



Incivility awareness could save lives

Xilin Li, Christopher K. Hsee, & Li Wang

abstract

We introduce the idea of deterring undesirable behaviors by raising *incivility awareness*—sensitivity to when one is violating norms of civil behavior. We demonstrate that this approach is effective in deterring pedestrians from crossing intersections at red lights, which is a serious worldwide safety problem. In three field experiments conducted at urban intersections (involving more than 12,000 total observations), we found that posting signs raising pedestrians' incivility awareness significantly reduced red-light crossing rates. We also found that the incivility-awareness message of "Crossing at the red light is uncivil" made those signs more effective than signs with messages that emphasized the importance of not crossing at a red light ("Don't cross at the red light"), civil behavior ("Waiting for the green light is civil"), safety ("Waiting for the green light is good for safety"), and danger ("Crossing at the red light is bad for safety").

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Psychological science delivers insights that can be used to develop cost-effective interventions to tackle real-world problems, ranging from improving influenza vaccination rates to encouraging retirement saving.^{1–11} In this article, we introduce a new psychology-based intervention—raising incivility awareness—and we explain how we tested its ability to induce pedestrians to follow traffic rules.

Core Findings

What is the issue?

Reducing socially undesirable behaviors could often quite literally save lives. Framing messaging for the public plays an important role in doing so. To reduce the number of pedestrians who violate traffic safety rules and risk casualty, raising awareness about the *incivility* of doing so has proven to be an effective intervention.

How can you act?

Selected recommendations include:

- 1) Reminding pedestrians to consider their image, especially their public image, before crossing streets
- 2) Targeting crowded venues rather than uncrowded ones, such as busy streets instead of quiet ones, for interventions

Who should take the lead?

Researchers and policymakers in transport and urban planning

We chose pedestrian protection as a test case because it is a worldwide safety problem. For example, about 0.3 million pedestrians worldwide were killed in road traffic in 2016, and many more were injured.¹² Many pedestrian casualties occur because pedestrians violate traffic rules and cross intersections when the light is red.^{13,14} Doing so not only endangers the pedestrian but also hinders the smooth flow of traffic, resulting in traffic jams and delays. Some governments tackle the problem by having police officers patrol crosswalks, but this consumes extensive human and financial resources.

Two lines of psychology research suggest that raising people's incivility awareness—their sensitivity to whether they are behaving uncivilly—could help deter pedestrian red-light crossing. One focuses on social desirability. Research shows that people are motivated to avoid socially undesirable behaviors to maintain a positive public image.^{15–18} This means that raising incivility awareness could lead people to expect that others would disdain their uncivil behavior, which could damage their positive image. The other line of research is on loss aversion. People are more responsive to negatively framed messages than to positively framed messages, because the pain of losing is more powerful than the pleasure of gaining something equivalent.^{19–22} This suggests that highlighting the negativity of uncivil behaviors would be more effective than highlighting the positivity of civil behaviors.

Drawing on these insights, we propose a new pedestrian-safety intervention that relies on raising people's incivility awareness. This intervention would remind pedestrians to consider their image, especially their public image, before

acting and highlight how crossing the street while the light is red is a negative act of incivility. Our intervention aims to nudge pedestrians to obey red do-not-walk signals and refrain from crossing the street when they do not have the right-of-way. It is important to note that this intervention is easy to implement and virtually free.

To test whether raising pedestrians' incivility awareness deters red-light crossing, we posted a sign with the message "Crossing at the red light is uncivil" on each side of a crosswalk and conducted three studies of pedestrian behavior at crosswalks in a large city. (See Figure 1 for a sample scene from our research.) The first study was a preliminary test of our hypothesis. The second study expanded on the first by comparing the incivility-awareness message with other messages, and the third examined how long the effect persists. We conducted our studies at three busy, unpatrolled intersections, each in a different district of Shanghai, the city in China with the largest urban population. The time and duration of each experiment were predetermined, and the sample size depended on pedestrian traffic.

