From: **JML** eesserver@eesmail.elsevier.com
Subject: JML-17-336: Decision letter and reviews
Date: February 12, 2018 at 11:54 AM
To: khealey@msu.edu

Title: Temporal Contiguity in Incidentally Encoded Memories
Corresponding Author: Dr. Karl Healey
Authors:

Dear Dr. Healey,

As you will see, I have obtained reviews from 2 experts; it is now clear that a 3rd review will not be forthcoming. The short version of this letter is that if you can address the major issues of the two reviewers, I think a revised version of the manuscript would make an important contribution. Because I am inviting a revision, this letter is quite detailed about both the major and minor issues that need addressing.

Reviewer 1 comments about the level of detail of the two theoretical accounts, but I'll go further: the introduction is too short. Not everyone is familiar with the TCE and it needs to be described and put into context. Similarly, the two possible explanations are only vaguely described; they need to be described more completely so that the predictions are better understood. Also missing is a statement separating the encoding conditions (incidental vs. intentional) and the retrieval conditions (direct vs. indirect test). You mention incidental, but the reader has to infer that the critical test conditions will be (direct). As a final example, you don't describe the Nairne et al. experiment and the reader is therefore unable to know how your study compares to their study.

Reviewer 1 also noted the very small contiguity effect in the explicit conditions relative to other studies. This also needs to be addressed. Is it because you have only 1 list? What if you run a model such that only one list is simulated: does that give smaller effects? Put another way, is it theoretically possible to get a large (> 1) TCE with only 1 list?

Like Reviewer 1 (see also a comment by Reviewer 2), I wondered if you observed standard-looking serial position functions. These have been reported previously for a single list learned undering incidental instructions (e.g., Neath, 1993, Exp. 1). This may be important if, for example, you get two different shaped functions under explicit and implicit, and get a TCE in the former but not in the latter. Similarly, an output order analyses may be informative. Geoff Ward and colleagues have a number of papers on this. This may also be relevant to the size of the TCE. These sorts of additional analyses may also shed light on why the results of Experiment 3 differs from those of Experiments 1 and 2.

Reviewer 2 notes that there are a number of studies that evidence for encoding temporal information under incidental learning conditions. Given this, you may wish to rephrase slightly your questions.

Finally, the most significant issue -- as noted by Reviewer 2 -- is how does Experiment 3 differ from Experiments 1 and 2? The lack of an identifying factor is a severe weakness of the paper. As Reviewer 2 notes, Experiment 3 may be able to serve as an existence proof, but it really offers no additional theoretical insight about when a TCE will be observed and when it won't.

I have a few other issues.

While it is laudable to have such a large sample, it is also important to know what the sample is like. What was the mean age? Were they native speakers of English (you are asking them to process and recall English stimuli)? How many were male? How many female? If you did not collect information about this, you need to state that you didn't, and it weakens the results.

I have a quibble about a statement on page 11: "the Explicit condition showed a distinctly peaked lag-CRP" I'm not sure I agree with this: For the negative lags in particular, the line looks flat, not peaked. Please provide some statistical test to support this claim. Similarly, I have another quibble with how you treat the correlation between overall level and magnitude of the TEC. In Figure 4, you report that there is no statistical evidence for a correlation, $p = 0.586$. Yet in the text you talk as if the correlation exists and is significant ("Although the correlation is positive, it is quite small ..."). Again, please either report additional statistical analyses such that you justify talking about a non-significant correlation, or change the text to match the outcome of the statistical test you did report.

At some point, you may wish to mention that incidentally-learned information can be recalled better than intentionally-learned information depending on the processing done at encoding (e.g., Eagle & Leiter, 1964). This has implications for a possible qualification of the statements about overall recall levels.

p. 6: Why is only the first list analyzed?

p. 10: Please use colours such as white and light grey (rather than black and dark grey) so that the error bars are visible.

Action: I am rejecting this version of the manuscript but I invite a revision. Please include a letter that details the changes you have made in light of this letter and the reviews. If you choose not make a change, please explain your rationale. I do think reporting additional analyses of the free recall data is obligatory, if only to rule out hypotheses having to do with unusual serial position functions, for example.

Thank you for selecting JML as a venue for your research, and I look forward to receiving the revised manuscript.

-Ian Neath
Associate Editor

Associate Editor

References

Eagle, M., & Leiter, E. (1964). Recall and recognition in intentional and incidental learning. Journal of Experimental Psychology, 68, 58-63.

Neath, I. (1993). Contextual and distinctive processes and the serial position function. Journal of Memory and Language, 32, 820-840. doi:10.1006/jmla.1993.1041

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The revised version of your submission is due by Jun 12, 2018.

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Thank you, and we look forward to receiving your revised manuscript.

