

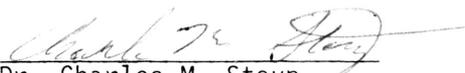
TO VIOLATE OR NOT TO VIOLATE:  
A STUDY OF PEDESTRIAN BEHAVIOR AT A CROSSWALK

by  
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Psychology

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## ABSTRACT

To Violate or Not To Violate:

A Study of Pedestrian Behavior At a Crosswalk (April 1984)

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This study was conducted to investigate the effects of a law-violating model, presence of a uniformed authority figure, and the combination of both of these factors on the likelihood of violating a "Don't-Walk" signal by pedestrians. A total of 2219 pedestrians were observed. The results indicate that the presence of a law-violating model increases the likelihood of violation, while the presence of an authority figure decreases this likelihood. It was also found that with both present simultaneously, the rate of violation was no different from control. Additionally, the gender of the model and authority figure was varied, and the effects of this variation on male and female pedestrians observed.

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DEDICATION

This thesis is dedicated to my parents for their never ending love and support in my educational endeavors.

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## INTRODUCTION

In today's society there are many contradictory views on breaking rules, regulations, and laws. These contrary views which apparently motivate misbehavior are what have caused this researcher to investigate the factors that determine the decision to comply with or violate a law.

Many studies conducted have shown that a violating model will affect subject behavior more than a conforming model. Dannick (1973) investigated the impact of law-violating and law-adhering models on pedestrian behavior at a crosswalk where traffic flow was minimal. The subjects had to make a decision either to violate or comply with a "Don't-Walk" signal at an intersection. The results of Dannick's study showed that the law-violating model had a stronger effect on subject behavior than the law-adhering model. In a study on sign violation, Freed, Chandler, Mouton, and Blake (1955) found that subjects would violate a sign prohibition more in the presence of a violating model than in the presence of a conforming model. Kimbrell and Blake (1958) conducted a study on motivational factors and how they

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This thesis follows the style required for publication in the Journal of Personality and Social Psychology.

affected violation of a prohibition. They found that more violations occurred when the subject saw another person violating than when the subject saw another person conforming. Barch, Trumbo, and Nangle (1957) hypothesized:

that the signalling behavior of the driver of a motor vehicle preparing to turn at an intersection would be related positively to the signalling behavior of the driver of an immediately preceding motor vehicle.

The results supported the hypothesis that the behavior exhibited by others in a situation involving a legal norm influences a subject's behavior. (pp. 396, 398)

These studies seem to indicate several types of human behavior:

1. Shared Risk and Safety in Numbers - both come under the same type of behavior in that the more that participate in the behavior the safer the person feels due to the other's participation, since the risk is shared equally among the participants.

2. Sense of Adventure - acting on impulse, trying something new, or something that varies from your normal behavior.

3. "Catch Me If You Can" - combines shared risk and the sense of adventure into a game in which the violation is of an apparently mild nature.

Factors other than, but including, the direct effect of the model's behavior include things such as sex, status, race, and the number of violating models. Leftkowitz, Blake, and Mouton (1955) found that subjects would violate a traffic regulation more frequently in the presence of a violating model as opposed to when no model was present,

and that significantly more pedestrian violations would occur when the violating model was dressed to represent a higher rather than lower social status. This study seems to point out a "follow the leader" effect, in which the subjects would simply follow the model, perhaps not considering the possibility of prosecution for the act, or conceivably rationalizing the action due to the other pedestrians involvement. It may also suggest a "maybe he knows something I don't know" effect, or that the violating model (higher status) is privy to inside information denied the average person.

In an extended study of jaywalking with regards to the sex, race, and the number of violating models, Russell, Wilson, and Jenkins (1976) found that the higher status model effect generalized across the sex, race, and number of violating models. This was accomplished by using high status females and black violating models, and jaywalking was increased with the use of two violating models, as compared to one. This study indicates safety in numbers and catch me if you can behavior. It also indicates crowd behavior, which stems from: (a) A common mood or emotion, and is motivated by strong emotion (e.g., fear), and (b) The exemplar behavior of one or more individuals; the more that participate, the more the behavior is reinforced.

In a study by Lincoln (1977) to examine the effects of modeling on donations, he found that both male and female models increased the rate of donations over the no model condition, with male models clearly more effective than female models. Solomon and Grotta (1976) pointed out that "the model may serve to remind or indicate to the observer that the behavior is either appropriate and socially desirable, or at least

unlikely to lead to punishment" (p. 29). All of these studies seem to indicate that the subject finds a sense of security in the model's behavior, and a follow the leader type of response.

Punishment, or the lack of it, seems to be another factor in the determination of pedestrian behavior, especially where an authority figure is directly involved. Wheeler (1966) in his review of the literature pointed out:

Walters and Parke (1964) and Walters, Parke and Cane (1965) found that children violated prohibitions against playing with toys less after having observed a punished model or a model who was neither rewarded or punished. It is probably the case that if the observer expects the model to be punished, the lack of any overt punishment is perceived as rewarding. (p. 187)

This study shows that the lack of prosecution would seem to encourage violation, or at least help rationalize the behavior. Galizio, Jackson, and Steele (1979) found that the presence of a police vehicle (authority figure) caused people to reduce their driving speed. They concluded that this reduction in driving speed was probably due to an overreaction to avoid punishment rather than for safety, or fuel efficiency reasons. In the above study, the authority figure, represented by the policeman in the police vehicle, caused people to reduce their driving speed due to the likely nature of getting a citation for speeding. In a study by Bickman (1974), subjects were asked to either pick up a paper bag, give a dime to a stranger, or move away from a bus stop by experimenters dressed either as a civilian, milkman, or a

guard. The results showed that the subjects complied more to the request of the guard than to the request of the civilian or the milkman.