Figure 1. A scene from the research



Study 1

Method

In Study 1, we tested the effectiveness of an incivility-awareness sign by comparing crossing rates under three conditions. The first condition was a *no-sign control*, when we posted no signs. The second condition used a *no-crossing imperative*, during which we posted signs that directly ordered pedestrians not to cross—a common method of attempting to prevent red-light crossing. We did this by erecting two 110-cm × 70-cm signs, one on each side of the crosswalk, that read “不要乱闯红灯” (Don’t cross at the red light). The third condition, *incivility awareness*, involved replacing the imperative no-crossing signs with two equally sized incivility-awareness signs that read “乱闯红灯没素质” (Crossing at the red light is uncivil).

The study proceeded over the course of seven hours (9:30–11:30 a.m. and 12:30–5:30 p.m.) on a weekday at one of the crosswalks of a busy intersection, where each red light lasted about 85 seconds. We rotated among the three conditions every hour, with each condition lasting about 20 minutes.

Data were collected by two research assistants who were unaware of the study’s hypotheses and remained far enough away from the signs that

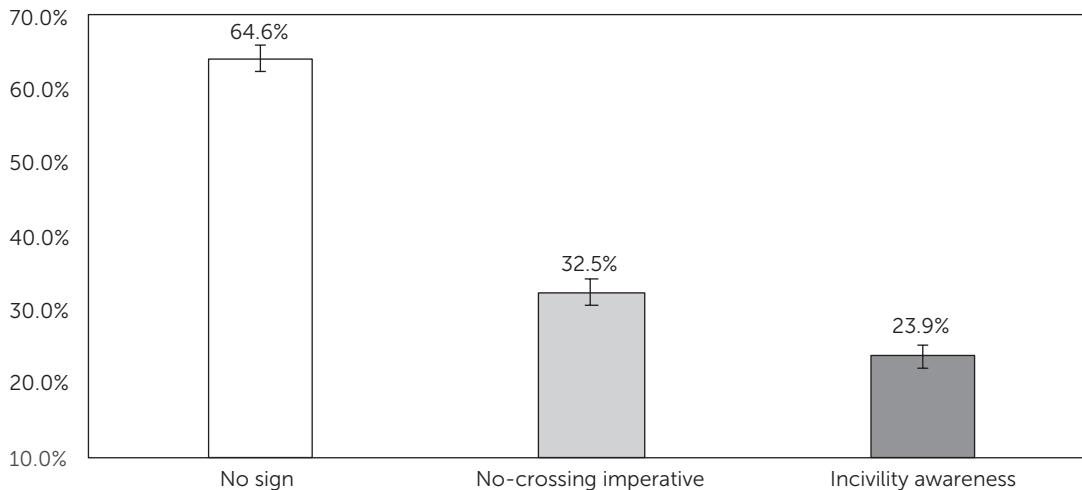
“people are motivated to avoid socially undesirable behaviors to maintain a positive public image”

the pedestrians would not notice them. For each red light, the research assistants recorded (a) the total number of *street crossers*, defined as those who arrived at either side of the crosswalk while the light was red and wanted to cross the street, and (b) the total number of *red-light violators*, defined as those street crossers who crossed the street while the light was red. These numbers allowed us to calculate the *violation rate*—the percentage of people who arrived at the red light and then crossed while the light was red.

Results

Of the 2,022 street crossers observed, 832, or 41%, were red-light violators. A chi-square test found a significant difference in violation rates across the three conditions, $p < .001$ (see Figure 2). (The chi-square details for all results in Study 1 and Study 2 are in the Supplemental Material. See note A for information on the statistical terms used in this article.)

Figure 2. Violation rates in Study 1



Note. The error bars represent ± 1 standard error. See note A for information on the statistical terms used in this article.

"people commonly associate traffic violations with a lack of safety"

The violation rate was only 23.9% for incivility awareness, the lowest violation rate across the three conditions, as opposed to 64.6% for the no-sign control, $p < .001$, and 32.5% for the no-crossing imperative, $p = .001$. (See the Supplemental Material for hour-by-hour statistics.)

