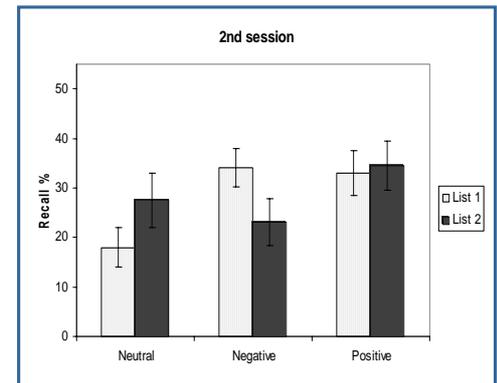
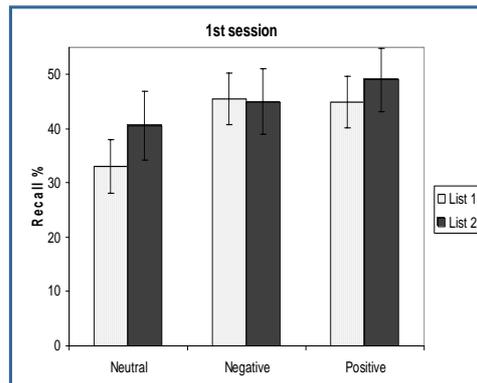


# Directed forgetting of neutral and emotional words: Forgetting 'torture' is indeed harder than forgetting 'briefcase'

Simon Nørby, Jon Wegener & Axel Larsen

This study employed the list-method directed forgetting paradigm on neutral, positive and negative nouns, and retested participants after one week. Participants forgot neutral and positive, but not negative items. Also, the forgetting effect on neutral items (measured as the difference in recall of list two and one items) increased during the one week delay, while memory of negative to-be-forgotten items appeared to consolidate relative to negative to-be-remembered items.



## Background

In the list-method directed forgetting (DF) paradigm, subjects are led to believe that they should forget about a previously studied list of items and focus on learning a new list (see Bjork, Bjork & MacLeod, 2006). A test of free recall usually shows that subjects remember less of list one than list two items. Also, recall of list one items is typically inferior to recall of list one items among subjects in a control group that has been told to learn both lists of items. Such results together with evidence from related domains (see Levy & Anderson, 2002) suggest that forgetting may happen by will.

The present study utilized the list-method DF paradigm on positive, negative and neutral material and tested the "long-term" effect of directed forgetting by employing a one week delayed retest. Emotional material is usually remembered better than neutral material (see Reisberg & Heuer, 2004). Therefore it was hypothesized that emotional stimuli would be harder to forget than neutral stimuli.

## Method

Materials comprised 16 very positive, 16 very negative and 16 neutral Danish nouns. The 48 words were between 6 and 10 letters long, had a medium frequency and were weakly related. Words were randomly assigned to list one or two with the constraint that each list should contain an equal amount of negative, positive and neutral words.

On arrival, the subject was informed that the task was to learn a number of words that would be shown individually on a computer monitor. After the first list had been presented, the screen unexpectedly displayed a blue windows error message. The experimenter acted surprised, tried pressing some keys without luck and finally told the subject that the experiment could be saved if s/he could forget about the previously shown words and learn a new list.

After the second list had been presented, the subject engaged in a simple arithmetic filler task. Then, s/he was informed that the computer failure had been planned and that s/he should try to recall as many of the 48 words as possible. Finally, the subject was asked to come back after one week to participate in a seemingly unrelated experiment. At the second session the subject was again asked to recall as many words as possible from both lists.

## Preliminary Results

The two figures shows recall of list one and two items as a function of emotional valence at test and retest. DF took place on neutral and, to a lesser degree, on positive words, but not on negative words. In fact, participants remembered more to-be-forgotten than to-be-remembered negative items. As can be seen in the figures, the direction of the difference between List 2 and List 1 recall for each level of emotional valence is consistent across Test and Retest, but the magnitude of the effect varies, with the largest effects obtained at the retest.

## Concluding remarks

The result, that it is harder to forget negative than neutral memories, is consistent with the idea that we may have an evolutionary based preference for negative information. Also, negative experiences are personally significant and memories of such experiences may be better encoded and rehearsed more often than memories of neutral experiences, which in turn may make forgetting of the former difficult.

It may seem counter-intuitive that negative to-be-forgotten items were remembered better than negative to-be-remembered items, but this finding is in agreement with the outcome of another recent study (Minnema & Knowlton, 2008). One possibility is that attempts to forget personally significant memories ironically make them salient (see Wenzlaff & Wegner, 2000).

Our results are at odds with Wessel and Merckelbach (2006), who reported DF of negative words, but consonant with Payne and Corrigan (2007), who found that memories of negative pictures resisted DF. We conjecture that the discrepant results are due to subtle differences in experimental design: Wessel and Merckelbach used blocked stimulus presentation of negative stimuli which may have caused habituation, while Payne and Corrigan mixed negative and positive stimuli, making the occurrence of negative stimuli unpredictable, as in our study.