness may interfere with things Chris wants to do*.*”* Similarly, instead of the high negativity, self-referent statement “*your illness is a progressive disease*”, another participant recalled “*the illness does not mean that I will get progressively worse*.” The total combined number of repetition and valence reversal errors amounted to 11.50% of overall recall, approximately double the rate observed among healthy adults in laboratory experiments 27. The unusually high rate of intrusion errors led us to initiate a supplemental analysis that also tests the mnemic neglect model, uniquely so among people with dementia.

If the MNE is in the service of self-protection, then this will be reflected in the type of intrusion errors. Following previous research 28, we categorised such errors as either *self-protective* (i.e., valence reversal of high-negativity statements, repetition of low-negativity statements) or *non-self-protective* (valence reversal of low-negativity statements, repetition of high-negativity statements). We then compared the proportion of each type of intrusion error that participants made in the two referent conditions. We hypothesized that, if intrusion errors act to protect the self, then we would observe more self-protective errors (and fewer non-self-protective error) in the self-referent (than other-referent) condition. There was no significant difference between the self-referent (*n* = 15, 41.67% of all intrusion errors) and other-referent (*n =* 21, 58.33% of all intrusion errors) conditions in terms of the overall number of intrusion errors, *χ*2 (1) = 1.00, *p* = 0.317. However, a chi-square analysis yielded a significant association between referent and intrusion error type, *χ*2 (1) = 5.60, *p* = 0.018. Participants made a higher number of self-protective (*n =* 11*,* 73.33% of self-referent intrusion errors) than non-self-protective (*n =* 4*,* 26.67% of self-referent intrusion errors) errors in the self-referent condition, but made a lower number of self-protective (*n =* 7, 33.33% of other-referent intrusion errors) than non-self-protective (*n =* 14, 66.67% of other-referent intrusion errors) errors in the other-referent condition. This pattern of results reinforces the claim that the MNE is in the service of self-protection among people with dementia.

*Recognition.* Following prior research 27, we used Signal Detection Theory to analyse the recognition data. In order to take account for biases in responding, as would occur, for example, if a participant identified all 48 items as having been in the original list of words that was read out, we calculated a discrimination index (*d*1) by subtracting the ratio of false positives (or False Alarms) from the ratio of correct positive responses (or Hits). We entered the discrimination index scores into a 2 (high/low negativity) × 2 (self/other-referent) ANOVA. As expected, the interaction was not significant, *F*(1, 54) = 0.47, *p* = 0.49. No other effect was significant (Table 2).

**Summary of results.**

The MNE emerged among people with dementia: they manifested selective forgetting for self-threatening (i.e., high-negativity, self-referent) statements compared to non-self-threatening (i.e., low-negativity, other-referent) statements, regardless of their levels of depression or anxiety. The results pattern is consistent with the argument that the MNE is in the service of self-protection for people who live with dementia. Another result—pertaining to intrusion errors—is also consistent with this argument. Participants in the self-referent (vs. other-referent) condition were more likely to reverse the valence of high-negativity statements and to repeat low-negativity statements. Finally, as in prior relevant literature 27, recognition patterns did not differ. Although participants recalled fewer high-negativity statements referring to themselves than Chris, their recognition of these statements was equivalent, thereby indicating that all statements were encoded.

**Conclusions**

We presented participants with dementia-related statements that varied on negativity. Also, we kept the information content constant among participants while manipulating the referent; that is, some participants were read and recalled information that referred to the self, whereas others were read and recalled identical information that pertained to another person. These methodological strengths are uniquely suited to testing the mnemic neglect model.

The model states that self-threatening (relative to non-self-threatening) information is processed shallowly and recalled poorly 27, a phenomenon labelled the MNE. This phenomenon has been robustly observed among healthy adults. However, it was not clear whether it would be present among persons with dementia. On the one hand, such persons may find highly negative statements about dementia threatening, and thus process this information shallowly and recall it poorly. On the other hand, they may be vigilant toward highly negative, dementia-related information, and hence process it deeply and recall it well. We conducted the first investigation on the topic to find out.