Study 1 therefore provided initial evidence that prompting incivility awareness was effective. It is possible that the incivility-awareness signs were more effective than having no signs simply because they were more salient and attention-grabbing than the normal red-light signal. However, this salience cannot explain the difference between the rates of crossing in the incivility-awareness condition and the no-crossing-imperative condition, as the signs used in these conditions were the same size and had the same appearance. Nor could it explain the differences between the incivility-awareness condition and the other three sign conditions in Study 2, as we report next.

Study 2

Because people commonly associate traffic violations with a lack of safety, in Study 2, we included signs that reminded pedestrians that they were safer when they obeyed crossing signals. We compared the data from the incivility-awareness condition with the data from four other conditions: *no sign*, *safety awareness*, *danger awareness*, and *civility awareness*. We predicted that the two kinds of civility-related signs would be more effective than the two kinds of safety-related signs. This is because most pedestrians are probably already aware of the safety risks of crossing a street against a traffic light and so would be less likely to take note of the safety-related signs. Further, safety is an issue affecting only the self, whereas an incivility sign draws attention to not only

one's self-image but also one's public image, as discussed earlier.

We further predicted that the negatively framed signs would be more effective than the corresponding positively framed signs because of loss aversion and negativity bias. Because we expected negative messages to be more effective than positive ones and civility messages to be more effective than safety messages, we expected the incivility-awareness condition to be the most effective condition in the study.

Method

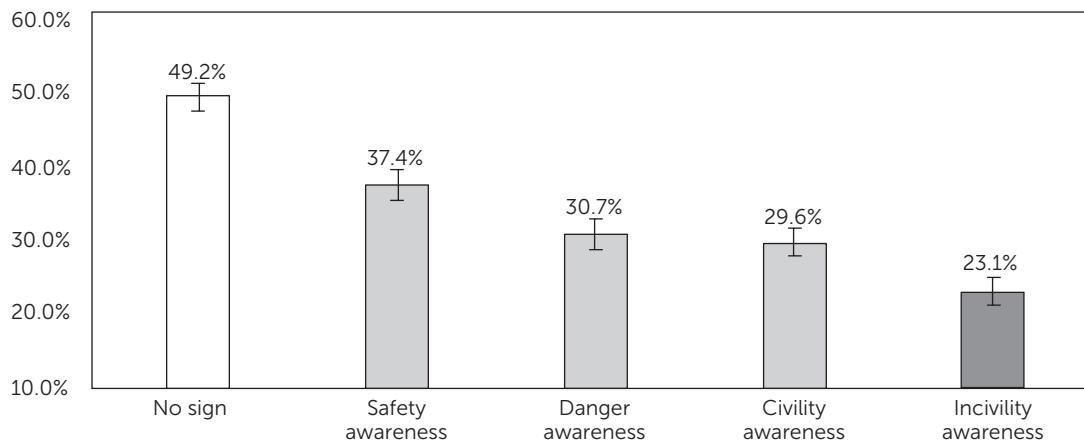
In Study 2, we followed the same procedure as in Study 1, except for the following details. In Study 2, the positively framed signs included a thumbs-up icon, and the negatively framed signs included a thumbs-down icon. We conducted this study at one of the crosswalks of a busy intersection, where each red light lasted 80 seconds before 2:50 p.m. and 60 seconds after 2:50 p.m. It included roughly 6.5 hours of observations (10 a.m.–11 a.m. and 12 p.m.–5:35 p.m.) on a weekday. For the first six hours, we rotated among the five conditions every hour, with each condition lasting about 12 minutes. For the last 35 minutes, we rotated one more time, with each condition lasting about seven minutes. The signs read as follows in the various conditions:

- For the safety-awareness condition, "等待绿灯有利安全" (Waiting for the green light is good for safety)
- For the danger-awareness condition, "乱闯红灯不利安全" (Crossing at the red light is bad for safety)
- For the civility-awareness condition, "等待绿灯有素质" (Waiting for the green light is civil)
- For the incivility-awareness condition, "乱闯红灯没素质" (Crossing at the red light is uncivil)

Results

Of the 2,847 street crossers observed, 993, or 35%, were red-light violators. A chi-square test

Figure 3. Violation rates in Study 2



Note. The error bars represent ± 1 standard error. See note A for information on the statistical terms used in this article.

found that the violation rate differed significantly across the five conditions, $p < .001$.