Sigelman and Sigelman (1976) conducted a study to examine the effects of an authority figure and bad model on the rates of prohibited right turns on red lights by motorists. They found that subjects would violate the right turn on red law less frequently with an authority figure present, but in the presence of a violating model the subjects turned right on red more frequently. The addition of an authority figure to the violating model condition gave the same rate of violation as the rate obtained with the violating model alone. This study seems to indicate several effects: safety in numbers, catch me if you can, shared risk of potential prosecution, and the gambling instinct. The gambling instinct being that the odds are 50/50, when in the presence of an authority figure and a visible role model that he, as the second violator, has as good a chance of avoiding a citation as that of the violating model, assuming the authority figure can handle only one violator at a time. In the studies presented above, human behavior was observed, and can be labeled in several natural ways: crowd behavior, catch me if you can, follow the leader, and finally, maybe he knows something I don't know.

Touhey (1974) conducted a study examining the ratings of the status of five occupations by male and female subjects. He found that the occupational prestige decreased when subjects anticipated an increasing proportion of women entering these fields in the near future. In a study conducted by the author examining subject's attitudes when

comparing male and female authority figures in areas like physical capability, competence, efficiency and perceived authority, it was found that the male authority figure was rated significantly higher than the female authority figure in these areas.

Past research concerning modeling, authority figures, and their effects on conformity or violation of a prohibition suggests that a number of model and situational characteristics may produce effects on the pedestrian's behavior. However, none of the pedestrian studies cited above have investigated these factors simultaneously to test for any potential interactions among model characteristics. Therefore, two studies, Study 1 and Study 2, were conducted with the following expectations:

1. Subjects will violate the law more frequently in the presence of a violating model than with no violating model present.

2. Subjects will violate the law less frequently in the presence of an authority figure than with no authority figure present.

3. Subjects will violate the law at the same rate in the presence of both a violating model and authority figure as in the presence of a violating model alone.

4. Subjects will violate the law more frequently in the presence of a male violating model than in the presence of a female violating model.

5. Subjects will violate the law more frequently in the presence of a female authority figure than in the presence of a male authority figure.

## METHOD

### Setting

The setting for both studies was a street corner, on a large college campus, adjacent to the main college "drag". This setting was ideally suited for the studies due to the large flow of pedestrians. The subjects of the studies were pedestrians who approached the corner of observation, and were confronted with a crosswalk signal that flashed alternately from "Walk" to "Don't-Walk". The traffic flow of this intersection was a little different than most, and some additional explanation is necessary. The "Walk" signal was only on for eight seconds, and when the "Don't-Walk" signal came on, the traffic light was still green for the motor vehicles flowing in the same direction as the pedestrians. Also, when the "Walk" signal was on, vehicles opposite to the pedestrians (see Figure 1-A) could turn left from point F to point B into the pedestrian's crosswalk, this was not a protected left turn and left up to the discretion of the driver of the motor vehicle. An advantage to the corner, due to both the heavy flow of pedestrians and motor vehicles, was that when the traffic flowing (see Figure 1-B) from point A to point B stopped, this allowed traffic flowing from point C to point D to make a protected left hand turn from points C to E. This made it safe for the violating model to violate the "Don't-Walk" signal, because by the time the model reached the center of the intersection, the "Walk" signal was on. And since

