The Usage of Acronyms in Facilitating Memory Retention

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Abstract

The focus of this study was to explore the effect of acronyms on memory. 21 participants were recruited through 2 day collection days and tasked with memorising a set of words read through an audio recording, with each participant engaging in both conditions. In the control condition, participants were not given an acronym, while in the experimental condition, participants were provided with the acronym "PSYCHOLOGY" written on a sheet of paper. The number of correctly recalled words was recorded for both trials and the means of the trials were compared. Results suggest that short term usage of acronyms also improves word recall, but to a lesser extent than long term usage. Further research should be conducted to confirm findings due to the present use of a within-subjects design, as well as explore more applied usages of acronyms in natural contexts and the relationship between acronyms and false recall.

Acronym Use To Facilitate Memory Retention

People are constantly searching for ways to improve their memory; the human short term memory has a capacity of around 4 chunks or items that can be held in your memory at once for most tasks (Cowan, 2001). When considering how the average human in modern day processes around 34 gigabytes of information per day (Bohn & Short, 2021), the limits to human short term memory leaves much to be desired in the way of storage. A common approach many people take in hopes to improve their working memory is the employment of acronyms. In previous studies (Saheli & Kiana, 2021), researchers aimed to see the long term effects of acronyms on learning. Through a longitudinal between-subjects pretest-posttest experimental design conducted on 20 female EFL (English foreign language learners), it was found that acronyms have "significant effects on improving vocabulary recall among learners", with those in the experimental group improving considerably more than those in the control group. Similarly, the goal of this study is to determine the relationship between acronym usage and memory retention, with an emphasis on the short term benefits of this mnemonic device. Researchers hypothesized that the use of an acronym would increase the number of words that a participant is able to remember in a given time frame.

Method

Participants

In total, 21 English speaking participants taking the course PSYC 217 "Research Methods" at the University of British Columbia were recruited for this experiment. Data was collected on 2 separate days, with one during the section 901 data collection period and another

during bonus data collection day, which consisted of students taking PSYC 217 across all sections in the 2022W semester. 11 participants were recruited on the first day, and 10 participants were recruited on the second day. Participants were given a chocolate for compensation.

Materials

2 recordings of 10 different words varying four to seven letters in word length were used in each condition (see Appendix A). These words were generated using an online random word generator and reviewed to ensure there were no strong connotations behind any of the words. This was done so each of the words were equally memorable, and participants did not remember a particular word due to context or other factors. Other materials were also used to account for controls or record participants' responses. These included noise cancelling headphones, a white tri-fold, a paper pretest, a stopwatch, and a device to play the audio recordings. A piece of white paper with the chosen acronym of "PSYCHOLOGY" written in bright red was used to manipulate the independent variable of no acronym used/acronym used, and an excel spreadsheet was used to record the result of the dependent variable, which was the number of words recalled.

Procedures

A within-subjects design was used for the purposes of this experiment. Participants were required to fill out a letter of informed consent and a pretest (see Appendix A) before proceeding. The pretest was implemented to control for those that had prior experience with using acronyms, as it was thought that participants who frequently used acronyms would perform better in the experimental condition than those who did not. Upon completion participants were placed in front of a white, trifold bristol board and received noise-cancelling headphones to prevent distraction from the task. For the first trial, they were instructed to listen to the first audio

recording and list any words they remembered after a 30 second practice period, which was

timed by an IPhone stopwatch. The purpose of the 30 second gap between listening and reporting

the words was to avoid primacy and recency effects. The number of words they remembered

were then recorded on an Excel spreadsheet. Words reported that were not in the original list

were not included in the final calculation, as they did not show that the participant was able to

remember the given words. For the second trial, participants were given a paper with the chosen

acronym and notified that the acronym corresponded to the first letter of each word in the second

recording. Afterwards, they repeated the listening, practice and reporting process with the

assistance of the acronym, and the number of words remembered were recorded again. Once

participants had finished both trials, they were thanked, debriefed and given the opportunity to

ask questions about the experiment.

Results

The number of words remembered was calculated by totalling the amount of words a

participant remembered in a given trial. To calculate relevant descriptive statistics, the

corresponding Excel spreadsheet formulas were used (ex. =AVERAGE, =STDEV). The mean of

the participants in the control group (M = 4.19, SD = 1.51) was lower than the mean of

participants in the experimental group (M = 5.67, SD = 1.74). On average, participants

remembered 1.48 more words (calculated by the difference of means in the control/experimental

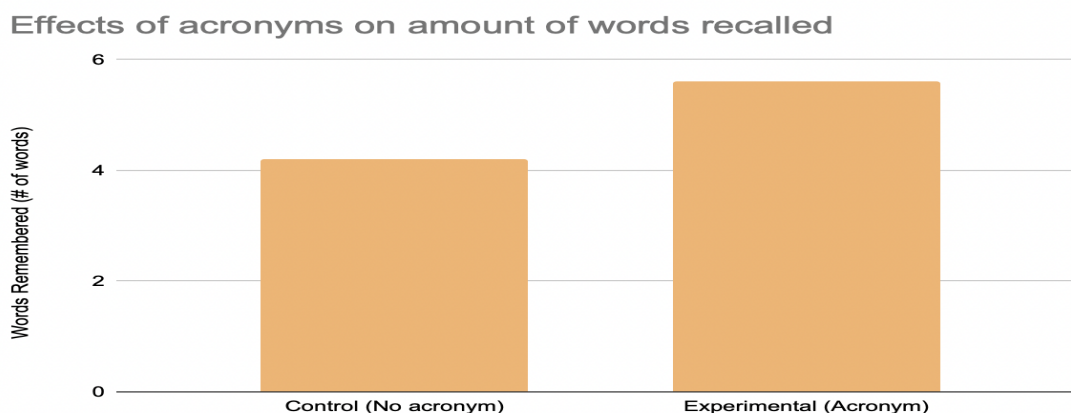groups) in the experimental condition (see Figure 1).