As we predicted, the incivility-awareness condition was the most effective of the five conditions at mitigating red-light crossing, with a violation rate of only 23.1%. This rate was lower than the rates in any of the other conditions—49.2% in the no-sign control condition, 37.4% in the safety-awareness condition, 30.7% in the danger-awareness condition, and 29.6% in the civility-awareness condition, all with $p < .015$ (see Figure 3). (See the Supplemental Material for hour-by-hour statistics.)

We further found that the civility-focused signs were more effective than the safety-focused signs ($p < .001$). Between the two safety-focused signs, the negatively framed sign was more effective ($p = .019$). Between the two civility-focused signs, the negatively framed sign was also more effective ($p = .013$).

Study 3

Method

In Study 3, we tested whether the incivility-awareness effect lasts after people have seen the signs repeatedly—in other words, whether repeated viewing makes the effect wear off. We conducted this study over four weeks (from Thursday of week 1 to Friday of week 4)

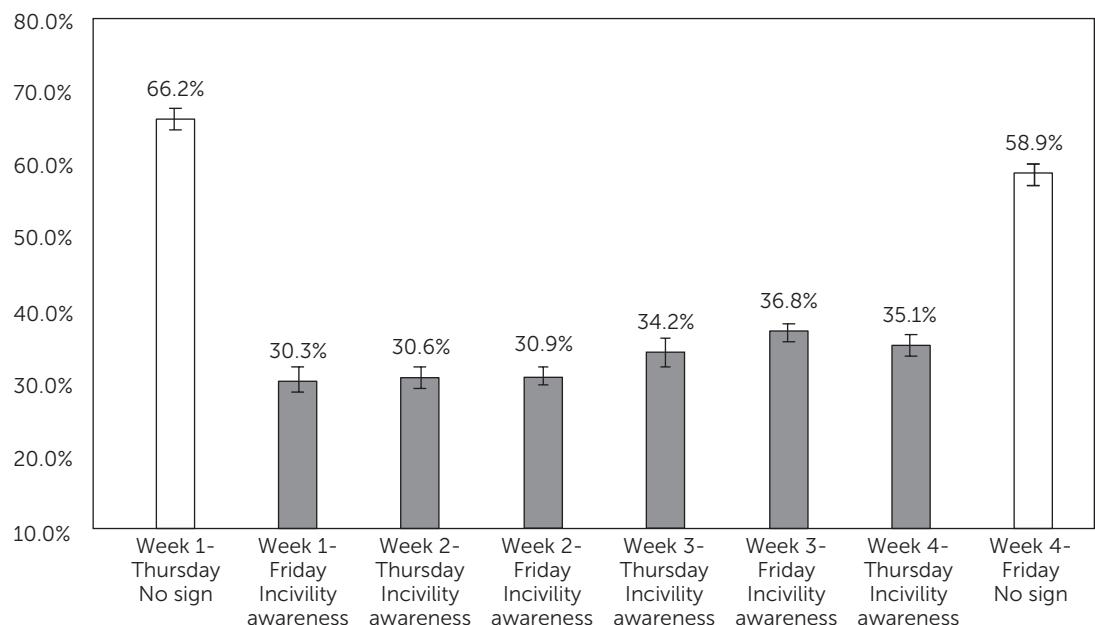
at one of the crosswalks of a busy intersection, where each red light lasted for 55 seconds. We selected this crosswalk partly because it was near a school and multiple residential buildings, which meant that the pedestrians there likely crossed that intersection daily. This allowed us to test whether our signs had an enduring effect among pedestrians who probably saw them repeatedly.

We did not post any signs on the first and last days of the four-week test period. This was our control condition. We treated all the interim days as treatment conditions. We erected two incivility-awareness signs on each side of the crosswalk from 10 a.m. to 5 p.m. on all the interim days; the signs were identical to the signs used in Study 2. We collected data the same way we did in the other studies for a total of four hours (11:30 a.m.–1:30 p.m. and 3:00 p.m.–5:00 p.m.) every Thursday and Friday.

