

Can Induced Empathy Cause Behavioral Change?

A Pilot Study of Alternative Signage to Reduce Accessible Parking Space Violations

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**Abstract**

A pilot study that tested the effectiveness of an empathy targeting sign on decreasing the number of parking violations in accessible parking spaces for people with disabilities was conducted in Fairfax County. Observational data was collected during a six-week A-B-A design. During the treatment period the empathy targeting sign was placed below the traditional signs at four accessible parking spaces. We hypothesized that would-be violators who saw the sign would have a change of heart and avoid parking illegally in the accessible space to leave it open for those who needed it. Although no statistically significant differences were observed in parking behaviors, notable trends in the desired direction were seen during the treatment period (a reduction in the number of violations and an increase in the number of potential violations where drivers seemingly changed their minds about parking in the accessible spaces). Given the low cost and simplicity of this intervention, our results support the implementation of a large scale investigation into the effectiveness of signs that use empathy to try and decrease illegal parking behaviors.

### **Introduction**

Joe - a college student - hurries into a crowded strip-mall parking area to purchase a cup of coffee before class. He scans the area and notices that only accessible parking spots are available. Realizing he only needs three minutes to get his coffee, Joe decides to park in one of those spaces. Joe does not know that Jane, who has a serious mobility impairment, needs to park in one of those spaces but had to abort her trip because she saw Joe pull into the last spot. We suspect if Joe knew of Jane's predicament, he would never have parked in the spot and interfered with Jane's ability to shop. Unfortunately, Joe's behavior is quite common. For example, in Fairfax County, Virginia, Fairfax County Police issued about 320 citations for violations of accessible parking spaces in 2016. There are probably many more violations that are not reported, including violations by drivers with permits borrowed from someone else, permits not needed anymore, or instances where the police arrived after the violator has left. If there were a way to make Joe aware of Jane's situation, violations might decrease and more accessible parking spaces would be available for those who are legally permitted to use them.

Illegal parking violations in accessible parking spaces are a serious offense that affect the wellbeing of those who need the spots. Typically, parking fines have been the main approach to deterring violations. Despite the high dollar amounts, which can be up to \$500, violations still occur. Other approaches have included increased enforcement, tighter standards for issuing permits, and public information campaigns. Past research has evaluated the effectiveness of different types of signs. Suarez de Balcazar et. al. (1998) compared vertical signs using the International Symbol of Access to ground markings. Cope and Allred (1991) added a message below the accessible parking sign that implied the possibility of public surveillance.

Currently, the Virginia law requires a sign indicating the space is for people with disabilities as indicated by the wheelchair logo on a blue background with a phrase threatening fines up to \$500 for violations. The present study examined a novel sign design that attempts to personalize the need to avoid unwarranted use of accessible parking spaces. Instead of only relying on an external consequence (i.e., a \$500 fine) to discourage illegal parking, we tested the notion that empathy can be used to intrinsically motivate drivers to do the right thing. In this approach, the standard ADA parking sign is supplemented with a sign showing a photo of a person in a wheelchair along with the words, 'Think of Me, Keep it Free.' The hypothesis was that personalizing the sign will deter potential violators by encouraging them to be more understanding of the needs of people who require that space to park. We hoped that drivers would decide not to park in the spaces after realizing that the possible consequence was not only a fine imposed on them, but also an imposition on another person.

This application of intrinsic motivation was informally demonstrated by psychologist Daniel Pink on a 2014 National Geographic TV show called *Crowd Control*. Based on this show, the Colorado Advisory Council for Persons With Disabilities installed a number of the supplemental signs in a suburb of Denver in 2015. See: <http://denver.cbslocal.com/2015/01/31/handicap-signs-get-personal-in-arvada/> They noticed a drop in police citations after the signs were installed. While this is an encouraging finding, police citations are not a reliable measure of actual violations, many of which can often escape police detection. In order to better quantify any changes in parking behavior influenced by the Think of Me sign and see if any benefits might be found in a different location (i.e., Fairfax County, Virginia), a small scale evaluation was conducted.

We hypothesized:

1. The number of violations would be lower in treatment period, compared to the baseline period.
2. The number of violations would be lower in the post-treatment period, compared to the baseline period.
3. The number of driver hesitations to park would be higher in the treatment period, compared to the baseline period.
4. The number of driver hesitations to park would remain higher in the post-treatment period, compared to the baseline period.

### **Methods**

We conducted an A-B-A observational design to assess the effectiveness of socially relevant messaging on parking violations in accessible parking spaces. Effectiveness was measured using covert observations of parking behavior by research assistants. These assistants coded only instances where direct violations occurred or where it appeared as if a violation might occur. Below, we explain the details of these procedures in greater depth.

