Available online at http://jgu.garmian.edu.krd

Journal of University of Garmian

https://doi.org/10.24271/garmian.207218

Investigating the Reading Performance of Kurdish Learners of ESL by Using Stroop Test

Beway Mahmood Saheb

English Department/ College of Basic Education/ Halabja University

Article Info

Received: January, 2020

Revised: February, 2020

Accepted: April, 2020

Keywords

Stroop Test, Reading, Language Performance, ESL

Corresponding Author

beway.saheb@uoh.edu.iq

Abstract

Stroop test has not been used to examine the reading performance of Kurdish speakers of English as a second language. Therefore, the aim of this study is to use English and Kurdish Stroop tasks to investigate the reading performance of Kurdish Learners of ESL. The six males and three females who participated in this research represent the sample of the study. They read and name Stroop stimuli in each of the six tasks which were divided into two parts; three Kurdish tasks and three English ones. The results of the difference of time and the scores of the Stroop effect show that the time to complete the English tasks was longer than that of the Kurdish tasks, but the Stroop effect is almost equal in both Kurdish and English conditions. Moreover, the overall dominance of Kurdish language affects and facilitates the processing of the Kurdish Stroop tasks. The high reading performance of the participants is also noted and this indicates the suitability of English and Kurdish Stroop tests with Kurdish speakers of English.

1. Introduction:

1. Introduction

Reading skill is an essential skill in learning second language. The contexts of second language learning are the ones in which the target language of the classroom is already available outside the class (Brown & Lee, 2015). The tasks of reading can be done automatically or intentionally. Harley (2001, p. 162) points out that reading is basically a mandatory process; meaning that readers feel obliged to read a word once they see it. He supports this introspection by reporting evidence from the Stroop task: "naming the colour in which a word is written is made more difficult if the colour name and the word conflict (e.g. 'red' written in green ink)". During the reading process, it is required to make sense of the word by recognising the words as a language data as well as the concept. This sometimes becomes harder as a result of some factors such as lexical frequency, word length, dissimilarities of languages, and language transfer.

The Stroop task was originally devised by John Ridley Stroop (1935) who studied educational psychology. The test has been used in many related,

but different areas of psychology, and developed or modified by researchers around the world. It has also been employed to better understand the reading ability by examining the performance of test takers. During the test, stroop test takers generally are presented with three cards. Two of them contain words, and each word is a name of a colour. In one of these, the words are written in black ink (W) whereas in the other, words are printed in a colour which does not represent the colour (CW). The third card has equal number of items printed in coloured ink (C) as the other cards (Golden, 1978). Furthermore, the reading performance of each individual is observed with each card, and then compared together so as to measure the time and correct scores that is called Stroop interference effect or Stroop effect.

Bilinguals, people who are able to use two languages for communication (Procter, 2008), who have performed Stroop tasks encounter the problem of suppressing one language system so as to respond to the item in the target language. Bialystok, Craik, and Luk (2008) report that it is difficult for people who are proficient in two languages to access their lexicon because both languages are active during language production. Therefore, such bilinguals read in the second language with less automaticity. As a result, the performance of reading takes longer in terms of the time, and above all the size of the Stroop interference effect (i.e. the actual performance in terms of correct means of reading Stroop items) diminishes. This is in line with what Al-Ghatani, Obonsawin, and Al-Moutaery (2010), who created the first Arabic version of the Stroop test, support in their study that the Arab participants read the Arabic items faster than that of the English ones. It appears the more automatic they are, the less time they need to complete the tasks. However, the authors of the Arabic version of the Stroop task also find that the participants were successfully completed similar proportion of items for the English and Arabic Stroop tests. This result does not confirm the inverse relationship between the time reduction and the magnitude of the Stroop interference effect reported earlier. Additionally, this result comes from a small scale study in which the participants are ten Arabs originally from Saudi Arabia.