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Sincerely,

Journal of Memory and Language, Editorial Office
E-mail: jml@elsevier.com
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Reviewers' comments:

Reviewer #1: Review of "Temporal contiguity in incidentally encoded memories"

Summary: The author presents a study examining under what conditions a temporal contiguity effect will occur for incidentally encoded words. Replicating prior work by Nairne et al. (2017) Experiments 1 and 2 showed no temporal contiguity effects for incidental items. However, in Experiment 3 temporal contiguity effects were found in five different incidental encoding conditions. These results suggest that control processes likely account for a large portion of temporal contiguity effects, but that also automatic encoding processing account for some portion of temporal contiguity effects. The author suggests that models that incorporate both are needed for a fuller account of the data.

This is an interesting paper that provides novel evidence that temporal contiguity effects can be found with some incidentally encoding conditions. The writing and results are generally clear and the large sample sizes are a nice plus. I reviewed this paper for another venue and although I like it a lot I think some additional work is needed before acceptance.

First, it would be nice if differences in the two accounts (controlled vs. automatic) of the temporal contiguity effect (TCE) were more fleshed out. I understand the general idea, but in the current paper the differences seem rather vague. What is it about controlled processes that influences the size of the TCE? Is it strategies or intent? The author suggests that it is not just intent, but there is really no indication of how different strategies would influence it. Similar for the automatic processing account. How/why does this account predict the effect? I have read the prior papers, but much more needs to be said in the current study regarding the two accounts and what the overall theoretical advance is other than current theories are lacking.

Second, one interesting finding in all the experiments was how small the temporal contiguity effect was. Is this because only one list was used? The author and other work by Kahana and collegues has typically found much larger contiguity effects where the lag +1 conditional response probability is closer to .30. Similarly, typically contiguity effects are asymmetrical, but most of the current effects look pretty symmetrical. I'm aware that there are some studies that have found symmetrical effects, but it is not clear what is going on in the current data. Again, much more discussion is needed to better explain what is going on with the current data.

Finally, are serial position and probability of first recall curves similar across the different conditions? Examining these other patterns of performance may give some insight into the current results.

Reviewer #2: JML-17-336 is an interesting manuscript investigating temporal contiguity in incidentally encoded memories. The topic is important because many theorists assume that free recall of word lists is largely guided by item-to-item associations that are established during list presentation. Item t is associated to item t+1during presentation and at test recall of t guides the subsequent retrieval of t+1. Relevant empirical evidence comes from the temporal contiguity or clustering effect (TCE) in which recalling the word studied in, say, the 5th serial position means that the next recall is more likely to be from the 6th or 4th position than from more distant positions. There is a lot of evidence for this pattern, but the evidence has come largely from intentional learning experiments that collapse across the learning of many lists. Thus, it's possible that the TCE is strategic rather than automatic. A recent paper from our lab (Nairne et al., 2017) found no evidence
for temporal contiguity effects in an incidental learning context-hence, the current experiments are an attempt to replicate and investigate temporal effects in a similar context.

This is nice work, with well-done experiments, and replications are important. My specific comments follow:

Although not reviewed here, there is already substantial evidence that people encode and retain temporal position and order information under incidental learning conditions (e.g., Nairne, J. S. (1991). Positional uncertainty in long-term memory. Memory & Cognition, 19, 332-340); in this work, temporal contiguity-like effects can be seen in the errors gradients that are produced when people are asked to reconstruct the original orders of presentation. So, the questions are really (1) under what conditions do people use this information strategically to drive recall? and (2) can differential temporal coding, or strategic use of that encoding, be used to explain large and consistent condition differences in recall (such as levels of processing or, in the case of Nairne et al. (2017), the difference between survival processing and controls). The answer to the second question is clearly no, as shown here and in Nairne et al., and the current experiments provide no answer to the
first question.

It is important to differentiate between the encoding of temporal information, which may be automatic, and the strategic use of that information during recall. Seriation is an effective output strategy under some conditions (unrelated word lists) but not under others (categorized lists). In the present experiments we can't really tell whether the low TCEs are due to an encoding problem or a retrieval decision. We probably need to do some retrieval experiments, where the encoding is held constant but retrieval strategies are encouraged (or not), to make further progress.

My biggest complaint is that it's not clear exactly how the tasks used in Experiment 3, which produce significant TCEs, differ from those used in Experiments 1 and 2. The common referent idea doesn't seem to work, and the author never attempts to bring any hypothesis under direct experimental control. I'm not sure what to make of this, except that the current data do provide an "existence proof" of sorts for TCE under incidental learning conditions but, as noted above, we already knew this (sort of).

Smaller points:

1. I don't know why the task instructions are placed in supplemental materials. They should be in the methods sections.

2. The discussion of how to calculate the TCE is confusing and will be opaque to most readers. A specific example would help.

3. Some readers will probably want conventional statistical analyses which are absent here.

Overall, despite the criticisms, I suspect that this paper is likely to be influential. There are some serious deficiencies in current models of recall and this paper lays them out.

Jim Nairne