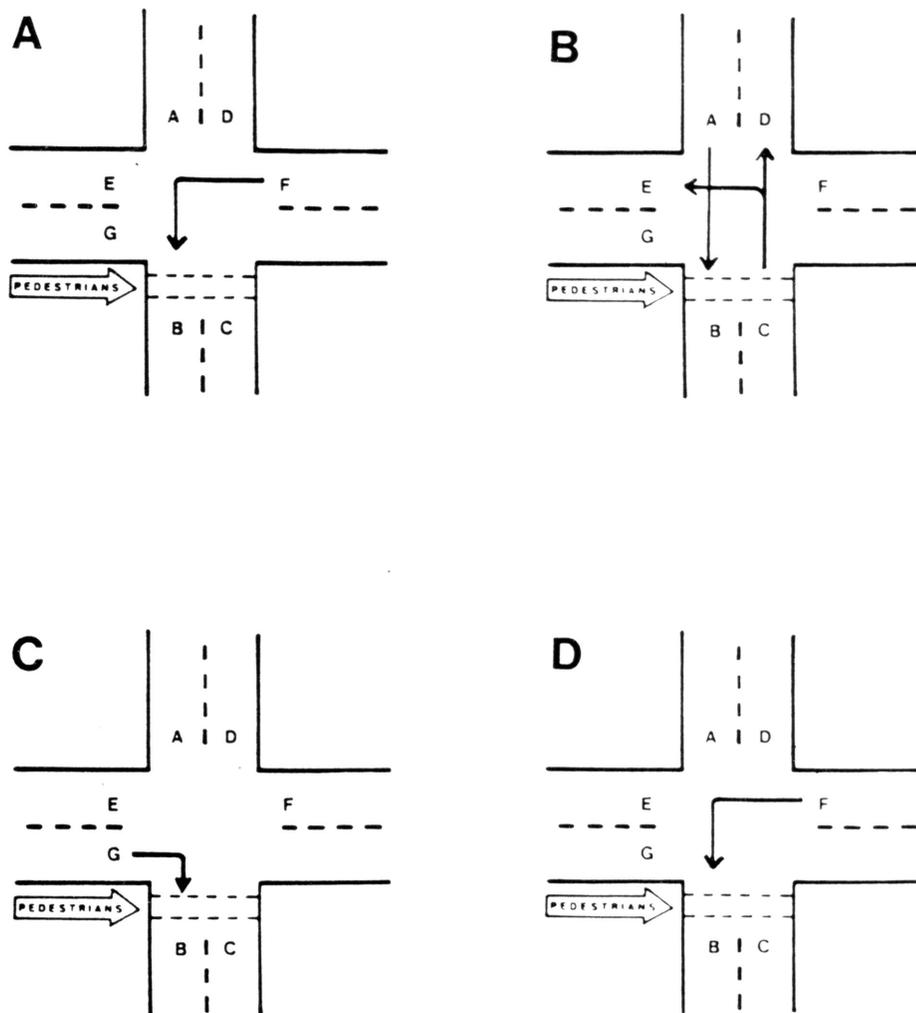


Figure 1 Diagram of the intersection employed

the safety of both the models and the pedestrians involved was the primary concern, this made the corner suitable for the studies. Any right hand on red turns from points G to B (see Figure 1-C), or any left hand turns from points F to B (see Figure 1-D) that interfered with the violating models procedure, or interfered with the subject's decision to violate or comply with the "Don't-Walk" signal were disregarded as a confounding variable. These studies were conducted with the permission and participation of the University Police Department, and there was no additional police activity in the area other than when the authority figure was involved.

#### Procedure

The basic conditions for observation were as follows:

Control Condition - no bad model or authority figure present.

Bad Model Condition - a person representing a bad model would violate the "Don't-Walk" signal.

Authority Figure Condition - an authority figure was placed on the corner where the pedestrians were standing.

Combined Condition - both a violating model and authority figure were present.

Observations were made on randomly assigned weekdays from 3:00 p.m. to 5:00 p.m., with 30 minutes allowed for each condition. Two observers were positioned unobtrusively about 50 feet away with a clear view of the crosswalk area. Subjects were recorded as violators if they stepped off the curb and crossed the street in a continuous, unhesitating manner, when the light read "Don't-Walk" or flashed "Don't-Walk". Subjects were recorded as within compliance if they remained on the

corner until the "Walk" signal came on and then crossed the street.

In the control condition, natural pedestrian behavior was observed and recorded in the absence of the authority figure and the bad model. In the bad model condition, pedestrian behavior was observed in the presence of a violating model. The bad models were two college students who deliberately crossed the street when the "Don't-Walk" signal was on. One bad model stood on the corner of observation, and the other stood on the corner on the opposite side of the street. The bad model on the corner being observed would violate the "Don't-Walk" signal, and the model on the opposite corner would cross legally with the natural flow of pedestrians. After they had both crossed, they would walk down the street half a block, hesitate, and return to the corners on their new side, ready to cross with the next group of pedestrians. The purpose of using two models was to increase the sensitivity of the study, and to prevent the subjects from guessing that an experiment was being conducted. In the authority figure condition, pedestrian behavior was observed in the presence of an authority figure, a campus police officer, holding a clipboard and a pen. The police officer pretended to observe and make notations of the rotations of the traffic lights. The police officers involved were in full uniform, off duty at the time, and had volunteered to participate in the study. In the combined condition both the authority figure and bad model were present, acting independently of one another.

Study 1 was conducted and followed the basic conditions, with the use of two male bad models, and male authority figures. The gender of the pedestrians was not recorded. Study 2 (conducted about six months

later) followed the basic conditions except that both male and female bad models and authority figures were used, and the gender of the pedestrians was recorded.

### Subjects

The subjects were 2219 pedestrians (predominantly college students) who approached the corner of observation. In Study 1, 749 pedestrians were observed; in Study 2, 1470 pedestrians were observed, 886 males, and 584 females. People on bicycles or mopeds were not considered pedestrians in this study.

## RESULTS

The results of the studies are as follows:

### Study 1

The results of Study 1 are found in Figures 2 and 3. As can be seen, there was significantly more violation in the bad model condition than in the control condition ( $\chi^2 = 30.63$ ,  $df = 1$ ,  $p < .05$ ), and there was significantly less violation in the authority figure condition than in the control condition ( $\chi^2 = 14.01$ ,  $df = 1$ ,  $p < .05$ ). Contrary to the results found by Sigelman and Sigelman (1976), there was significantly less violation in the combined condition than in the bad model condition ( $\chi^2 = 16.29$ ,  $df = 1$ ,  $p < .05$ ). Comparing the combined condition to the authority figure condition, there was more violation in the combined condition than in the authority figure condition ( $\chi^2 = 24.04$ ,  $df = 1$ ,  $p < .05$ ). Finally, comparing the combined condition to the control condition, no difference was found ( $\chi^2 = 1.55$ ,  $df = 1$ ,  $p > .05$ ).