The understanding of Stroop effect is mostly based on the effective variables that have been reported in relevant literature during the last eighty five years of the existence of the test. Many factors affect the performance of the test takers. In a study involving two languages, the similarity between the two impacts the entire process of reading and naming the Stroop items. Fang, Tzeng, and Alva (1981) affirm the effect of orthographic variation on the performance of the participants in their Stroop study in which four nationalities took part. The spelling system of languages entails mechanisms that limit or accelerate the information processing system. Moreover, the difference between two languages, for example German and Swedish which are graphemically similar to a degree, and English and Chinese which are not, has to be taken into consideration because this influences Stroop interference effect to various extents (Chen & Ho, 1986).

In this research, the reading performance of Kurdish learners of English as a second language (henceforth ESL) is studied using both Kurdish and English versions of Stroop tasks. Time differences and correct scores are investigated so as to understand how fast and correct the Kurdish learners read and respond to the tasks. It is hypothesized that

the learners may take longer in responding to the English Stroop tasks as English language is not the participants' first language which may also affect reading the number of English Stroop items accurately, if compared to reading the Kurdish Stroop items. It is expected that this study, as the first scientific piece of paper to the best of our knowledge in the context of Kurdish and English languages, determines whether Stroop test helps in better understanding the reading performance of the learners. The following research questions are posed:

1. Do Kurdish learners of ESL read the Kurdish Stroop tasks faster than the English tasks? Why?

2. How do Kurdish learners of ESL perform Kurdish and English Stroop tasks correctly?

3. Can both versions of the Stroop test, English and Kurdish, be used with Kurdish learners of ESL?

2. Methodology

2.1 Participants

The participants are nine Kurdish ESL Learners, 6 males and 3 females. Their mean age is 30.1. The learners are studying postgraduate M. A. programs such as English language, engineering, computer sciences, agriculture, and pharmacy at the Nottingham University, UK. This means they are qualified in English and have a good command of the English language. In addition, the mean years of their education were 23 years including the years of schools and the four years of undergraduate university levels. All nine students were healthy at the time of testing with no history of any language disorder or illness. In table (1), the demographic characteristics of the subjects are shown.

Table 1- Participants Demographic Characteristics

Subject No.	Age	Gender	Years of Education
1	25	Male	19
2	33	Male	25
3	26	Male	20
4	28	Male	22
5	25	Male	19
6	34	Male	25
7	27	Female	20
8	38	Female	30
9	35	Female	27

2.2 Materials

A version of the Stroop test was developed to fit the research aim of this paper based on Golden's (1978) *Stroop Colour and Word Test*. Instead of using cards, computer power points were used, and three slides for each language version, Kurdish and English were created. The first slide (W) has sixteen words printed in black ink, and the second slide (C) contains the same number of items printed in coloured ink and in rectangulars. The third slide (CW) has the same number of words that are printed in coloured ink which is different from the words which represent the selected colours. Therefore, the total number of slides is six.

The Times New Roman is used to type the English colour words because it is a common and clear font. Then, Kurdish Keyboard is installed in order to type the Kurdish words because the Kurdish font is not originally available in Microsoft Office programs and this keyboard is also commonly used in Iraqi Kurdistan region where the participants belong. The chosen font size is forty.

There has not been consensus on how many colour words should be taken into account. After reading several articles; therefore, four colours have been selected for the test. These are red, green, blue, and yellow. The number of syllables in the Kurdish and English words is equal except for yellow which is two syllables.

2.3 Procedure and Data Analysis

The two parts of the test were administered separately. The necessary instructions were given to the participants in their mother tongue which is Kurdish. The Kurdish part of the test was conducted first, and then followed by the English one.

Each slide was reported treated independently; moreover, the focus was on to two main points. Firstly, how long it may take each participant to read the items was carefully noted down including the seconds (s.) and milliseconds (ms.). Secondly, the whole performance of each participant was recorded so as to listen to it afterwards. As a result, the errors of the participants were counted. Thus, it seems that the participants were supposed to make mistakes or miss a word especially when they read the third slide of incongruent items.

