

The Zeigarnik Effect: Learning, Completion, Motivation and Memory

John Zak

Douglas College

Abstract

Psychologists need an astute understanding of the factors that motivate, promote learning, and enhance one's memory. The present study sought to measure variables relating to memory retention. The analysis featured 12 individuals (6 men and 6 women). To begin, an assessment including 12 unsolved anagrams was administered. Each participant had 1 minute to decode the word before the conductor revealed the answer. After each anagram had been observed, subjects were given a blank sheet of paper and instructed to write down as many of the words they could remember. The hypothesis predicted participants would remember unsolved anagrams at a higher frequency than those successfully solved. The results lended marginal support for the hypothesis, and therefore, should not be considered convincing.

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The ability to remember is an evolutionary adaptation, whereby, human beings are able to enhance their chances of survival and overall flourishing. Specifically, memory retention has been demonstrated to be inseparably tied one's motivational fortitude, completion of tasks, and ability to learn. Relatedly, the findings discovered through the "Zeigarnik effect," inferentially and explicitly, correspond to these facts.

In essence, the "Zeigarnik Effect" proposes that, there is a greater likelihood for individuals to remember tasks they have yet to finish rather than those they have successfully completed (Baddeley, 1963). Furthermore, while involving tests, the theory presumes that subjects will devote significantly more attention to the answers they get incorrect (Baddeley, 1963).

Prior to addressing the present study, it is necessary to briefly outline previous research that is germane to the topic at hand. In their article, McGraw and Fiala (1980) identified two distinct kinds of motivation—extrinsic and intrinsic—that Zeigarnik's findings are contingent upon. An intrinsic motivation relates to one's personal satisfaction with their own work. However, if an intrinsic motivation is disrupted, one's ambition may be transformed into an extrinsic motivation. Invariably, the individual's actions will be spearheaded by an extrinsic motivation if their task is enveloped by particular constraints (specific requirements, expectations, deadlines ect), or involves the potential of earning a reward (McGraw & Fiala, 1980).

In order to test the theory, McGraw and Fiala (1980) assured an experimental group they would be compensated monetarily for their willingness to participate (McGraw & Fiala, 1980). The results of the study found the experimental group had an extrinsic motivation—being paid—and thus, were significantly less likely to return to the uncompleted

task (a jigsaw puzzle) during a five minute stretch of free time (McGraw & Fiala, 1980). In short, McGraw and Fiala (1980) identified that the Zeigarnik Effect could be undermined by manipulating one's degree of motivation.

In another study conducted by Weiner, Johnson, and Mehrabian (1967), The Zeigarnik Effect was proven to be intrinsically linked to learning comprehension rather than motivation and memory alone. Based on previous research, individuals who described themselves as in need of high achievement, and low in neuroticism, are more likely to remember uncompleted or unsolved tasks than their counterparts (Weiner, et al., 1967). Initially, researchers concluded that high achievers often remember uncompleted tasks in accordance with their need to master the unknown (Weiner, et al., 1967). Conversely, individuals with a low need for achievement were believed to subconsciously suppress the memory of uncompleted tasks, deeming them anxiety producing and threatening (Weiner, et al., 1967). Weiner et al.'s (1967) study began with a similar presumption, however, a test administering insoluble items to each subject—a contingency known by participants after a preliminary testing period—resulted in similar finding: the highly motivated remembered uncompleted items at a higher frequency. These findings ought to expand one's conceptualization of memory and motivation, for neither group had incentive to remember nor suppress the unsolvable items (Weiner, et al., 1967). Accordingly, leaders of the project explain memory as a multifaceted process—the operation involves an initial comprehension and learning period (Weiner, et al., 1967). At the conclusion of the study, the researchers proposed learning was the significant, differential component that impacted disparities between each group (Weiner, et al., 1967).

Finally, Fred Mckinney conducted several experiments to decipher the correlations between memory retention and interruption. These studies include data involving subjects

being interrupted before, during, and after the completion of a task (McKinney, 1935).

McKinney's work incorporates both motor and verbal exercises such as maze learning and vocabulary recall. In the end, the findings culminated in an intriguing discovery: interruption that ensues prior to the completion of a task—during the learning phase—will result in a higher average recall than the tasks met with a certain degree of completion (McKinney, 1935).