### Study 2

#### Bad Model Condition:

First, as shown in Figure 4, there was significantly more violation in the bad model condition than in the control condition ( $\chi^2 = 42.96$ ,  $df = 1$ ,  $p < .05$ ). Secondly, considering the effects of the gender of the bad model, it was found that there was significantly

## STUDY 1 : CONTROL CONDITION

|           | VIOLATE | NOT VIOLATE |
|-----------|---------|-------------|
| CONTROL   | 56      | 117         |
| BAD MODEL | 127     | 82          |

$\chi^2 = 30.63$

|                  | VIOLATE | NOT VIOLATE |
|------------------|---------|-------------|
| CONTROL          | 56      | 117         |
| AUTHORITY FIGURE | 36      | 185         |

$\chi^2 = 14.01$

Figure 2 Results of Study 1 Comparing Bad Model and Authority Figure Conditions to Control Condition

## STUDY 1 : COMBINED CONDITION

|           | VIOLATE | NOT VIOLATE |
|-----------|---------|-------------|
| BAD MODEL | 127     | 82          |
| COMBINED  | 57      | 89          |

$\chi^2 = 16.29$

|                  | VIOLATE | NOT VIOLATE |
|------------------|---------|-------------|
| AUTHORITY FIGURE | 36      | 185         |
| COMBINED         | 57      | 89          |

$\chi^2 = 24.04$

|          | VIOLATE | NOT VIOLATE |
|----------|---------|-------------|
| CONTROL  | 56      | 117         |
| COMBINED | 57      | 89          |

$\chi^2 = 1.55$

Figure 3 Results of Study 1 Comparing Bad Model, Authority Figure, and Control Conditions to Combined Condition

## STUDY 2 : BAD MODEL CONDITION

|           | VIOLATE | NOT VIOLATE |
|-----------|---------|-------------|
| CONTROL   | 168     | 304         |
| BAD MODEL | 189     | 130         |

$\chi^2 = 42.96$

|              | VIOLATE | NOT VIOLATE |
|--------------|---------|-------------|
| MALE MODEL   | 120     | 66          |
| FEMALE MODEL | 69      | 64          |

$\chi^2 = 5.13$

|                   | VIOLATE | NOT VIOLATE |
|-------------------|---------|-------------|
| MALE PEDESTRIAN   | 122     | 81          |
| FEMALE PEDESTRIAN | 67      | 49          |

$\chi^2 = .16$

Figure 4 Results of Study 2 Comparing Bad Model to Control Condition, and Comparing Gender of Model and Pedestrians in Bad Model Condition

more violation with a male bad model than with a female bad model ( $\chi^2 = 5.13$ ,  $df = 1$ ,  $p < .05$ ). Finally, considering the effects of the gender of the pedestrians, it was found that there was not a significant difference in the frequency of violation between male and female pedestrians ( $\chi^2 = .16$ ,  $df = 1$ ,  $p > .05$ ).

Figure 5 provides an evaluation of any possible interactions between the gender of the bad model, and the gender of the pedestrian. As can be seen, there were no significant differences between the frequency of violation for male and female pedestrians with a male bad model ( $\chi^2 = 1.77$ ,  $df = 1$ ,  $p > .05$ ), or with a female bad model ( $\chi^2 = .59$ ,  $df = 1$ ,  $p > .05$ ).

#### Authority Figure Condition:

Turning now to the authority figure condition, Figure 6 shows that there was a significant decrease in the frequency of violation in the presence of the authority figure compared to the control condition ( $\chi^2 = 20.57$ ,  $df = 1$ ,  $p < .05$ ). Considering the effects of the gender of the authority figure, it was found that there was less violation with a male authority figure than with a female authority figure ( $\chi^2 = 4.10$ ,  $df = 1$ ,  $p < .05$ ). Considering the effects of the gender of the pedestrians, it was found that there was significantly more violation by male pedestrians than female pedestrians ( $\chi^2 = 10.30$ ,  $df = 1$ ,  $p < .05$ ).

Considering now the possible interaction between the gender of the authority figure and the gender of the pedestrian, Figure 7 shows that there were significantly fewer violations by female pedestrians than male pedestrians, in the presence of a male authority figure

**STUDY 2 : BAD MODEL CONDITION**

|                 |                   | MALE BAD MODEL |             | FEMALE BAD MODEL |             |
|-----------------|-------------------|----------------|-------------|------------------|-------------|
|                 |                   | VIOLATE        | NOT VIOLATE | VIOLATE          | NOT VIOLATE |
| MALE PEDESTRIAN | MALE PEDESTRIAN   | 79             | 37          | 43               | 44          |
|                 | FEMALE PEDESTRIAN | 41             | 29          | 26               | 20          |

$\chi^2 = 1.77$                        $\chi^2 = .59$

Figure 5 Results of Study 2 Comparing Gender of Pedestrians to Gender of Bad Model in Bad Model Condition

## STUDY 2 : AUTHORITY FIGURE CONDITION

|                  | VIOLATE          | NOT VIOLATE |
|------------------|------------------|-------------|
| CONTROL          | 168              | 304         |
| AUTHORITY FIGURE | 82               | 301         |
|                  | $\chi^2 = 20.57$ |             |

|                         | VIOLATE         | NOT VIOLATE |
|-------------------------|-----------------|-------------|
| MALE AUTHORITY FIGURE   | 36              | 170         |
| FEMALE AUTHORITY FIGURE | 46              | 131         |
|                         | $\chi^2 = 4.10$ |             |

|                   | VIOLATE          | NOT VIOLATE |
|-------------------|------------------|-------------|
| MALE PEDESTRIAN   | 60               | 161         |
| FEMALE PEDESTRIAN | 22               | 140         |
|                   | $\chi^2 = 10.30$ |             |

Figure 6 Results of Study 2 Comparing Authority Figure to Control Condition, and Comparing Gender of Authority Figure and Pedestrians in Authority Figure Condition

