

# Psychology paper- swoop effect flashcard



**ASSIGN  
BUSTER**

Interference has been a large topic of study and research in the psychology field. The purpose of this lab was to test interference using the “ Stroop test”. University students were paired off and given the test to conduct, recording their accuracy and reaction time using a stop watch. The data was compiled and analyzed to check interference on colour identification when associated words were spelled out in a certain ink colour. It was found that words that had a greater associative bond had the greatest interference power when the subjects tried to identify the ink colours.

It was concluded that conflicting word and colour stimuli's increase the presence of interference. These results were discussed in terms of further experiments being conducted by other psychologists to see if practice or hypnosis can help reduce the reaction time when interference is present due to conflicting stimuli's. John Ridley Stroop came up with a study in 1935 that was used to study interference in serial verbal reactions. It has been hypothesized that words and information stored in the memory will cause interference when completing what is now called the stroop test.

It has been shown repeatedly that when presented with a colour ink that spells out another colour different from the ink colour, subjects have great difficulty in identifying the ink colour (Stroop, J. R (1935). This process is called inhibition or interference in the brain. It is the result of one part of the brain dominating the response of other functional areas. This task of identifying ink colours that spell the names of another colour causes a delay in response, also causing a slower reaction time and an increase in mistakes.

This experiment demonstrates this inhibition as well as shows that the brain cannot be trained to overlook these differences. It also demonstrates the automatic nature of a person's brain that is used to just simply reading a word versus identifying a colour. The task of identifying an ink colour that spells out a certain word is difficult because humans have the tendency to read a word automatically versus identifying a colour. Reading is a task that is done everyday however we do not walk around and identify colours that are visible; it is stored and processed without much direct thought.

It becomes difficult to turn off the automatic response of paying attention and reading the words as opposed to just identifying the ink colour. As well, this experiment done by Peterson (1918 and 1925) found that a certain response habit has become associated with each word while in terms of the actual colours themselves, a variety of response tendencies have developed. In this observation it is noted that naming colours would only be a problem if the words present have a previous colour association to the subjects. To a child that does not know how to read, naming colours would be easy.

Or to a subject that does not have exposure to exotic fruits, if certain fruits were listed that the subject was not aware of, interference would not be much of a problem, especially if the subject had never heard the name before. Another great point was made by Kline (1921) when he did a study of interference and used material that would have meaning to his subjects. These included states, countries, books, authors and so forth. His experiment demonstrated that the greater the associative bond the greater the presence of interference would be.

Also, Brown (1915) stated that the variance in speed when naming colours and reading words is not dependent on practice but rather the association process involved in naming a colour is completely different than the association process of reading a written word. Based on the results from Stroop (1935), Peterson (1918 and 1925), Brown (1915) and Kline (1921) I would hypothesize that in this experiment, interference would slow down the reaction time in identifying the ink colours whenever a word that has an association to a colour is present.

This should prove to be the case for the colour words and the list of items associated with particular colours. Method Subject: The subjects of this study were university students enrolled in a spring introductory Psychology course at Ryerson University. The ages can range from early twenties to over mid-forties. There were 68 subjects that participated in this study. They were aware that they were being tested in terms of identifying the colours in each experiment, as well as the purpose of trying to get the colours correct as quickly as possible.

They were aware that they were being timed and that their results would be recorded and compiled along with the rest of the class. Apparatus: To complete this study one would need a stop watch. It is preferable that the stop watch counts in seconds. You would also need a notepad to take note of the time one takes to complete an experiment. The last material needed would be the stroop exercise charts. It consists of 6 experiments that are to be completed and timed. Procedure: Before the experiment started, the subjects were briefed about what was expected of them.

They were told to pair off with someone that has a stop watch. The pairs moved to quieter locations of their choice in order to avoid interruptions and confusion from other pairs nearby. The subjects made their way through the experiments, identifying out loud the ink colours on each experiment. For example, in the image to the left above, Experiment 1 with the colour bars started by identifying the green coloured bar in column 1 first. The subject then went down column 1 and continued on to the top of column 3 and worked their way down column 3 and so forth until they reached the blue bar at the bottom of column 9.

The subjects took turns completing the experiments. The results were then recorded to the nearest seconds. All the data was compiled into a chart and was given to the subjects to compare the results. Discussions The hypothesis originally stated mentioned that interference would be more present in experiments that contained conflicting stimuli as well as words with great associative bonds, was substantiated by the results of the experiment. Experiment 1A, which had the colour bars, had the lowest average response time for the subjects.

There were no interferences against the ink colour and therefore interference was not that present. It also caused little deviation amongst the subjects as the standard deviation was 11.82. For experiment 1B, letter stimuli were introduced and this changed the response in the subjects slightly. The average went up to 52.32 seconds and the deviation went up to 12.53 seconds. This might have caused only a slight interference because the letters were random and did not have much associative powers.

Experiment 2A was starting to introduce words that might have associative powers depending on the individuals. They were words that generally are considered to be colour neutral but that might not be the case if a subject recalls a visual image based on these words. For example, a subject might have a blue stove and seeing the word stove might cause more interference for them. For this experiment the average response in seconds went up to almost 59 seconds. That's a bigger jump from the last two experiments. This can demonstrate interference and the need to read the word that is present.