The results indicated that the MNE occurs among people with dementia. They recalled poorly dementia-related information when it was self-threatening, that is, when it was highly negative and referred to them. However, they recalled dementia-related information relatively well when it was non-self-threatening, that is, when it was low on negativity and referred to another person. This pattern of selective recall aligns with the assertion that the MNE serves to guard the self against threat 27. We obtained additional evidence that participants engaged in information processing that is likely to reduce threat to the self. In particular, they committed more self-protective intrusions (i.e., valence reversals of high-negativity statements, repetitions of low-negativity statements) than non-self-protective intrusions (valence reversals of low-negativity statements, repetitions of high-negativity statements). Yet, recognition patterns did not differ for self-threatening versus non-self-threatening information, a finding that is consistent with the mnemic neglect model.

Our findings of the MNE for recall, but not recognition, are consistent with the dementia literature 29, 30, which suggests that people living with Alzheimer’s disease who do not explicitly acknowledge their illness often evince implicit awareness of it31. In one study, for example, people with early dementia took longer to read dementia-related words than neutral words matched for frequency and syllable length 32. However, although in that study the threat posed by the dementia-related words was indirect, the statements in our study were self-referent and the level of self-threat was manipulated.

It has been suggested that the memory impairments characteristic of dementia result in a failure to update personal information, and thus contribute to a “petrified self” 33. In contrast, our findings suggest that self-protection is not due exclusively to memory impairments caused by neural deficits, but is also due to psychosocial processes related to the level of self-threat. Qualitative analyses of the narratives of people living with dementia suggests that, for many, acceptance of the diagnosis poses a dilemma 34, 35: confronting their dementia directly at the risk of increased distress or retreating away from it at the risk of losing control. Some people with dementia appear to resolve this dilemma by exploring the more threatening aspects of dementia indirectly, through stories and metaphors 36, 37. This indirect exploration may decrease self-threat in a similar way as the other-referent statements did in our study. Within a clinical context, therefore, the differential recall of self-referent versus other-referent dementia-related statements can be understood as a proxy measure of the acceptance of a dementia diagnosis. As such, our investigation may constitute an alternative way of exploring whether the acceptance of a dementia diagnosis is influenced by psychological mechanisms related to self-protection.

*Study limitations.* We derived the ratings of dementia-related statements on self-threat from University of the West of England staff and undergraduate students rather than from people with dementia, because we wanted to avoid the risk of distressing the latter population. Of course, we cannot rule out the possibility that people with dementia might have rated the statements somewhat differently than university staff and students. However, we have reasons to be confident in the validity of the obtained ratings. *Firstly*, staff and students were familiar with dementia. As our informal observations suggested, many staff members completed the survey because of personal interest in dementia, and frequently because their lives had been affected by dementia (due to an association with a relative or friend). Also, students attended dedicated sessions on neurological conditions, including various forms of dementia, given that psychology across the lifespan in prominent throughout the Psychology programme at University of the West of England. *Secondly,* the results of the study validated the ratings; that is, the statements rated as highly negative were recalled poorly (when coupled with self-reference)

The attrition rate was high relative to mnemic neglect studies with healthy adults. This included five participants completing the recall task but withdrawing from the recognition task. One contributory factor may have been the semantic similarities between some of the recall statements and some of the (novel) recognition statements. For example, the recall statement “*The illness doesn’t mean that X has to stop doing the things that X enjoys*” is similar to the novel recognition task statement “*With the illness there is still much that X can enjoy in life*.” This similarity may have rendered the recognition task difficult and thus discouraged further participation. Again, we are confident in our findings. This attrition was limited to five participants, and the null results on recognition mimicked those of results obtained with healthy adults.

*Study implications.* Our findings have both clinical and empirical implications. On a clinical level, we selected our statements about dementia from information leaflets that are widely available in the UK and intended to be read by people who live with dementia. In our study, recall of some statements was improved when they referred to another person than the self. This finding suggests that information in such leaflets will be recalled better when self-threat is reduced, that is, when the statements refer to another person (e.g., the general or average other). Additionally, previous research has established that the MNE is cancelled out under various circumstances, such as when the threatening information is relayed by a close friend (rather than a stranger) 38, when motivation for self-improvement is strong (rather than weak) 39, when the threatening information pertains to aspects of one’s self that are modifiable (vs. fixed) 39, and when the self is bolstered (via self-esteem induction) prior to the delivery of threatening information 25. Extrapolating from these findings, dementia researchers may consider devising situations that are likely to improve the recall of threatening information. For example, nostalgic recall (relative to control) bolsters the self by augmenting psychological resources (e.g., self-esteem) in both non-clinical populations 40 and people living with dementia 41. Consequently, we expect that, following an induction of nostalgia, participants will be more likely to recall self-referent high-negativity information about dementia. We intend to test this hypothesis in a future study.