## STUDY 2 : AUTHORITY FIGURE CONDITION

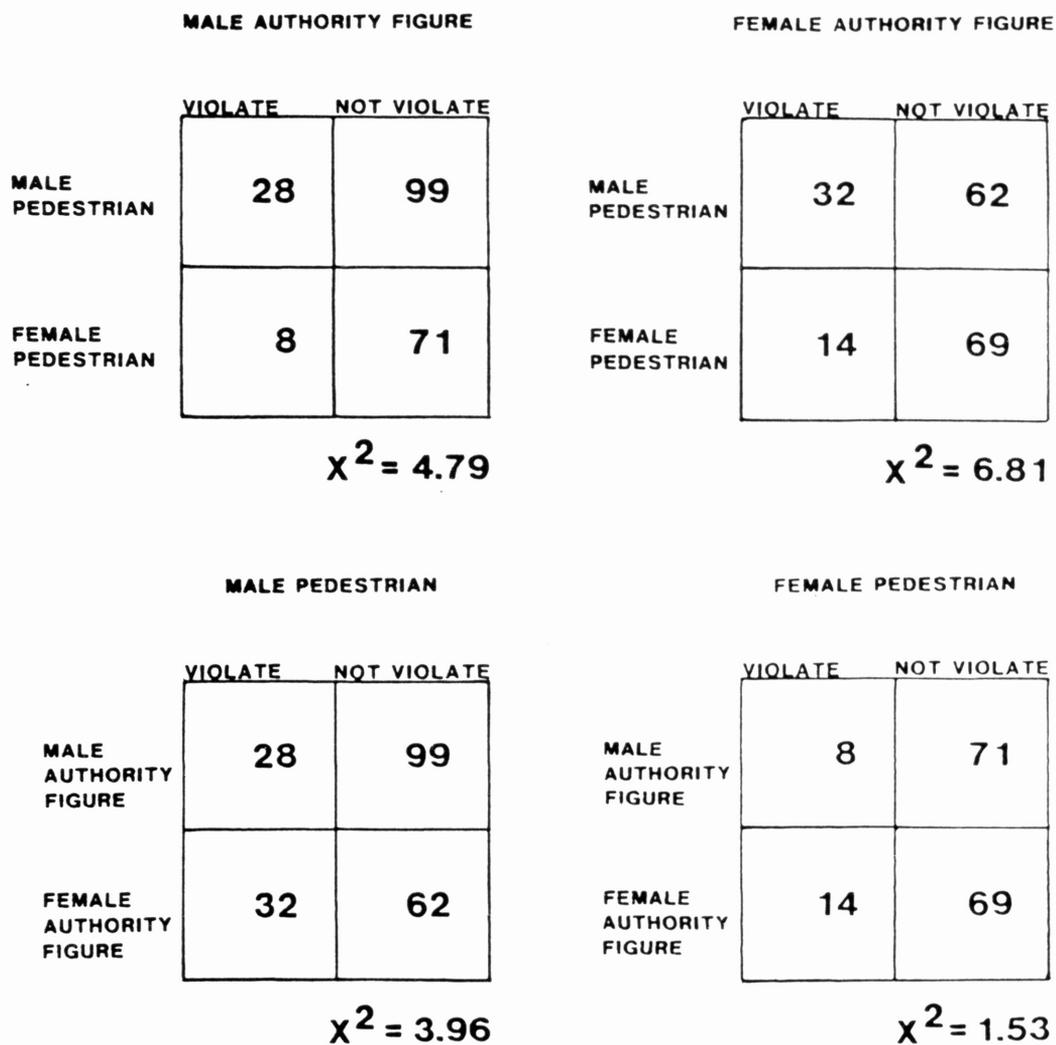


Figure 7 Results of Study 2 Comparing Gender of Pedestrians to Gender of Authority Figure Separately for Each Combination in the Authority Figure Condition

( $\chi^2 = 4.79$ ,  $df = 1$ ,  $p < .05$ ), and in the presence of a female authority figure ( $\chi^2 = 6.81$ ,  $df = 1$ ,  $p < .05$ ). Finally, it was found that male pedestrians were more likely to violate in the presence of a female authority figure than a male authority figure ( $\chi^2 = 3.96$ ,  $df = 1$ ,  $p < .05$ ). However, this was not true for female pedestrians ( $\chi^2 = 1.53$ ,  $df = 1$ ,  $p > .05$ ).

#### Combined Condition

Consistent with Study 1, Figure 8 shows that there was no difference in the frequency of violation between the combined and control conditions ( $\chi^2 = .40$ ,  $df = 1$ ,  $p > .05$ ). As would be expected, there was more violation in the combined condition than in the authority figure condition ( $\chi^2 = 22.03$ ,  $df = 1$ ,  $p < .05$ ), and less violation in the combined condition than in the bad model condition ( $\chi^2 = 28.21$ ,  $df = 1$ ,  $p < .05$ ).

Unlike the authority figure condition, Figure 9 shows that in the combined condition there was no difference in the likelihood of violation for male and female authority figures ( $\chi^2 = 1.57$ ,  $df = 1$ ,  $p > .05$ ). Consistent with this difference between the combined and authority figure conditions, it was also found that there was no difference in the likelihood of violation between male and female bad models in the combined condition ( $\chi^2 = 3.24$ ,  $df = 1$ ,  $p > .05$ ). Recall that a difference was obtained between male and female models in the bad model condition. As for the gender of the pedestrians, it was found that there was no difference in the likelihood of violation for male or female pedestrians in the combined condition ( $\chi^2 = 2.65$ ,  $df = 1$ ,  $p > .05$ ). This result is consistent with those obtained in the

## STUDY 2 : COMBINED CONDITION

|          | VIOLATE | NOT VIOLATE |
|----------|---------|-------------|
| CONTROL  | 168     | 304         |
| COMBINED | 112     | 184         |

