Stoop Effects And Verbal Fluency

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Abstract

The Stroop effect is a phenomenon in which you say the color of the word and not the name. It deals with cognition and reaction time. For instance, purple may be printed in red, and the color of the word is said rather than the name. The emotional Stroop test works by inspecting the participant's reaction time when naming the colors of negative emotional words. The emotional Stroop effect appears to capture the person's attention and slows response time due to the emotional relevance of the word. Responses in both the Stroop test and emotional Stroop test are suppressed due to distracting word information while attention to the color of the word is maintained. The reaction time for naming colors when the words relate to negative emotions is greater. The finding is that reaction time increases when participants are asked to name the color of ink in which a word is printed rather than the name of the competing printed color.

Introduction

The Stroop effect was first described during the 1930s by a psychologist named John Ridley Stroop, after whom the test is named. The Stroop effect has been explained by two competing approaches: perceptual conflict and response competition. According to Spreen and Strauss (1991), perceptual conflict refers to the overloading of a person's processing capacity with irrelevant information and relevant incongruent color, thereby delaying the entire processing time. The latter describes a situation in which two competing reactions use a single response channel. People tend to take more time to make out the color or the word, especially if it is different from what it describes. That delayed reaction when the color of the word does not match the name is what describes the Stroop effect.

According to Macleod (1992), people find it easier to say the color of the word when the word matches the color. The test reveals the effect that interference brings about when it comes to reaction time. Color provocation necessitates alteration from a perceptual to a verbal code. This kind of transformation is not essential for word stimulus. As a result, extraneous word information reaches the response initiation stage earlier than the relevant color information, causing interference. Although the Emotional Stoop test and the classic Stoop effect have related developmental aftermaths, they also have variations.

In the Stroop test, a person encounters a conflict between an incongruent color and word, but in the

emotional Stroop test, the message implied in the word affects emotions. In psychology, the emotional Stroop test is used to assess a person's emotions. The emotional Stroop test is applied in clinical studies by using emotional words related to the affected person's area of concern.

Stoop Effects And Verbal Fluency

Studies on stoop test

The selective theory

Information from all kinds of stimuli at any time enters the sensory buffer. On the basis of physical characteristics, one of the inputs is selected for processing by passing through a filter. Human beings capable of processing information are limited; hence, the filter usually prevents excessive information to avoid overloading. Initially, there are inputs that are not selected by the filter; these inputs remain in the sensory buffer for a while, and if they are not processed, they decay. Broadbent made an assumption that unattended information at the early stages of processing was rejected. People focus their attention selectively because too much information cannot be processed at the same time.

Automaticity

Automaticity is of great significance for readers to become wholly proficient and fluent. Automaticity implies recognizing information and processing it without conscious thought. Automaticity is not inborn; instead, human beings develop it as they try to learn. An automatic reader looks at words and understands what they mean subconsciously. They don't give much attention to the words to absorb their meanings. Automaticity can be developed at an early age with patience. It requires a high degree of practice to be incorporated into the human being's memory. The benefit of automaticity is that once one has taken time to learn it, it is not easily forgotten later.

The speed of processing theory

Researchers established that a variety of cognitive abilities like processing speed, memory, and problem-solving decline with an increase in age. As Birren theorized, cognitive decline that results as people begin to age results in slowing an individual's processing speed. This can be practically seen by studying the functional abilities of the aged. Cognitive training can be done to enhance or sustain cognitive abilities, either in young or old people.

The purpose of the study was to examine the effects of the stoop test and the emotional stoop test and find out whether verbal fluency has a correlation with the stoop effects. People who read fluently are expected to read faster, although they experience greater Stroop interference. Three experiments

were carried out, which were the stoop, congruent and incongruent and emotions, which are either positive or negative conditions creation of a conflict between an incongruent color and word is expected in the stoop test. Both the stoop test and the emotional stoop test grant a need to suppress reactions to distracting word information while maintaining attention on the color of the word to complete information. The experiment was carried out in a pair of two people. The experiment required participants to name the colors of words, and each word gave a clue to the color. Each member in a pair was timed for 60 seconds using a stopwatch.

