Leading Words and Estimation

Beyza Özen

beyza_ozen@hotmail.com

İmran Ünlü

unlu.imran@gmail.com

Zehra Betül Türel

betul.turel65@gmail.com

Hazel Varlı

hazelvarli@hotmail.com

Abstract

This study has examined that when people making a decision on speed estimation about a complex event such an accident how they are affected by leading words of other people. The research has aimed to find out how accurate people are in reporting numerical details such as how fast two trains were travelling. An eighteen seconds video clip which is comprised of train accident was showed to participants in this research. Participants questioned with leading questions which include "smash" and "hit" and "no leading". There were two experimental and one control groups. The research was designed as a quasi experimental study. Participants were selected out of students of Psychology department in Istanbul Bilgi University. The result of this study indicated that participants gave higher speed estimation when they were exposed the question that includes "smash" rather than "hit" or "no leading".

Keywords

Leading words, speed estimation, decision

Effects of Leading Words on Speed Estimation

We make some decisions and estimations in daily life as a routine. We think when should we wake up, what we have in breakfast, how we dress in job or school or somewhere else, Are the clothes chiffon or tricot depend on the weather condition, so we need to estimate the air temperature. We think which way we chose to walk, we estimate the automobile speed when to cross, and these daily decision and estimation go on. As doing those we try to gain maximum gain and minimum loss about our lives (Taatgen et al., 2007). These are simple and banal things for us. When people experience such these actions or events, they constantly make decisions and estimations. However when people make decisions or estimations, they did as influenced other people's attitudes, words or behaviours. In this research mostly focuses on people estimation which is open to able to be affected language of other people. We studied on leading words effect on estimation.

In early study, Loftus and Palmer (1974) showed a film about the collision of two cars. The first group was asked for "How fast were the cars going when they contacted? ". Experimenters asked the same questions to the other group using verbs such as "hit", "bumped", "collided", and "smashed" instead of contact. Results indicated that, the participants ended up giving a higher estimate of speed when using verb "smashed" than others. Later, although there is not broken glass in the video, experimenters asked "Did you see any broken glass in accidents?". More members from the group of smashed compared to the members from the group of "collided", "bumped", "hit" and "contacted" said that they have seen a broken glass in the video. The word is "smashed" which is settled in minds re-create the memories about a video, this situation have led to see them as ones that are not in actuality. The aim of this study was that would a leading question could distort the people's decision on estimation. Therefore we can say that the way question asked people and the answer they give after exposed to the question are interconnected.

Another study of Loftus was about the misinformation effect. This study showed that when people had misinformation, memory can become awry. Loftus performed classic automobile accident experiments. They are used deceptive elements. First of all, subject were shown mixed event. In this experiment, when half of subjects received the misinformation, the other halve of the subjects were not misinformed. All of them tried to remember the actual accident. This study used this paradigm that subject saw accident and later they received the misinformation about traffic sign to control traffic. They were told that the traffic sign was a stop sign, when in reality it was a yield sign. This study shows that misinformation can change individual's memory. Taken together, the hundreds, if not thousands, of similar

studies show that misinformation can change an individual's recollection in predictable, and sometimes very powerful, ways (Loftus, 2005).

There is another important researcher; S. Cooley. He also made researches about leading questions in false memory. In his experiment, there were two groups: experimental and control groups. The experimenters showed series of 20 pictures and asked them leading-misleading and non-leading questions. They were asked the same questions which contain the connotation words: "do you remember seeing the blood in the picture of the crime scene?" The keywords used in the experimental group had stronger connotations than those used in the control group: "do you remember seeing the blood in the picture of the murder scene?" The results show that the use of words with stronger connotations can cause people to create more false memories (Cooley, 2008). We see the results of these experiments are so similar: The Loftus experiment is supported by Cooley's.

What we want to show by making a similar and smaller experiment is that leading words used in questions can bring out different answers from participant even they are exposed to same scenario. The experimental design which we want to use is closer Loftus rather than Cooley. However, it is similar what we say at the end of the experiment. We are going to demonstrate when people make decision they (consciously or not) are affected question styles and words. Why we chose this topic is that leading questions have significant place in people lives. Sometimes it's used persuasive method, sometimes psychotherapy technique to prompt the patient to remember childhood traumas. Moreover it can be used by the general public such as in child abuse cases. To sum up, as a group we thought this topic is both useful and practical, and we expect to obtain the results such Loftus' and Cooley's.