#### **Data Collection Location**

We chose to observe parking behavior during the months of October and November. Our observations were obtained in a shopping center parking lot near a large, mid-Atlantic university. Both university and local drivers visit the stores and restaurants at this location. During this time period, students had already begun courses and likely had settled into a routine. No important holidays fell within these dates so the observation times would not be affected by unusual increases or decreases in traffic. Further, we concluded the observational period before Thanksgiving recess to avoid the possibility that the observations might be influenced by

increased number of non-local drivers visiting for the holiday. Our aim was to ensure that the sampling domain retained a similar socio demographic range of local drivers and that parking behaviors would only be attributable to the signs we displayed during the treatment session.

Data were collected on four accessible parking spaces located in one subsection of the parking lot that was relatively independent from the other sections of the lot (see figure 1). Observations took place at a location near the parking spaces where the data collectors would be unobtrusive and not attract attention. The observations were made on weekdays between 1pm and 7pm to coincide with the times with most traffic, as determined from pre-observation sampling.

Permission was granted by the shopping center manager to complete this study.



*Figure 1* - an aerial photo of the lot used in this experiment. The accessible parking spaces are located at the south side of the third row from the left.

## **Design**

We used an A-B-A design over the course of the six week experiment. We collected data at the lot for two weeks before any treatment was put into place, followed by two weeks of data collection during the treatment, and finally, two weeks of data collection after the treatment. The treatment consisted of an additional sign placed below the traditional blue sign (*see figure 2*).

The sign featured a photo of a smiling man in a wheelchair with the words “Think of Me, Keep it

Free” written above and below the photo. The design is similar to the one used by the Colorado Advisory Council for Persons with Disabilities. The initial two weeks of observations provided us with a baseline level of parking offences that we could use to compare to the treatment period. Additionally, we had two weeks of observations after taking the sign down to determine whether its benefits, if any, would have a lasting effect. We reasoned that if we found an enduring reduction in improper parking behavior, it would provide evidence that repeat offenders may have had a “change of heart” that transcended the presence of the empathy targeting sign.



*Figure 2* The two signs used in the study. On the left is the empathy targeting sign. On the right is the traditional signs featuring a line drawing of a wheelchair with the words “Penalty, \$100 - \$500 fine, tow-away zone”.

### Data Collection Procedure

Research assistants observed the lot from 1pm - 7pm Monday through Friday for six weeks. The experiment was broken up into three, two-week phases but the experimental procedure was the same throughout each phase. Each phase resulted in 60 hours of observation

making a total of 180 hours of observation during the six weeks. The intervention signs were put up on the Saturday evening preceding the treatment phase and taken down two weeks later on the Saturday after the treatment phase.

Assistants kept a low profile during observation to avoid reactive behavior from those being observed (people may not illegally park in a spot if they know they are being observed), including having books, computers, sunglasses, or a hat, in order to minimize the possibility of reactivity. During their shifts, assistants watched the four accessible parking spaces and made a mark on their sheet when appropriate. If assistants were unsure whether or not a vehicle was deserving of a mark, they took a lap around the parking lot, as if they were heading to their car, and quickly looked at the vehicle in question as they walked by.

The assistants recorded the number of direct parking violations and hesitations. Assistants were given the following classifications of a violation:

- Parking in an accessible parking space without a placard or license plate sticker.*
- Idling or “standing” in an accessible parking space without a placard or license plate sticker.*
- If the driver stays in the car and passenger(s) get out, it is still illegal if they do not have a placard or license plate sticker.*

A hesitation, however, was different. Given the relatively low incidence rate of direct parking violations, we counted times when somebody pulled into the spot and appeared to change their mind. Assistants were given the following classification of a hesitation:

- This is a judgment call for you to make and is not as clear as a violation.*
- If someone appears to pull into the spot but changes their mind and decides not to park there, that is considered a hesitation. This is different from someone simply using the spot to turn*