Hypothesis

1. The aim of the experiment was to test the stoop effect by inspecting whether the time taken to identify the names of colors when the words related to negative emotions was greater than the response time to naming colors when the words related to positive or no emotion at all.

2. To determine whether naming colors when the words and font colors matched required less response time than naming colors when the words and font colors did not match.

3. To find out whether cases with high verbal fluency had a greater Stroop effect.

Materials, Methods, and Procedures

The experiment was carried out by 16 females and 5 males.

Materials:

1. A stopwatch

2. 21 pieces of plain paper

The Stoop Test:

All the participants were presented with a copy of a printed paper containing a sentence that read, ‘I will cross the road when the signs turn black.’

‘The sky is blue’

A stopwatch was used by the members for timing purposes.

The Emotional Stoop Test:

All the members in the pairs were presented with printed papers. The papers had different kinds of statements, which were positive, negative and neutral.

I cry and sob when I remember the death of my mum. (Negative statement)

The clock is on the wall. (Neutral statement)

I scored remarkably in the last exam. (Positive statement)

Phonemic Fluency Test:

Participants were to produce as many words as possible from a category within 60 seconds. They were to produce words beginning with the letters F, A and S. The words were written down.

Semantic Fluency Test:

Participants named animals, fruits, and drinks within 60 seconds. They took turns to name the items, whereby one participant named the items.

Results and data analysis

The participants studied response time by means of the emotional Stroop task while carefully matching the arousal levels of positive, negative, and neutral words. Emotional words, in relation to neutral words, elicited emotional interference independent of valence. This was a clear indication that arousal determines emotional interference. Positive and negative words were more easily remembered and recognized than neutral words, independent of valence. Differences in state anxiety were linked with emotional interference, in that interference was high in subjects with high anxiety. Trait anxiety was not influenced.

Members of the groups displayed different kinds of reactions. The positive statement took a long time to be read while most finished reading the negative statement at a fast rate. Negative sentences are more difficult to process than positive ones. The members read negative sentences, then started to think. Fast readers are slow in reading negative sentences. In the early stages, the negation of the sentences is ignored by the mind, but after reading, one starts to process. The mind tries to gauge the true value.

Most members of the groups paused for some time before they finished reading. The participants in pairs timed one another as they took turns to read. For some members, time was up before they finished reading. Color naming interferes with the printed word. The response time when the color