Method

Participants

Thirty eight undergraduate students who are studying Psychology in Istanbul Bilgi University participated in this experiment. The participants are participated in voluntarily and selected from the general psychology course. The study group consisted of both female (35) and male (3) students and they are between ages 18 and 38. The average age of students was 20 years (*SD*=3.11). All participants are requested to sign informed consent form.

Material

Consent forms and blank sheets were given to the participants. An eighteen seconds video clip which is comprised of train accident was showed to the participants. The video clip is similar to the original experiment's clip (Loftus and Palmer, 1974). Also, there were two experimental and one control group and first group consists of fourteen, second group consist of ten and third group consist of ten participants. The independent variable of this experiment (IV) is the word asked with questions and the dependent variable (DV) is the estimation of speed in kilometers per hour (km/h) answered by participants. Independent variable is operationalized in terms of two words in the questions: "smash" and "hit" and dependent variable is operationalized by the answer that participant estimate in response to question. Moreover; in order to determine whether independent variable has effects on dependent variable, the participants were asked three different types of questions on one

trial: "How fast were the cars going when they smashed into each other", "How fast were the cars going when they hit each other" and "How fast were the cars going in the video". First and second questions includes leading words ("smash" or "hit"), even third one do not ("no leading"). In addition to this, our experiment was conducted in Turkish: all questions and consent form was translated from English to Turkish. Debriefing was made to explain the main purpose of the experiment to the participants.

Design and Procedure

This study was conducted as an experimental study in order to investigate the effects of leading words on speed estimation. A convenience sample which consisted of 38 undergraduate psychology students from three different sections of Critical Thinking in Psychology class. There were fourteen students in the first section, ten students in the second section and other ten students were the third section. These three sections were randomly chosen as either control or experimental groups. A quasi-experimental design was used in the study. This experiment contained two experimental groups and one control group. The independent variables were manipulated by the connotation of the key words in each question; either "smash" or "hit". The dependent variable was the speed estimations of participants in kilometers per hour (km/h).

Each section was collected and tested at the different time and different places which are located in the classroom at Bilgi University. Two sections of Critical Thinking in Psychology class received leading question about the video clip and other section received non-leading question. Firstly, in each section the informed consent forms were given the participants before the beginning of experiment and they were informed about their right of withdrawal from the experiment. Then participants were asked to read and sign the informed consent forms. After reading and signing; they were not informed about the aim of experiment, it is just asked to watch carefully the video clip and then to write their answers on questionnaires. Then participants were showed an eighteen seconds video clip of a train accident and questionnaires were given to them to write their answers. In the questionnaires it is asked to write their estimation of speed about the accident they had just seen. First group were asked "How fast were the trains going when they 'smashed' into each other?", and second group were asked "How fast were the trains going when they 'hit' each other?" and the control group were asked "How fast were the trains going in the video?" After participants write their answer they were debriefed regarding the experiment. Finally, all participants were thanked for their participation to study.

Results

The main aim of this experiment was to analyze the effect of the leading questions on speed estimation. Thirty eight students participated in this study and they were separated into three groups: 1) 'smash', 2) 'hit', 3) 'no leading'. We expected that participants to give higher speed estimations to the question which includes 'smash' than questions which includes 'hit' and 'no leading'. Again, it was expected that they will give higher speed estimation to the questions that contain 'hit' than the questions contain 'no leading'. To test whether or not there was leading question effect, we analyzed main effect of 'smash', main effect of 'hit' and

main effect of 'no leading'. One way anova was carried out to evaluate the effects of leading question on the speed estimation. Results of the analysis showed that the null hypothesis should be rejected, there is a significant main effect for each form of a question, F (2, 35) = 4.36, $p < .05$ and $\eta^2 = .19$. The descriptive statistics of experimental conditions is shown in Table 1.

Moreover, Post Hoc Tukey test was conducted to determine differences within groups. Results of that analysis show that there are significant differences between the conditions of 'smash' & 'hit' and 'smash' & 'no leading'. As illustrated in Table 1, the mean speed estimation of questions asked with 'smash' (M= 135, SD=67.7) higher than the question asked with 'hit' (M=84, SD=27.1) and the question asked with 'no leading' (M=87.1, SD=38.7). Contrary to our expectations, there is no significant difference between the condition of 'hit' and 'no leading'.Furthermore, because we have unbalanced gender variation (3 males, 35 females) in this experiment, we did not make a correlation between gender and speed estimation: it would not give us accurate information. Similarly, by the reason of there was only one participant whose age is 38 and most of the participant's ages are between 18-22, it would be inaccurate to make a correlation between ages and speed estimation.