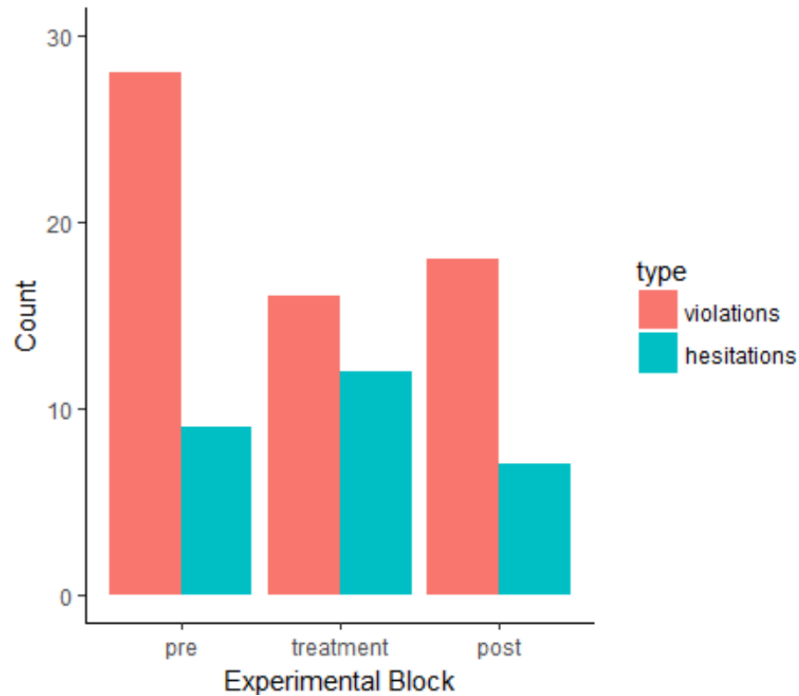


*around but you should be able to differentiate between the two. People who 'hesitate' may wait longer, look around to see if people are watching, and not immediately put their car in reverse.*

### **Results**

We ran Poisson regressions to test for an effect on the number of parking violations across blocks and another on the number of parking hesitations across blocks (alpha was set at .05). We observed no significant differences between block level in the number of parking violations ( $z = -1.548$ ,  $p = .122$ , null deviance: 35.484 on 29 degrees of freedom; residual deviance: 33.053 on 28 degrees of freedom). Similarly, we observed no significant differences between block level in the number of behavioral hesitations ( $z = -0.462$ ,  $p = 0.644$ , null deviance: 35.409 on 29 degrees of freedom; residual deviance: 35.194 on 28 degrees of freedom).

Generally, there is little value in following up on non-significant results. However, because this was a pilot study using only 4 parking spaces, we examined summary statistics. Figure 3 shows the number of parking violations and hesitations across experimental blocks. The number of illegal parking violations was reduced from 28 to 16 (42.9 percent) from the baseline to the treatment period. Additionally, the number of behavioral hesitations increased from 9 to 12 (33.3 percent) from the baseline to the treatment period. After the treatment period, the number of violations increased to 18 (12.5 percent increase) and the number of hesitations decreased to 7 (41.7 percent decrease).



*Figure 3* - Number of parking violations and hesitations in each experimental block.

### Discussion

Accessible parking violations are an ongoing problem in Fairfax County and nationwide. The national scope of the problem has attracted the attention of the International Parking Institute, who have formed an accessible parking coalition to address the issue (“IPI-Led Accessible Parking”, 2017). The need to reduce violations may become more urgent in the future due to the projected increase in the older population, some of whom may require accessible spaces. To help identify a potential remedy, a small scale study was conducted on four accessible parking spaces at a medium size shopping center in Fairfax County, Virginia. Covert observations were conducted over the course of a six-week period which was broken up into three main two-week blocks: the baseline, treatment, and post-treatment periods. During the treatment period, additional signs intended to target empathy that showed an image of a man in a wheelchair with the words “Think of Me, Keep it Free” were placed below the traditional blue signs that are fastened to the poles at accessible parking spaces.

Given that data was collected on only 4 accessible parking spaces, it is not surprising that the effect of the additional sign on parking behaviors was not statistically significant. However, in looking at trends, a notable reduction in parking violations occurred when the empathy sign was installed. We also found that when the intervention was in place, more people pulled into an accessible spot and backed out quickly after seeming to change their mind upon seeing the sign. After the signs were removed, the data show that parking behaviors reverted to more violations and fewer hesitations. The number of violations after the signs were removed were lower than during the baseline phase. Whether or not this was a possible indication of a lasting effect of the empathy sign is unclear because it is not known how many of the drivers in the post treatment period had seen the “Think of Me” signs when they were installed.

It is important to note that total traffic throughput was not measured in the parking lot during the experiment. Therefore, it is unclear whether any differences (significant or not) resulted from the sign and not from differences in the amount of traffic that was present in the parking lot between blocks. However, we checked weather patterns for the dates during the course of the study and it only rained once on a weekday between the times of 1pm and 7pm (during the post treatment period). Therefore, any effect uncovered in this study could not likely be attributed to differences in weather patterns affecting the parking behaviors of those wishing to avoid getting wet. In conclusion, although the effect of the empathy sign on parking behaviors was not statistically significant, the data suggest that the empathy sign had a positive effect on parking behavior.

Given the relatively low cost and simplicity of implementing this intervention, the trends that were found support further, larger scale evaluations of the signs effectiveness. The findings are also consistent with both the TV show demonstration by Daniel Pink as well as the reported experience with the signs that were deployed in Colorado.

If further evaluations are conducted, one useful addition would be to include a condition with an additional control sign placed below the traditional sign to rule out the possibility that the saliency of two signs was driving any effect found in this study. Further research may also consider surveying the affected population for their opinions on factors such as the noticeability of the sign, their interpretation of the meaning of the sign, and whether the design is acceptable. This information might lead to the development of more effective and acceptable signs for future use.

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