3. Results

In table 2, the detail of the time each participant took to perform each task is shown. The time differences between Kurdish and English word-naming slides, colour-naming slides, colour-word-naming slides, and Kurdish and English mean scores are presented. Overall, it took the subjects to read the English part longer (12.87) than the Kurdish one (10.71). To be specific, in reading (W) slides the average for both languages are almost the same. In naming (C) slides, participants needed (9.26) for the Kurdish part whereas they completed the English part in (12.51). Finally, the time to name the English (CW) items outweighs that of the Kurdish items by almost three seconds.

Table 2- Participants' Time Differences between the Kurdish and the English Stroop Tasks. (The numbers below are in seconds and milliseconds.)

Sub.	Kurdish (W)	English (W)	Kurdish (C)	English (C)	Kurdish (CW)	English (CW)	Kurdish Mean	English Mean
1	6	6.1	8.3	11.3	12.4	17.5	8.9	11.63
2	5.8	7	8	11	13	17.7	8.93	11.9
3	4.8	7.1	8.5	9.2	18.02	21.4	10.44	12.56
4	6.0	5.8	8.2	12.7	14.5	16.1	9.56	11.53
5	7.0	6.7	8.6	12.3	14.8	17.0	10.13	12
6	7.9	6.2	7.8	14.3	19.8	24.1	11.83	14.86
7	8.2	8.33	10.61	13.1	14.71	17.43	11.17	12.95
8	9.2	11	13.3	13.2	17.1	18.2	13.2	14.13
9	8.74	6.58	10.07	15.53	18.02	20.71	12.27	14.27
Total	7.07	7.20	9.26	12.51	15.81	18.90	10.71	12.87
Mean								

Table three shows the scores of the subjects in doing the Kurdish and the English Stroop tasks. There are two essential points to be made. Firstly, there are two errors in the Kurdish naming colour task that belong to participant one and three. The first participant skipped one colour. The third participant used a dialectical counterpart instead of the main word for the colour green which is *sawz* in Kurdish. For the latter case, the participant speaks Kurdish semi-official language (Sorani Dialect) fluently. However, he speaks and uses another Kurdish language variety (Hawleri dialect) in which there is another word for the colour green *kask*. He utters *kask* once and it is considered incorrect. This is because he had been informed about this issue before the experiment, and the ninth participant also speaks that local dialect, but she did not make that mistake. Secondly, it appears that there is a very small difference (15.81 compared to 15.7) between both mean scores of the correct items in the Kurdish and English tasks.

Table 3– The Correct Scores for the Kurdish and the English Stroop Versions

Subjects	Kurdish (W)	English (W)	Kurdish (C)	English (C)	Kurdish (CW)	English (CW)	Kurdish Mean	English Mean
1.	16	16	15	16	16	15	15.66	15.66
2.	16	16	16	16	16	15	16	15.66
3.	16	16	15	16	15	16	15.33	16
4.	16	16	16	16	16	16	16	16
5.	16	16	16	16	15	16	15.66	16
6.	16	16	16	16	15	14	15.66	15.33
7.	16	16	16	16	16	15	16	15.66
8.	16	16	16	15	16	15	16	15.33
9.	16	16	16	16	16	15	16	15.66
Total mean	16	16	15.77	15.88	15.66	15.22	15.81	15.7

4. Discussion

This paper examines the reading performance of Kurdish students of ESL by using Kurdish-English Stroop test. Three research questions are posed. The First question explores the time difference between performing the Kurdish and the English Stroop tasks and the possible reasons behind the time difference. It appears that Kurdish ESL learners read and name the Kurdish stimuli (i.e. the Kurdish items or words) faster than its English equivalents. It is also noted that the participants took longer to read and name the English stimuli in each condition (W, C and CW) compared to the Kurdish stimuli. These results are expected as there is a large body of literature that proves the dominance of the first language of participants in executing the Stroop tasks. This result is consistent with what Al-Ghatani et al. (2010) discovered with Arab participants who experienced Arabic and English Stroop tests for the first time. Moreover, the second part of the first research question tackles the factors that cause the time difference explained earlier. The participants were more automatic in reading the stimuli in their first language, Kurdish, than their second language, English. For them, it was easier to access the vocabulary of their Kurdish language than the English lexicon. Similarly, Bialystok et al. (2008) stress the role of automaticity and lexical access processing in facilitating Stroop tasks in the first language. Macleod (1991) in his famous review concludes that lexical access of second language is undoubtedly difficult. In Parallel with the previous studies, Chen and Ho (1986) believe that participants who perform Stroop tasks in two different languages with distinctive systems, for instance Kurdish and English, cannot read both types of stimuli in an equal amount of time. Regardless of many variations that

exist between Kurdish and English, Fang et al. (1981) argue that the different orthography of both languages alone makes hard for the Stroop test-takers to perform uniformly.