Results

Of the 7,792 street crossers observed, 3,215, or 41%, were red-light violators. Figure 4 shows the day-by-day results. (See the Supplemental Material for hour-by-hour results.) On the first day of the experiment, when the incivility-awareness signs were not yet present, the violation rate was 66.2%. On the second day, after the incivility-awareness signs were erected, the violation rate dropped to 30.3%. Violation

Figure 4. Violation rates in Study 3



Note. The error bars represent ± 1 standard error. See note A for information on the statistical terms used in this article.

rates remained below 37% on each interim day (all $p < .001$), although they increased somewhat over time. It is important to note that on the last day of the experiment, when the signs were removed, the violation rate rebounded to 58.9%, which was significantly higher than the rate when the signs were present (all $p < .001$). These results suggest that incivility-awareness signs may keep the red-light violation rate low even when people see them repeatedly. The results also suggest that the effect may vanish once the signs are removed, suggesting that continuous reinforcement is needed.

Discussion

With this research, we introduce incivility awareness as a method of deterring undesirable behaviors and test its effectiveness in the context of pedestrian traffic violations. Our findings raise questions that we hope future researchers will address.

First, for our intervention to be useful, it should have a sustainable effect. Although the results of Study 3 show that pedestrians continued

responding to the signs for four weeks, we do not know if the effect would eventually wear off or how much longer it could last.

Second, the signs we used are larger and less formal than the typical stop sign. We do not know whether smaller and more official-looking signs would be similarly effective.

Third, we have focused on the benefits of incivility awareness rather than the costs, such as potentially upsetting pedestrians, and have not determined whether the benefits outweigh the costs.

Fourth, we compared the incivility-awareness method against only a limited number of alternatives; we do not know if more effective methods exist. For example, would a frightening picture showing the dead body of a red-light crosser killed by a passing truck be more effective?

Finally, we have demonstrated only the effect of incivility awareness and have yet to pinpoint the underlying psychological mechanism that

makes it work. For example, we do not know the extent to which our effect is driven by concerns about public image, namely, fear of losing face in front of others.²³

Understanding the underlying psychological mechanism could help in identifying the settings in which an incivility-awareness intervention would be most effective. If the effect is driven primarily by concerns about public image, as opposed to concerns about self-image, then we would predict that incivility-awareness interventions will be more effective at deterring undesirable behaviors that occur in public venues where other people are around (for example, crossing on red lights and talking loudly on public transportation) than undesirable behaviors that occur in private venues where no other people are around (for example, not washing one's hands after using the restroom). We also predict that incivility-awareness interventions would be more effective in crowded venues than in uncrowded ones, such as on a busy street rather than on a quiet street.

We further predict that if public-image concerns are a driving force behind the behavior change, incivility-awareness interventions will be more effective in collectivistic cultures such as China, where people are more concerned about potential loss of face^{23,24} than are people in individualistic cultures such as the United States.

We expect future researchers to test these speculations and identify the limitations of our intervention. We also hope that future researchers will test whether our intervention can be used as a nudge to deter undesirable behaviors beyond red-light crossing, such as cutting in line, littering, and not wearing a face mask in public places during a pandemic. We hope that our method can make our environment not only safer, but also friendlier, cleaner, and healthier.

endnote

- A. From the editors to nonscientists: For any given data set, the statistical test used—such as the chi-square (χ^2), the *t* test, or the *F* test—depends on the number of data points and the kinds of variables being considered, such as proportions or means. The *p* value of a statistical test is the probability of obtaining a result equal to or more extreme than what would be observed merely by chance, assuming that there are no true differences between groups under study (this assumption is referred to as the *null hypothesis*). Researchers traditionally view $p < .05$ as the cutoff for statistical significance, with lower values indicating a stronger basis for rejecting the null hypothesis. Standard deviation is a measure of the amount of variation in a set of values. Approximately two-thirds of the observations fall between one standard deviation below the mean and one standard deviation above the mean. Standard error uses standard deviation to determine how precisely one has estimated a true population value from a sample. For instance, if one took enough samples from a population, the sample mean ± 1 standard error would contain the true population mean around two-thirds of the time.