Experiment 2B was the most difficult for the subjects. It contained two directly conflicting stimuli. The ink colours did not match the name of the colours written. The average response time for this experiment jumped to 81 seconds and a standard deviation of 17.93, the highest of all the experiments. This data supports the findings of Stroop (1935), Peterson (1918 and 1925) and Kline (1921). It demonstrates the strong presence of interference for verbal reactions. Here the brain was trying not to read the word present and to rather identify the ink colour.

The subjects had to really direct their attention and stop one response (which was the reading of the colour) so that the brain can identify the ink colour. This experiment ties into the hypothesized expectations that words that have colour associations would cause more interference for the subject to identify the colour of the ink. Experiment 3A was a repetition of the neutral words in experiment 2A and the results were just the slightly better than those of 2A, an average response time of about 52 seconds.

The improvement of the results with this experiment the second time around might be that the subjects associated the response with the object of the experiment as opposed to the natural inclination to read the words. It would be easy to do this with these set of words, as they are generally colour neutral which limits the interference. Since there is little associative power with these list of words, the subjects focused on what was required for the experiment and increased their response time for the experiment, improving on average for about 6 seconds.

The last experiment, experiment 3B, contained words that had direct colour associations. These words were grass which is associated to green, sky which is associated to blue and so forth. The words used were common words that many subjects would be aware of and might see on a daily basis, such as the sky or the grass. The average response time for this experiment was 55 seconds. The results of this experiment does show an increase in response time compared to experiment 3A but it does not show a slow reaction time of the results of experiment 2B.

It seems that the subjects have trained themselves to ignore words that may not directly interfere with the task of identifying the colours and to just name what they see as opposed to what is written. This result would contradict the hypothesis that a word that has a colour association would create a lot of interference in the reaction time of the subjects. However, an explanation of these results could be that the subjects do not have much association to words such as tomatoes, sky or fire and therefore were able to overlook the words and concentrate on identifying the colours.

This could be the case because the subjects are from an urban environment where concentrating on the sky and the grass on a daily basis is blocked by the dominance of tall buildings in their city, therefore a low associative bonds to these words. As a result of the low associative bonds to these words that normally have a colour association; the subjects were able to identify the colours without much interference. This could be the example of the findings of Peterson (1918 and 1925) being demonstrated. One of the limitations to the interpretation of my data would be the lack of knowledge on the individual thoughts of the subjects.

It was not feasible to speak to each individual to find out how each word has an effect on them. For certain subjects certain words used in the experiment might have had more of an associative bond than others, which would have slowed their reaction time against other subjects. For example in experiment 3B when the word “ Fire “ shows up, perhaps there were subjects that had an experience with fire that has been placed in their long term memory and therefore it would have made it difficult for them to react quickly to the ink colour.

Perhaps in Experiment 3A, the word art conveyed a confusing meaning to certain subjects who were contemplating the meaning of the word a bit more intensely than other subjects. Another limitation to the experiment is the lack of information on what the different learning styles of each subject in the experiment was. Perhaps there were those that were more visual than auditory and therefore seeing the words brought pictures to their mind that slowed down their reaction time. It would be good to get individual feedback



from subjects on the words presented in the experiment to see what associative bonds or visual affects it had on the subjects.

The next experiments that could be conducted for the stroop effect are being determined by interested psychologists right now. Ligon (1932) did a study of naming colours and reading colour names with 638 subjects from grades 1 to 9. With the results he had, he found that all explanations about the stroop effect were weak and proceeds to set up a new hypothesis; however he did not fully explain those findings. He did mention that the common factor is learned and that the special factors are organic.

Other psychologists have tried to implement hypnosis as a factor to help with the problems that result from the stroop effect. Subjects are being tested to only name the colours while under posthypnotic suggestion. Some results are showing that this can help subjects that are highly suggestible while less suggestible subjects showed little reduction in the interference effect. Others are trying to use the stroop effect in testing interference in bi-polar individuals. These studies were also focusing on the effects of interference on first-degree relatives of those with bi-polar disorders.

Some tests have shown that those with bi-polar disorders have an increased susceptibility to interference and intact inhibitory control in their first-degree relatives. Yet another future experiment that can be conducted is the “reverse stroop” test. This was done by psychologists to eradicate that idea that the stroop effect simply says that it’s hard to name colours because reading is automated as opposed to identifying colours. This new experiment

or testing has participants pointing to colours as opposed to naming them out loud.

Those are just some of the future experiments being conducted by other psychologists. Since J. R Stroop started this testing in 1935, it has been a cause for constant research by psychologists. The tests are great in testing cognitive abilities in individuals. It also offers clues to fundamental cognitive processes for psychologists. This test has formed three hypotheses. That the results are affected by automaticity, which says that reading, is an automatic process that cannot be turned off and therefore causes interference when a subject is asked to simply identify a colour as opposed to reading the word listed.

Another explanation comes from the speed processing which says that the brain processes words faster than colour. So when two stimuli's do not match, the brain will try to do what is naturally faster and that is read the word, and to avoid that, there is a delay in reaction time. The results do favour these explanations; however, as other psychologist's continue to study this topic, there may be other explanations that will be discovered that can present another perspective as to why one faces and perhaps how one can overcome the stroop effect.