$\chi^2 = .40$

|                  | VIOLATE | NOT VIOLATE |
|------------------|---------|-------------|
| COMBINED         | 112     | 184         |
| AUTHORITY FIGURE | 82      | 301         |

$\chi^2 = 22.03$

|           | VIOLATE | NOT VIOLATE |
|-----------|---------|-------------|
| COMBINED  | 112     | 184         |
| BAD MODEL | 189     | 130         |

$\chi^2 = 28.21$

Figure 8 Results of Study 2 Comparing Combined Condition to Bad Model, Authority Figure and Control Conditions

## STUDY 2 : COMBINED CONDITION

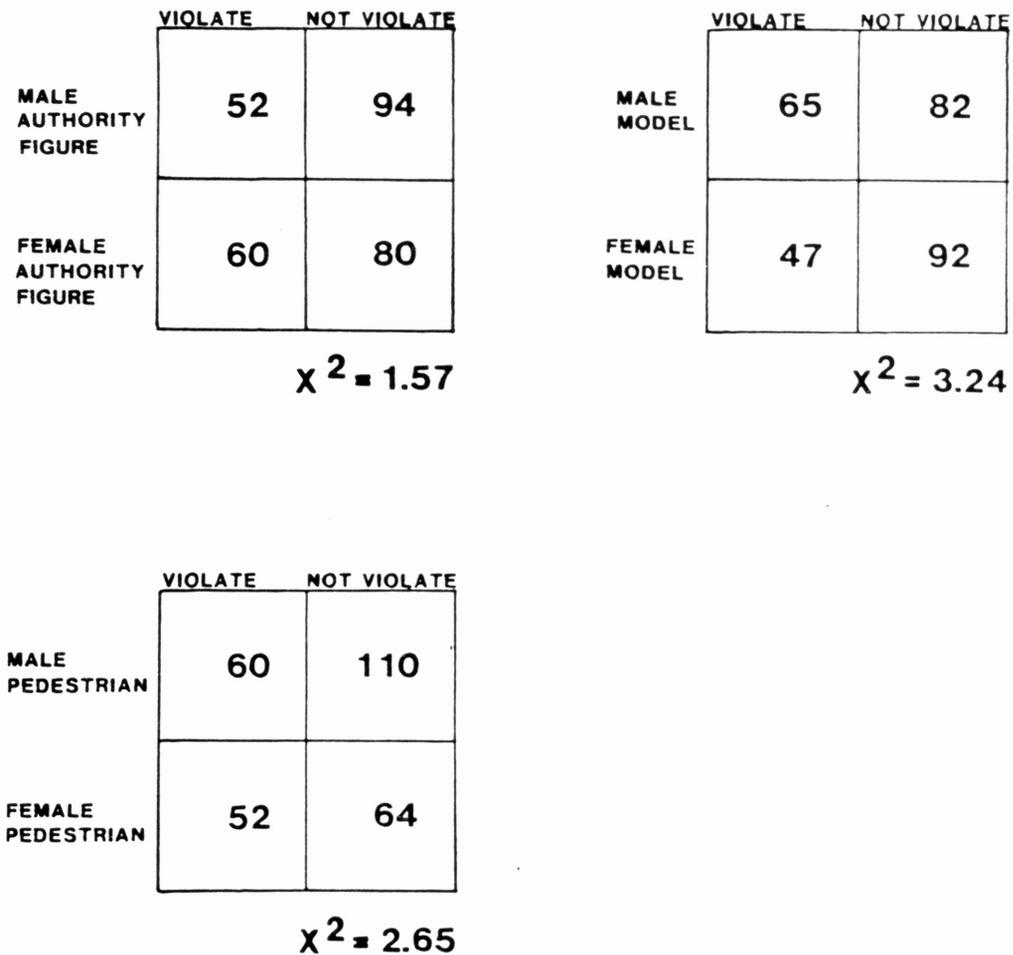


Figure 9 Results of Study 2 Comparing Gender of Authority Figure, Bad Model, and Pedestrians in the Combined Condition

bad model condition.

The results shown in Figure 10 represent or attempt to assess the potential interactions between the gender of the authority figure, bad model and pedestrian. As can be seen, the results for the male authority figure are consistent for male and female pedestrians with a male bad model ( $\chi^2 = .04$ ,  $df = 1$ ,  $p > .05$ ) and a female bad model ( $\chi^2 = .79$ ,  $df = 1$ ,  $p > .05$ ). However, for the female authority figure there was no difference in the likelihood of violation for male or female pedestrians with a male bad model ( $\chi^2 = .003$ ,  $df = 1$ ,  $p > .05$ ), but a significant difference with a female bad model ( $\chi^2 = 4.87$ ,  $df = 1$ ,  $p < .05$ ). This difference is due to a higher rate of violation for female pedestrians in this condition.

