

Title: A WITHIN-SUBJECT DESIGN OF COMPARISON OF WAITING TIME OF PEDESTRIANS BEFORE CROSSING THREE SUCCESSIVE ROAD CROSSINGS

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Abstract:

The study was aimed to compare the waiting time of pedestrians before crossing three successive road crossings. Most of the studies related to pedestrians' behavior are focused in between-subjects designs but not many of them are based on a deeper understanding of patterns of the same pedestrians in various situations. It is important to learn more profoundly the universal cognitive mechanisms underlining pedestrians' behavior.

One of the relatively rare examples of this trend is the work of Hamed (2001) which presents interesting findings concerning the crossing patterns of pedestrians in Jordan. Hamed found a negative correlation between waiting times of pedestrians before crossing the first part of a road divided by an island and the waiting time before crossing the second part of the same road. The more the pedestrian waited at the first crossing the less he waited at the second one, perhaps because the first trial did not leave him/her enough patience for the second trial.

Theoretically, two alternative explanations are relevant to this finding: (1) The pedestrian relates to both parts of the road as to one piece of barrier and therefore the patience devoted to the crossing of the first part is on the account of the patience of the second part and (2) Each pedestrian is "equipped" with one unit of patience which decreases as the pedestrian is trying to cross both the two part of the road.

The differentiation between the two explanations of pedestrians' behavior while crossing double-crossing roads has practical value in the context of road crosses design. It is important that pedestrians when coming to cross streets will do it highly patient and alert.

The empirical determination of both the theoretical explanations has been made by testing the waiting time of pedestrians before crossing a triple-crossing. Our hypothesis was that if the first explanation was valid, then the third crossing will be perceived as a new road and therefore a new "portion" of patience will be used. If the second explanation is relevant then the pedestrian's patience will lessen and till s/he arrives at the third part the waiting time will be shorter than at the previous two crossings.

A second empirical test to determine between the two models was carried out by a comparison between the correlation of waiting times of pedestrians in two different types of double-road: (1) with a narrow or (2) with a broad island diving between the two parts of the street. Our hypothesis was that due to a broader island the double-road is perceived as two units by the pedestrian and therefore his/her patience will be refreshed at the second part.

More than 900 people (57% female) were observed by crossing a triple-crossing road in five different locations in the center of Israel. The waiting times before crossing at each part of the road were recorded by two experienced observers. The mean waiting time beyond individual differences was 5.18, 4.95 and 0/84 seconds at the first, second and third crossings in respect.

Our results are not in line with those of Hamed (2001). Beyond the demographic variables of age, gender, location and other, Pearson Correlation Test reveal that there is a positive strong correlation between waiting times of the first and the third crossing $R=0.194$ $p.<0.05$ (but not the second crossing. This finding supports the model of the renewing patience of the pedestrian.