2,022, 2,847, and
7,792 study samples
were observed for
street crossers

author affiliation

Li and Hsee: University of Chicago. Wang: Tongji University. Corresponding author's e-mail: xilin.li@chicagobooth.edu.



In the three studies,
41%, 35%, and 41% of
pedestrian street
crossers were
red-light violators

supplemental material

- <http://behavioralpolicy.org/journal>
- Data, Analyses, & Results

references

1. Chapman, G. B., Li, M., Colby, H., & Yoon, H. (2010). Opting in versus opting out of influenza vaccination. *JAMA*, *304*(1), 43–44.
2. Cialdini, R. B. (2009). We have to break up. *Perspectives on Psychological Science*, *4*(1), 5–6.
3. Donnelly, G. E., Zatz, L. Y., Svirsky, D., & John, L. K. (2018). The effect of graphic warnings on sugary-drink purchasing. *Psychological Science*, *29*(8), 1321–1333.
4. Eskreis-Winkler, L., Fishbach, A., & Duckworth, A. L. (2018). Dear Abby: Should I give advice or receive it? *Psychological Science*, *(29)*11, 1797–1806.
5. Jung, M. H., & Critcher, C. R. (2018). How encouraging niceness can incentivize nastiness: An unintended consequence of advertising reform. *Journal of Marketing Research*, *55*(1), 147–161.
6. Li, X., & Hsee, C. K. (2021). Free-riding and cost-bearing in discrimination. *Organizational Behavior and Human Decision Processes*, *163*, 80–90. <https://doi.org/10.1016/j.obhdp.2019.08.003>
7. Milkman, K. L., Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2011). Using implementation intentions prompts to enhance influenza vaccination rates. *Proceedings of the National Academy of Sciences, USA*, *108*(26), 10415–10420.
8. Nickerson, D. W., & Rogers, T. (2010). Do you have a voting plan? Implementation intentions, voter turnout, and organic plan making. *Psychological Science*, *21*(2), 194–199.
9. Shu, S. B., & Shu, S. D. (2018). The psychology of decumulation decisions during retirement. *Policy Insights from the Behavioral and Brain Sciences*, *5*(2), 216–223.
10. Soman, D., & Cheema, A. (2011). Earmarking and partitioning: Increasing savings by low-income households. *Journal of Marketing Research*, *48*(SPL), S14–S22.
11. Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. Penguin.
12. World Health Organization. (2018). *Global status report on road safety 2018*. https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/
13. Balasubramanian, V., & Bhardwaj, R. (2018). Pedestrians' perception and response towards vehicles during road-crossing at nighttime. *Accident Analysis & Prevention*, *110*, 128–135.
14. Rosenbloom, T. (2009). Crossing at a red light: Behaviour of individuals and groups. *Transportation Research Part F: Traffic Psychology and Behaviour*, *12*(5), 389–394.
15. Bolino, M. C. (1999). Citizenship and impression management: Good soldiers or good actors? *Academy of Management Review*, *24*(1), 82–98.
16. Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. *Advances in Experimental Social Psychology*, *21*, 261–302.
17. Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review*, *99*(1), 544–555.
18. Leary, M. R., & Kowalski, R. M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin*, *107*(1), 34–47.
19. Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, *76*(2), 149–188.
20. Krishnamurthy, P., Carter, P., & Blair, E. (2001). Attribute framing and goal framing effects in health decisions. *Organizational Behavior and Human Decision Processes*, *85*(2), 382–399.
21. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263–292.
22. Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, *5*(4), 296–320.
23. Zane, N., & Yeh, M. (2002). The use of culturally-based variables in assessment: Studies on loss of face. In K. S. Kurasaki, S. Okazaki, & S. Sue (Eds.), *Asian American mental health: Assessment theories and methods* (pp. 123–138). Kluwer/Plenum Publishers.
24. Ho, D. (1991). The concept of "face" in Chinese-American interaction. In W. C. Hu & C. L. Grove (Eds.), *Encountering the Chinese: A guide for Americans* (pp. 111–124). Intercultural Press.