Undoubtedly, the aforementioned, previous research enriches the present study—a reproduction of an experiment previously assembled by Alan Baddeley. The primary hypothesis of Baddeley's (1963) research recapitulates Zeigarnik; namely, test items that remain uncompleted will be remembered more frequently than those that were solved or completed.

Method

Participants

The study includes 12 participants that are—with the exception of two individuals—currently enrolled in some form of post-secondary education. Specifically, the sample consists of 6 women and 6 men. On average, the age of the group is 27.3 years.

Procedure

To begin the analysis, each participant is accompanied to an empty, silent room. The assessment begins after the completion of an informed consent form. Administered through a slideshow, the test features 15 distinct anagrams. In essence, anagrams are scrambled letters that when rearranged make a word. Prior to beginning the “Test Phase,” a “Practice Phase” allows the participants to garner a basic understanding of the evaluation. The “Practice Phase” exhibits three anagrams that the subject has exactly one minute to decode. If the participant is unable to complete the task in the allotted time, the conductor of the study

reveals the answer. Once the time is up, or the subject has found the answer, a blank screen appears for five seconds, and subsequently, moves on to the next unsolved anagram. After the practice phase, the test phase, which consists of 12 anagrams, is undertaken. Throughout the test, the administrator records relevant data for each participant regarding which anagrams were completed or uncompleted. When each anagram has been observed, the participant is asked a question to briefly recalibrate their thinking: “what strategy were you using to solve the anagrams?” Finally, after the subject responds, they are given a blank sheet of paper and instructed to record, in no particular order, as many of the anagrams that appeared in the test phase as possible. The study concludes with the completion of the memory exercise, and the results are collected by the conductor for data analysis.

Results

The hypothesis anticipated subjects to recall anagrams they failed to solve more often than those successfully completed (Baddeley, 1963). Accordingly, the unsolved items were remembered more frequently than the solved items. In total, participants remembered 31% of unsolved words and only 28% of solved words. However, the difference between the two figures is not substantial, and thus, cannot be deemed persuasive. Therefore, the data is antithetical to the study’s overall prediction.

Discussion

On a minute level, the experiment demonstrates the tendency for individuals to remember uncompleted items more frequently than completed or solved items. Nevertheless, in order for an experiment to be regarded as reputable and convincing, the results ought confirm the hypothesis in a definitive manner. The mere 3% disparity between each group is not sufficient evidence to validate the study’s primary prediction.

Undoubtedly, there are various differences and few similarities between the current study and research previously mentioned. First, McGraw and Fiala's (1980) findings are uniquely focused on one's motivation rather than memory. The pinnacle of their study features a period of free time, a procedural component excluded from the current investigation. Furthermore, Weiner et al (1967), includes individual surveys, factoring in personality traits while presenting their results. Once again, these considerations are entirely ignored within the present study. In point of fact, the data is collected with no attention to participant's individual makeup with regard to personality traits (conscientiousness, neuroticism). Finally, similar to McKinney's trials, the present analysis utilizes the interruption technique by limiting a participant's solving time to 1 minute. Conversely, McKinney (1935) prevents subjects from continuing their tasks at various points throughout the procedure, even stopping them after a single error. The primary, distinctive feature of current study is the lack of experimental or control groups—each subject experiences the exact same conditions (Baddeley, 1963).

Theoretically, including research elucidated from previous studies, the findings are imbued with implications directly linked to various areas—education in particular. Regarding motivation, McGraw and Fiala's (1980) work identified an issue pertaining to learning in general. Within education, there is a unique interplay between the possibility of punishment and reward. Extrinsic constraints upon assignment completion offer incentive for students to conscientiously devote time to their work. However, the findings indicate one's intrinsic motivation—or learning based on one's own curiosity—may be eliminated by these stipulations. Therefore, within the educational domain, extrinsic motivation would best be tempered by providing avenues that incite intrinsic motivation at the same time. By conducting studies concerning physical activity in children, Mandigo and Thompson (1998)

offer insight into fostering an environment conducive to the development of intrinsic motivation.