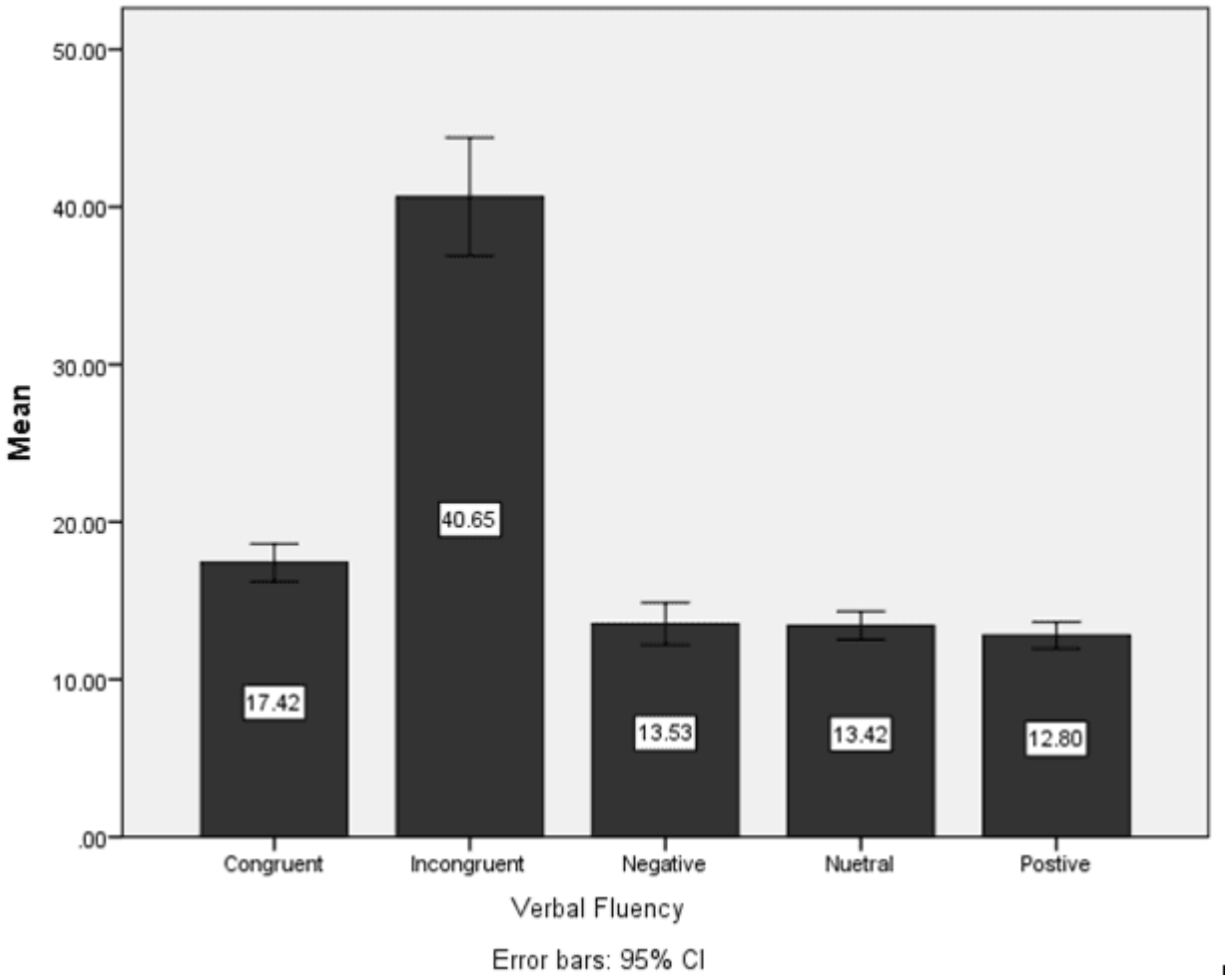
matched with the words was fast, but the response time when the colors did not match the words was long. In the congruent condition, the word matches a color.

Participants relied on a focused reading process to yield fast and exact reactions. In the incongruent condition, accurate responding requires participants to use cognitive mechanisms in order to produce accurate results. The time the participants took to think of the name of the color in the incongruent condition relative to the congruent condition is what is referred to as Stroop interference*. This idea that there are two discrete levels of control may be false; nevertheless, these mechanisms broadly have been disclosed in autonomous lines of investigation.*

As training, subjects performed the classical Stoop task prior to the experiment. The classical Stoop task consisted of two blocks: during the first block, 60 congruent items (12 practice trials, 48 test trials, e.g., the word “red” written in red color), and during the second block, 48 incongruent items (e.g., the word “red” written in blue color) were displayed.

The experiment entailed two runs, and each run contained four blocks of neutral, positive and negative words. The blocks were arranged in a 123213 fashion (1 = neutral, 2 = positive, 3 = negative) to avoid sequential demonstration of blocks of the same valence. Within each block, ten trials were put. The arrangement of trials was randomized to avoid a situation where successive trials would cause a similar manual reaction. Overall, the subjects had 70 negative, 70 positive, and 70 neutral words. The participants tried to remember and identify the words. In the disclosure-recall task, participants wrote all the words they remembered. All the 60-word stimuli from the experiment were replaced with other words, and subjects were presented with the words (e.g., eat *vs.* beat*).*

The presentation of word pairs was pseudo-randomized, as was the screen position (top or bottom) of the target word. Distractor items were matched with target items in terms of valence and grammatical category. One participant completed the task and then gave the other a chance. The item names were written on paper. Some members were very fast in responding while some were slow. The most common performance measure is the total number of words. Additional measures such as figure repetitions and the number and size of groups of words from the same semantic or phonetic subsection can be carried out.