## STUDY 2 : COMBINED CONDITION

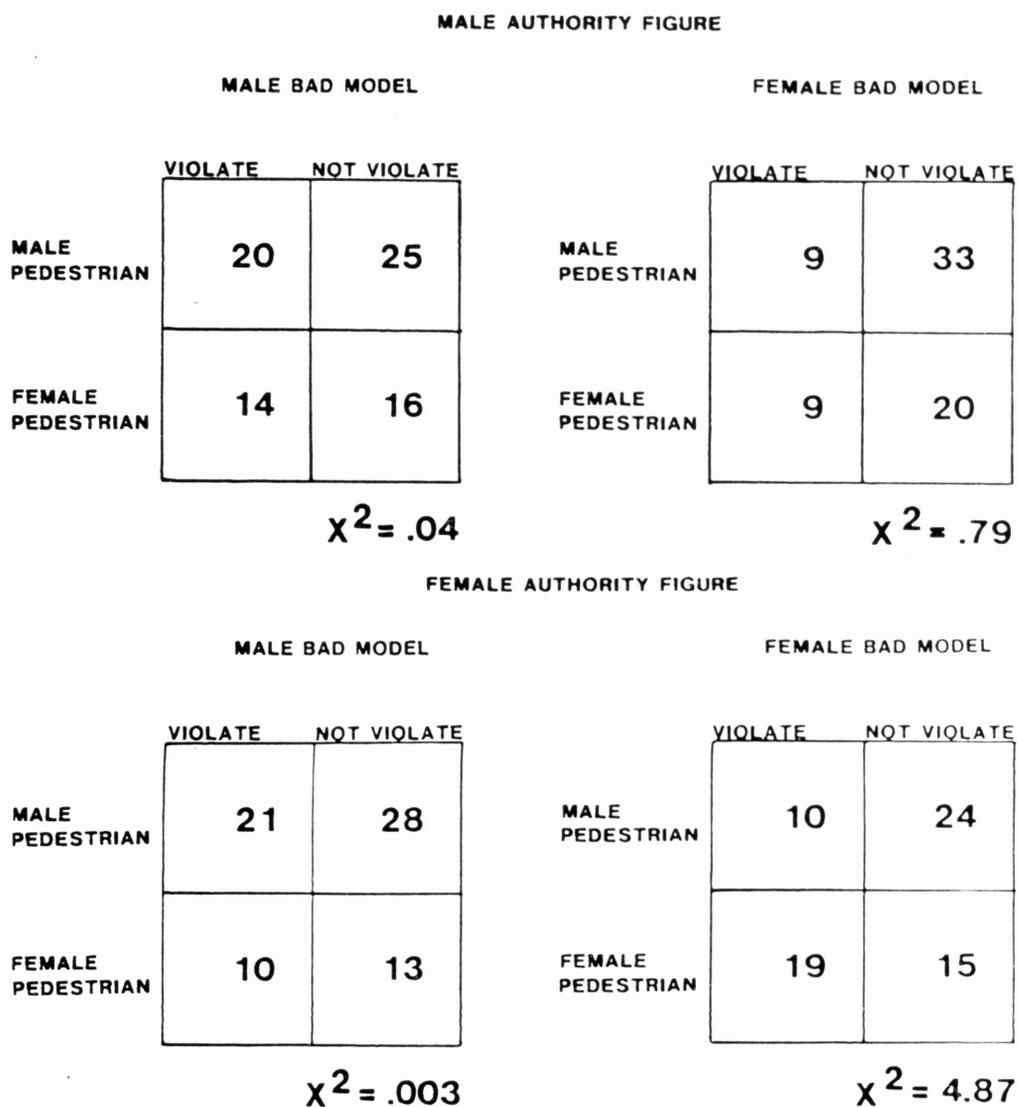


Figure 10 Results of Study 2 Comparing All Combinations of Gender of Pedestrians, Bad Model, and Authority Figure in the Combined Condition

## DISCUSSION

Since the results of both Studies 1 and 2 were extremely consistent, the discussion and general conclusions that follow apply equally to both.

### Bad Model Condition

Comparing control to the bad model condition, there is a higher probability of violation with the bad model present than with no bad model present. Comparing the gender of the model, it was found that there were significantly more violations with the male bad model than with the female bad model. Consistent with previous research it was found that the introduction of a bad model does increase the likelihood of violation, with this effect being somewhat stronger for male than female models. Finally, these results indicate that the effects of the bad model are independent of the gender of the pedestrian, regardless of the gender of the bad model.

### Authority Figure Condition

In the authority figure condition, it was found that the presence of an authority figure significantly reduced the likelihood of violation. Separating the authority figures on the basis of gender, it was found that there was a lower probability of violation with a male authority figure than with a female authority figure. As for the gender of the pedestrians, it was found that male pedestrians were much more likely to violate than female pedestrians when an authority figure is present.

To clarify these results, in the condition with a male authority figure it was found that there was a much higher likelihood of violation by male than female pedestrians. Furthermore, this pattern held for the female authority figure as well. Considering now only the male pedestrians, it was found that there was a higher likelihood for violation with a female authority figure than with a male authority figure. However this did not hold true for female pedestrians, for whom there was no significant difference in the probability of violation for either the male or female authority figure.

To summarize the authority figure condition, it was found, consistent with previous research, that the presence of the authority figure tends to significantly decrease the probability of violation. However, the presence of the female authority figure reduced the likelihood of violation less than a male authority figure, particularly for male pedestrians.

#### Combined Condition

Considering now the combined condition (the condition in which both the authority figure and bad model were present), it was found that compared to the control condition there was no difference in the likelihood of violation. As would be expected there was a higher likelihood of violation in the combined condition than in the authority figure condition, and there was a lower probability of violation in the combined condition than with the bad model alone. This indicates that the effects of the authority figure and bad model tend to offset one another when both are present simultaneously. These results are not consistent with those obtained by Sigelman and Sigelman (1976)

in their study dealing with motor vehicles, and the decision to violate or comply with the right turn on red regulation. Sigelman and Sigelman found that in the combined condition the likelihood of violation was the same as in the bad model alone condition. One possible explanation for these different results is that this study was concerned with pedestrians rather than the drivers of motor vehicles. Since there is a much greater perceived risk where safety is involved for the pedestrian than for the driver of a motor vehicle, one should not assume that one can parallel motor vehicle and pedestrian studies.