In conclusion, our research showed that people living with dementia exhibit selective amnesia for threatening information, that is, highly negative and self-referent information pertaining to their illness. As such, our findings contribute to the understanding of memory processes in people with dementia and, by implication, of psychological mechanisms underlying the acceptance of a diagnosis of dementia. We hope our findings spark additional investigations on the topic.

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**Conflict of interest**. None

**List of captions**

Figure 1: Flow Chart for Participant Recruitment. Page 23

Table 1: Descriptive Statistics Page 24

Table 2: Mean Discrimination Index Scores (*d*1) for Recognition

as a Function of Negativity and Referent. Page 25

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**Figure 1: Flow Chart for Participant Recruitment.**

1,638 people excluded

* Not meeting criteria (1,459)
* Declined (71)
* Other reasons (108)

1,708 people assessed for eligibility

Randomised (70)

“Self” condition

(n=35)

“Chris” condition

(n=35)

4 participants excluded from analysis (1 due to protocol violation1, 2 due to high level of anxiety or depression, 1 did not complete recall task)

4 participants excluded from analysis (2 did not complete the recall task, 1 withdrew consent and 1 due to high level of anxiety)

Analysis (n=31)

Analysis (n=31)

1 The participant was not assigned to the correct condition.

**Table 1: Descriptive Statistics**

|  |  |  |
| --- | --- | --- |
|  | **Self**  **(*n* = 31)**  **Mean (*SD*)** | **Other**  **(*n* = 31)**  **Mean (*SD*)** |
| Age | 80.94 (7.77) | 79.28 (7.01) |
| MoCA  ACE-III  M-ACE | 18.44 (2.79)  75.67 (8.47)  25.00 (3.16) | 20.27. (2.39)  78.75 (6.63)  25.80 (1.81) |
| Anxiety (GAI) | 2.36 (3.45) | 2.48 (3.30) |
| Depression (GDS) | 2.65 (1.94) | 2.35 (2.16) |
| Diagnosis   * Alzheimer’s * Vascular * Mixed | 17  8  6 | 24  4  3 |
| Gender   * Men * Women | 18  13 | 12  19 |
| Living status   * With spouse * Alone * With family | 21  7  3 | 25  5  1 |

*Note.* Depending on recruitment site, we used the following cognitive screening tasks: the Montreal Cognitive Assessment or MoCA (*n* = 20), the Addenbrooke’s Cognitive Examination-IIIor ACE-III (*n*  = 28), and the Mini-Addenbrooke's Cognitive Examination or M-ACE (*n*  = 14).

**Table 2: Mean Discrimination Index Scores (*d*1) for Recognition as a Function of Negativity and Referent.**

|  |  |  |
| --- | --- | --- |
|  | **High Negativity**  **Mean (*SD*)** | **Low Negativity**  **Mean (*SD*)** |
| **Self (*n* = 30)** | 0.18  (0.18) | 0.17  (0.12) |
| **Other (*n* = 27)** | 0.19  (0.18) | 0.21  (0.25) |

1. http://www.nhs.uk/Conditions/dementia-guide/Pages/dementia-choices.aspx [↑](#footnote-ref-1)
2. The trial was granted NHS Research Ethics Committee approval on the 18th of December 2014 (14/SW/1142), with two major amendments approved subsequently (15th of April 2015 for home visits and 13th of November 2015 for recruitment of Study 2 participants). The study received approval from the University of the West of England Faculty of Health and Social Sciences ethics committee on the 13th of February, 2015 (HAS/15/02/113). [↑](#footnote-ref-2)
3. All participants consented to allow access to medical records that included details of recent cognitive assessments. [↑](#footnote-ref-3)
4. The trial protocol was registered on-line (Current Controlled Trials ISRCTN30485698) [↑](#footnote-ref-4)