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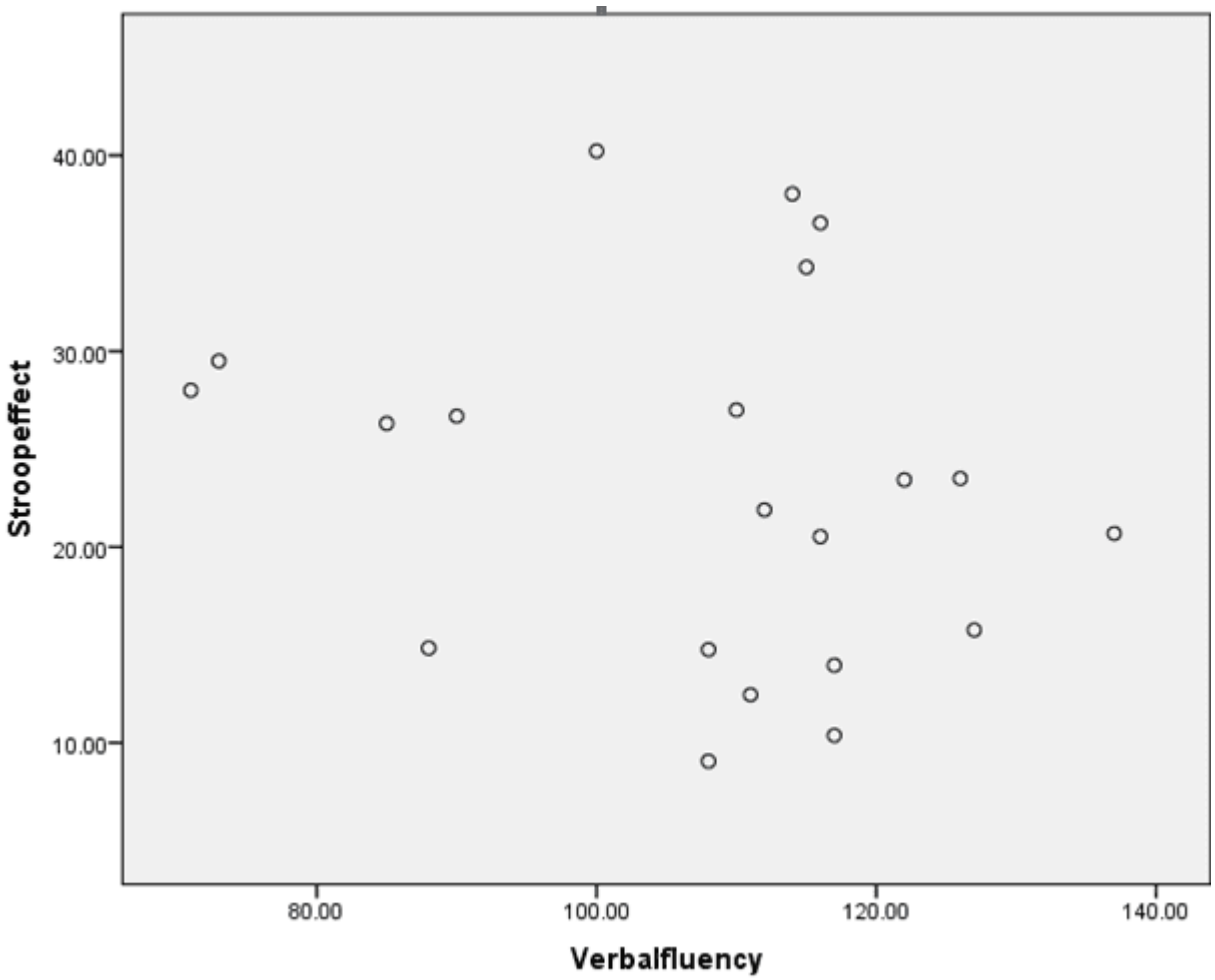

	Mean	Std. Deviation	N
Stroop effect	23.2305	9.18347	21
Verbal fluency	107.7619	17.37212	21
Phonemic fluency	47.1429	8.35036	21
Semantic fluency	60.6190	12.06017	21