The second research question is basically about the performance of the learners that are supposed to read and name the Stroop stimuli. It is, thereby, the outcome of the effect that the Stroop tasks produced. The results reveal a tiny difference between the overall performance of the learners in doing the Kurdish and the English tasks. It is vital to report this success of the Kurdish ESL learners in accurately performing the Stroop tasks in both languages. This result is very similar to an outcome from two studies that the participants performed equally without a noticeable Stroop effect (Al-Ghatani et al., 2010; Lee & Chan, 2000). Additionally, it is worth noting to see how this successful performance of the learners was not largely influenced by the factors mentioned earlier for the first research question.

The third question of the research questions the use of Stroop test in the context of Kurdish ESL learners. In other words, the appropriateness of not only the English version of the test, but also the Kurdish version is valuable to be exposed in an academic paper for the first time. Based on the discussion for both first and second research questions, it appears that the participants fully engaged in every step of the test. They also showed outstanding performance in completing the tasks quickly and reading the stimuli accurately. Therefore, Kurdish ESL learners are compatible with the Stroop test which can be adapted to fit further conditions, for example, foreign language context.

5. Conclusions

The reading performance of Kurdish speakers of English as a second language has been investigated for the first time with respect to Stoop tasks and in light of previous relevant studies. The dominance of the learners' first language, Kurdish, helps in producing an unequal response time for both Kurdish and English Stroop tasks because the learners experienced less automaticity in reading the English Stroop tasks, and this makes hard to access their English lexicon and read the English Stroop items as accurately as their Kurdish counterpart items. These outcomes by the learners prove the hypotheses aforementioned, and they show that the Kurdish and English of the Stroop test are needed as vital tools to learn about the reading performance of Kurdish learners of ESL. Moreover, the implication of this study is going to be in the area of learning languages, language pedagogy, and reading skill; however, the study's limitations such as its context and its small number of participants can be considered for further investigation.

References

Al-Ghatani, A., Obonsawin, M., & Al-Moutaery, K. (2010). The Arabic version of the Stroop test and its equivalency to the English version. *Pan Arab Journal of Neurosurgery, 14(1),* 112-115.

Bialystok, E., Craik, F.I.M., & Luk, G. (2008). Cognitive control and lexical access in younger and older bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 34(4),* 859 - 873.

Brown, H., & Lee, H. (Eds.). (2015). Teaching by principles: An interactive approach to language pedagogy (4th ed.). *London: White Palms: Pearson Education Inc*.

Chen, H. C., & Ho, C. (1986). Development of Stroop interference in Chinese- English bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 12(3),* 397-401.

Fang, S.P., Tzeng, O.J.L., & Alva, L. (1981). Intralanguage vs. Interlanguage Stroop effects in two types of writing systems. *Memory and Cognition, 9*, 609– 617.

Golden, C. J. (1978). *Stroop colour and word test: Cat. No. 30150M; a Manual for Clinical and Experimental Uses. Stoelting*.

Harley, T. A. (Eds). (2001). The psychology of language: From data to theory. (2nd ed.). *Sussex. Psychology Press Ltd*.

Lee, T. M., & Chan, C. C. (2000). Stroop interference in Chinese and English. *Journal of Clinical and Experimental Neuropsychology*, *22(4),* 465-471.

MacLeod, C. M. (1991). Half a century of research on the Stroop effect: An integrative review. *Psychological Bulletin*, 109, 163–203.

Procter, P. (2008). Cambridge advanced learner's dictionary. Cambridge; Cambridge University Press

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology, 18, 643–661.*