Considering now the gender of the authority figure, in the combined condition it was found that there was no difference in the likelihood of violation in the presence of either male or female authority figures. Recall that in the authority figure alone condition, there was a difference between the male and female authority figures. This lack of consistency is probably due to the offsetting effects of the bad model in the combined condition. Similar results were found when considering the gender of the model, in that there was no difference in the probability of violation for male or female bad models in the combined condition. Recall again that in the bad model alone condition, there was a higher probability for violation with a male bad model than with a female bad model. Again this difference is most likely due to the offsetting effects of the presence of the authority figure in the combined condition. Finally, considering the gender of the pedestrians, the results in the combined condition are consistent with those obtained in the bad model condition, but not with those obtained in the authority figure condition. That is, there were

no differences in the probability of violation for male or female pedestrians in the combined condition or bad model condition; however, an effect of the gender of the pedestrian was obtained in the authority figure condition. It is worth noting, however, that unlike in the bad model condition, the combined condition showed a higher probability of violation by female pedestrians than male pedestrians. While not statistically significant, these results are directly contrary to those obtained in any of the previously described conditions. This inconsistency will be clarified in the discussion that follows.

To clarify the interactions between the gender of the authority figure, bad model, and pedestrian, it was found that the probability of violation was quite consistent for male and female pedestrians, regardless of the gender of the model, under the male authority figure. However, these results were not consistent in the presence of a female authority figure. Here, there was no difference in the probability of violation for male or female pedestrians with a male bad model present. On the other hand, there were differences between male and female pedestrians with a female bad model present. This difference is due entirely to the finding that female pedestrians were more likely to violate than not violate in the presence of a female bad model and a female authority figure. This result is highly anomalous, and probably accounts for the inconsistency of the results for male and female pedestrians in the combined condition as compared to the bad model and authority figure conditions. It appears that the female pedestrians are effectively ignoring the presence of the female authority figure with a female bad model present, behaving in a similar

manner to female pedestrians in the female bad model alone condition. The females in this condition appear to be responding differently than either male or female pedestrians in any other combination of models or authority figures in the combined condition, by failing to show the offsetting effects in the presence of the bad model and authority figure, which were the general results of the combined condition.

In summary, the results of this study extended the previous research on pedestrian behavior with respect to the effects of a law-violating model, and the presence of an authority figure. The results supported the hypothesis that a law-violating model produces an increase in violation, while an authority figure produces a decrease in violation. Finally, when combining these two conditions, it was found that, generally speaking, the effects of the bad model and authority figure tend to offset one another, producing no difference in the likelihood of violation as compared to the control condition. In general, it was found that a male bad model has a stronger effect on pedestrian behavior than a female bad model, and that the female authority figure has a decreased effect on pedestrian behavior than the male authority figure.

Recommendations for future research include:

1. Placing the authority figure on the corner opposite the corner of observation, and observing pedestrian behavior as they enter the authority figure's frame of reference, rather than leaving the authority figure's frame of reference, as in this study.
2. Conducting a more detailed attitudinal survey on male and female subjects, examining attitudes towards male and female authority

figures. The purpose being to try to ferret out a possible explanation of the female pedestrian's behavior, with a female bad model present, under a female authority figure.

REFERENCES

- Barch, A. M., Trumbo, D., & Nangle, J. (1957). Social setting and conformity to a legal requirement. Journal of Abnormal and Social Psychology, 55, 396-398.
- Bickman, L. (1974). The social power of a uniform. Journal of Applied Social Psychology, 4, 47-61.
- Dannick, L. I. (1973). Influence of an anonymous stranger on a routine decision to act or not to act: An experiment in conformity. The Sociological Quarterly, 14, 127-134.
- Freed, A. M., Chandler, P. J., Mouton, Jane S., & Blake, R. R. (1955). Stimulus and background factors in sign violation. Journal of Personality, 23, 499.
- Galizio, M., Jackson, L. A., & Steele, F. O. (1979). Enforcement symbols and driving speed: The overreaction effect. Journal of Applied Psychology, 64, 311-315.
- Kimbrell, D. L., & Blake, R. R. (1958). Motivational factors in the violation of a prohibition. Journal of Abnormal and Social Psychology, 56, 132-133.
- Lefkowitz, M., Blake, R. R., & Mouton, J. S. (1955). Status factors in pedestrian violation of traffic signals. Journal of Abnormal and Social Psychology, 51, 704-706.

- Lincoln, J. A. (1977). Effects of the sex of the model and donor on donating to Amsterdam organ grinders. The Journal of Social Psychology, 103, 33-37.
- Russell, J. C., Wilson, D. O., & Jenkins, J. F. (1976). Informational properties of jaywalking models as determinants of imitated jaywalking: An extension to model sex, race and number. Sociometry, 39, 270-273.
- Sigelman, C. K., & Sigelman, L. (1976). Authority and conformity: Violation of a traffic regulation. The Journal of Social Psychology, 100, 35-43.
- Solomon, L. Z., & Grotta, P. (1976). Imitation of a helpful model: The effect of level of emergency. The Journal of Social Psychology, 99, 29-35.
- Touhey, J. C. (1974). Effects of additional women professionals on ratings of occupational prestige and desirability. Journal of Personality and Social Psychology, 29, 86-89.
- Wheeler, L. (1966). Toward a theory of behavioral contagion. Psychological Review, 73, 179-192.