Figure 1. No Acronym vs. Acronym used in remembering a list of words

With regards to the pretest question of "have you previously used acronyms", there were 16 participants who answered yes (referred to as "yes group") and 5 participants who answered no (referred to as "no group"). For both the yes and no groups, the mean of the participants in the control group [yes group ($M = 4.06$, $SD = 1.50$), no group ($M = 4.60$, $SD = 1.46$)] was also lower than the mean of the experimental group [yes group ($M = 5.50$, $SD = 1.67$), no group ($M = 6.20$, $SD = 2.59$)]. For the yes and no groups respectively, participants remembered 1.44 and 1.60 more words on average between the control and the experimental conditions.

Discussion

With respect to the previous studies such as Saheli & Kiani (2021), our findings also supported the idea that acronyms assist in improving vocabulary recall. As there was a clear increase in the overall mean (1.48 more words remembered) when comparing the control condition to the experimental condition, it can be inferred that acronyms play a part in recall ability even in a short term context. Although the increase in words remembered was not as large as the one seen in Saheli & Kiani's (2021) study, the improvement still remains prevalent. This smaller increase was likely due to the time frame of the experiment; participants were given

around 30 seconds to consolidate the information as opposed to weeks or months. It should be also noted that as both the yes and no groups saw an increase between the control and experimental conditions, having prior experience using acronyms does not noticeably affect word recall ability.

Although several controls were implemented, note that some confounds could not be controlled for. Due to the nature of the within subjects design, it is possible that practice effects are an alternate explanation for the increase of words remembered. For example, participants may have been unprepared or getting adjusted to the task during the first trial, but after getting some experience with the task, they performed better in the second trial. A between subjects experiment with a similar design should be conducted to rule out this alternate explanation. Participants would thus only get to participate in one trial and would not have an opportunity to "practice" and improve, thus ruling out the possibility of practice effects.

As to how this study applies to a wider population, a potential threat to external validity is the perceived realism of the experiment. Namely, the controls that were implemented in this study could have affected the external validity in that it greatly decreased the mundane realism that participants experienced. The use of a white bristol board and noise-cancelling headphones to reduce distraction from the task likely influenced participant beliefs on whether the experiment resembled a "real world" experience. Another factor contributing to the lowered realism is how the acronym was provided to participants by researchers with the intent to standardise which acronym was used. In a more "natural context", participants would likely create an acronym themselves and be in a real world study space, such as a library or their bedroom. Thus, although there was an apparent increase in words remembered between conditions in our study, the generalizability remains low due to the highly controlled and

artificial setting that participants were placed under. To increase external validity in future studies on this topic, experimental designs should aim to create a more realistic environment where acronym usage for memory is common, reduce the amount of interaction between researchers and participants, and alter the experimental design to allow for participants to create their own acronym.

Further application of this research could explore how using acronyms can result in falsely remembering words. After removing the false words from the dataset, it was found that there was a noticeably larger number of incorrectly remembered words in the experimental condition when compared to the control condition (8 false words in experimental vs 4 false words in control). This may suggest that acronyms are somehow linked to false memory, and by introducing an acronym, participants are more likely to make incorrect guesses about the word corresponding to a given letter in an acronym. Further research must be conducted in order to confirm this hypothesis.

The findings from this study reinforce the idea that acronyms can help increase the amount of words remembered in a given time, and thus assist in improving an individual's memory. As opposed to Saheli & Kiani's (2021) study, this experiment placed a focus on the effects of brief and short term usage of acronyms on memory rather than long term usage of acronyms. In particular, this may be useful for students or other memory intensive roles; being able to even slightly improve your memory can greatly benefit those that have to digest large amounts of information. Overall, using acronyms is a viable method in making full use of our limited short term memory. By incorporating the use of acronyms in memory tasks, people may see a quick but noticeable increase in recall proficiency.

References

Cowan, N. (2001). The magical number 4 in short-term memory: A reconsideration of Mental

    Storage Capacity. *Behavioral and Brain Sciences*, *24*(1), 87–114.

    https://doi.org/10.1017/s0140525x01003922

Salehi, H., & Kiani, S. (2021). Vocabulary Recall Improvement through Acronyms: A Case

    Study of Iranian Advanced EFL Learners. *International Journal of Language and*

    Translation Research , *1* (3), 1–14. https://doi.org/10.12906/978389966737_001

Bohn, R., & Short, J. (2021). Measuring Consumer Information. *International Journal of*

    Communication, *6*, 980–1000.

Appendix A

Control Condition:
1. Mystery
2. Related
3. Secret
4. Provoke
5. Symbol
6. Captain
7. Method
8. Denial
9. Block
10. Panel

Experimental Condition:
1. Piano
2. Share
3. Yellow
4. Cover
5. Holiday
6. Ocean
7. Library
8. Orchid
9. Grapes
10. Yoga

Pretest Questions:
1. What is your name?
2. What methods of memorization have you used before?
3. Have you used acronyms for memorization in the past? (Yes/No)