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		Stroop effect	Verbal fluency	Phonemic fluency	Semantic fluency
Stroop effect	Pearson Correlation	1	-.214	-.191	-.176
	Sig. (2-tailed)		.352	.408	.445
	N	21	21	21	21
Verbal fluency	Pearson Correlation	-.214	1	.779**	.901**
	Sig. (2-tailed)	.352		.000	.000
	N	21	21	21	21
Phonemic fluency	Pearson Correlation	-.191	.779**	1	.430
	Sig. (2-tailed)	.408	.000		.052
	N	21	21	21	21
Sematicfluency	Pearson Correlation	-.176	.901**	.430	1
	Sig. (2-tailed)	.445	.000	.052	
	N	21	21	21	21

Discussion

This study aimed to determine whether memory is affected by categorical clustering. Reports of students in this sample showed that they retained more information when they used chunking to categorize information than when they did not. In his 1886 study, Cattell suggests that word reading

becomes easier or even automatic with extensive practice. Results concerning the emotional Stoop effect in subjects may be clarified by understanding the effects of provocation valence and arousal along with specific dissimilarities in apprehension. The results meant that word arousal gave rise to emotional interference independent of valence. State anxiety intensifies the interference of emotive words by biasing attention toward emotionally striking stimuli. MacLeod and Rutherford (1992) suggest that color naming interferes with anxiety and traits of a person. According to Ruff, Light, Parker and Levin (1997), word generation is related to measures of vocabulary, auditory attention and articulation speed. The present study found gender differences in numerical memory in favor of women. These results are inconsistent with prior research (Robertson et al., 2001; Sylvester & Nelson, 1990).

Problems encountered during the study

There was the issue of internal validity which included factors related to the study design, measurement, and statistical power. Threats to external validity like population, ecological, temporal and outcome validity lead to sample bias and particular features of the sample that limit generalization of findings. Measurement validity was a problem because this was a cross-sectional research design that relied on survey data.

Conclusion

From the results, we establish that the emotional Stoop effect was greater than the emotional delay with word reading. All the hypotheses were answered in this experiment. All the effects were noted, and it was ensured that nothing was overlooked. Efforts should be made to clearly and broadly determine the characteristics of stimuli. Although research on Stoop effects and Verbal Fluency faces a more challenging path ahead, it offers many exciting opportunities for future research in the current scientific world. More findings are expected in the future due to the many unproven theories and the breadth of the topic. A greater contribution can be made by developing tasks that bring about robust effects. Hopefully, the results of the experiment will inspire more in psychology.

Implications

The experimental words took extensive time to complete, followed by the control list of words. This has implications for the presentation of materials to people, as it will have to be well thought out before presenting certain things to different people. It also has implications for individual differences, for instance, among people doing brain-training games. It will depend on people because some will find it easier while others will find it hard.

References

Comalli Jr, P. E., Wapner, S., & Werner, H. (1962). Interference effects of Stroop color-word test in childhood, adulthood, and aging. *The Journal of Genetic Psychology*, *100*(1), 47-53.

Hock, C., Villringer, K., Müller-Spahn, F., Wenzel, R., Heekeren, H., Schuh-Hofer, S., ... & Villringer, A. (1997). Decrease in parietal cerebral hemoglobin oxygenation during performance of a verbal fluency task in patients with Alzheimer's disease monitored by means of near-infrared spectroscopy (NIRS)—correlation with simultaneous rCBF-PET measurements. *Brain Research*, *755*(2), 293-303.

Williams, J. M. G., Mathews, A., & MacLeod, C. (1996). The emotional Stroop task and psychopathology. *Psychological Bulletin*, *120*(1), 3.

Appendices

1. The Stoop test

2. The Emotional Stoop test

Negative, positive and normal sentences were used

I cry and sob when I remember the death of my mum. (Negative statement)

The clock is on the wall. (Positive statement)

I scored remarkably in the last exam. (Normal statement)

3. Phonemic Fluency Test

Animal fruits and drinks were used by the participants.

4. Semantic Fluency Test

Letter F A, and S were used by the participants.