Table 1. The mean distributions of experimental conditions

Experimental Conditions	N	Minimum	Maximum	Mean	Std. Deviation
Hit	10	50	140	84,00	27,16
Smash	14	60	300	135,00	67,79
No leading	14	10	150	87,14	38,71

Table 2. Anova Test

Speed	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21432,1	2	107160	4,368	,020
Within Groups	85875,7	35	2453		
Total	107307,8	37			

	(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
Tukey HSD	smash	hit	51,0*	20,5	,046	,80	101,19
		no leading	47,85*	18,7	,039	2,03	93,67
	hit	smash	-51,0*	20,5	,046	-101,19	-,80
		no leading	-3,14	20,5	,987	-53,33	47,04
	no leading	smash	-47,85*	18,7	,039	-93,67	-2,03
		hit	3,14	20,5	,987	-47,04	53,33

*. The mean difference is significant at the 0.05 level.

.

Discussion

Our findings showed that there was a relation between the words in questions and prediction of speed. There were differences in estimation times between some groups. These different estimations are important for our claim. The used "smashed" word when questioning has significant effect on participant decision. This difference estimation supports our hypothesis.

In the result of experiment, we see this significant effect. This is important because it claims that when people speak or ask something to somebody else, the person who listens or answers could be affected the speaker's own words. That influences the person's answers, decision making. Due to different connotations of the words, the three groups in our experiment did not give same answers to our questions. Before the experiment; we expected to have the similar results like previous experiments. We were predicting that we will have similar results because we know the language is effective on people. Actually, some of us expected to have acuter and more significant difference between the groups. However we

obtained significant difference as being seen in result part. We have had some limitations during the study also see below such as context, demographic effects or experimenter effects. If these limitations could be reduced, we claim that the experiment would have more significant difference.

When we look at the past experiments we have differences from the study of Loftus and Palmer (1974). They did this similar experiment in comprehensive form, and moreover they also had misleading effect. They also investigated false memory, but we only interested in leading-no leading questions not asking questions to the participants a week after again. We mentioned above Cooley study. Cooley's study also had different form but it was has some similarity with us. In his study, there is also investigated the false memory with misleading questions. There are difference between Cooley and Loftus & Palmer study. They both investigated false memory with language, but Loftus & Palmer experienced as using existing and not existing details; Cooley did as using strength of words. Furthermore we tried to do this experiment in a little different form.

Implementation phase of this study has some limitations. First of all, random assignment could not used because of the practical issues. Further researcher may apply random assignment to obtain more valid and reliable results. Also, this study can be implemented in different groups for being more representative. This study applied only Bilgi University's psychology students and has less male participant. Future research may apply different groups and has uniformly dispensed gender for being representative. That is why if this research apply the more participant, may be more accomplished. All participants did not perform the experiment at the same time and same class conditions. Future researchers may try to same condition to be more reliable. Moreover our experiment can be appropriate and useful for eye witness testimony studies: it is beneficial to take into account leading questions effects on bystander. Finally, control of experimenters was not directly, so participants could have effects on each other. Future researchers may apply one to one testing in laboratory environment to increase the reliability and validity in this research.

Consequently, we see power of words by this experiment. People can be influenced by words (leading, no-leading or misleading) that can affect people's estimations. This experiment thesis has great importance in people lives. In fact, it can be exposed to misleading information or reveal false memory, and it can also change individual's recollection. In terms of the leading effect on human, the claim of experiment is significant or important.

References

Cooley, S. (2008). An experimental investigating the effects of leading questions on false memory creation regarding a series of images. College of Saint Elizabeth Journal of the Behavioral Sciences, 2, 1-8.

Loftus, E.F. & Palmer, J.C. (1974). Reconstruction of auto-mobile destruction: An example of the interaction between language and memory. Journal of Verbal Learning and Verbal Behaviour, 13, 585 -589.

Loftus, E. F. (1975). Leading questions and eyewitness reports. Cognitive Psychology, 7, 560-572.

Loftus, E. F. (1994). The myth of repressed memory. New York: St. Martin's.

Loftus, F. E. (2005). Searching for the neurobiology of the misinformation effect. Learning and memory, 12, 1-2.

Taatgen, N. A., van Rijn, H. & Anderson, J. (July, 2007). An integrated theory of prospective time interval estimation: The role of cognition, attention, and learning. Psychological Review, 3. 577-598.