Flow-state suggests student's function optimally when encountering challenges slightly beyond their competence level (Mandigo & Thompson, 1998). Conversely, the tasks must remain solvable (conceivably) to the individual or else their state will be disrupted (Mandigo & Thompson, 1998). As a result, Mandigo and Thompson (1998) urge instructors to be transparent regarding their assignment expectations, while also enabling students to realistically set goals for themselves based on their own ability. Additionally, on an implicit level, they advise the further enabling of students by granting each them an element of autonomy, creativity, and control over their work (Mandigo & Thompson, 1998). In summary, a student's perceived sense of control and freedom to experiment allows them to adopt a heightened sense of ownership and pride to direct toward their tasks (Mandigo & Thompson, 1998).

Relating to Weiner's findings, if flow-state is experienced, one develops a directed, yet personal, sense of motivation; in consequence, they may accrue a higher need for achievement and neutralize their neurotic feelings that are inhibiting their academic success.

Another theoretical implication corresponding with McKinney's work has been implemented by behaviour specialists who work alongside the autistic. Behaviour chain interruption strategy (BCIS) is an intervention procedure that applies one of Zeigarnik's most astounding findings: interruption can be used promote learning (Bayes, Heath, Williams & Ganz, 2013). BCIS often involves withholding something from the student necessary to complete a task (Bayes, Heath, Williams & Ganz, 2013). The withholding itself will prompt the child to communicate, asking for the items they are missing (Bayes, Heath, Williams & Ganz, 2013). If the student does not ask appropriately or politely, they will not be given the

items they need (Bayes, Heath, Williams & Ganz, 2013). Thus, withholding during task completion can elicit communication skills in children who are deficient in this area (Bayes, Heath, Williams & Ganz, 2013). Autistic children typically prefer routine and may respond negatively to novel or unexpected daily practices. Therefore, a practitioner can strategically interrupt them at particular junctures of the day depending on their student's personal inclinations (Bayes, Heath, Williams & Ganz, 2013). The implications of Zeigarnik's findings breach far beyond BCIS. The main point is simple: interruption can be employed in a sensible manner in order to improve learning.

The current study is constructed in a manner that facilitates growth and learning; however, the experiment could be improved by increasing the volume of participants and range of the population in question. Ultimately, the hypothesis failed to pass the litmus test (for evidence) due to the limited scope offered by the experiment itself. The Zeigarnik Effect has reliably been proven to be consistently accurate in several previous studies. Principally, the issue with the present analysis stems from the mere 12 participants who were included. Typically, psychological research gathers data from large scale populations and are less likely to be significantly altered by anomalous scores. With respect to the incorporation of participants—even if the findings were statistically significant—the results of a mere 12 volunteers (in this case) do not provide sufficient evidence to suppose the hypothesis is accurate. In total, the data accounts for only two individuals who are not students, and a single individual outside of their 20's. The uniformity among the participants—pertaining to age and life stage—are reflective of an ongoing issue with psychological studies in general: the challenge of integrating a sample size actually resembling a population. In short, by utilizing the present data, one can only speculate about the potential scores of the uneducated, working force, or elderly.

In terms of improving the procedures of the experiment, a variable examining the correlation between motivation and memory ought to be included. The discoveries of McGraw and Fiala (1980) relate to a participant's propensity to continue to work on an unsolved task with allowable free time. Their findings do not directly include statistical information connected to memory—a phenomenon that would benefit from additional research. For example, hypothetically speaking, the current study could include a subsection of participants explicitly told they would earn a dollar for every anagram solved, along with a control group who were not promised anything. In the same manner, participants would then be asked to record each word they remember. The consequences of these modifications will be such that, the results could accurately describe the impact of intrinsic and extrinsic motivation on memory retention. Finally, the experiment solely focuses on one's short-term memory. The implications of memory and learning are essential components of human life and flourishing. Information only encoded for the short-term prove to be of low utility for the brain to store in an accessible fashion. As a result, including time intervals between testing allows one to reasonably examine long-term retention—providing further insights into an ongoing academic discussion.

In summary, the Zeigarnik Effect encompasses several nuanced ideas relating to memory, learning, and motivation. At the conclusion of the study, the statistical differences were marginal; hence, the hypothesis must be rendered unsubstantiated. For improvement sake, the experiment should be modified to account for societal diversity and additional variables (motivation, long-term memory). Essentially, if human beings have a propensity to become fixated on tasks left uncompleted, additional sources—outside the current study—must be cited to support the claim.

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