

COLLEGE STUDENTS' PERCEPTIONS OF SAFETY ON CAMPUSES WITH
CONCEALED CARRY

by

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LIST OF ABBREVIATIONS

Abbreviation	Description
ANOVA	Analysis of Variance
ANCOVA	Analysis of Covariance
<i>d'</i>	D prime
GNAT	Go/No-Go Association Task
IAT	Implicit Association Test

ABSTRACT

In recent years, several states have implemented “campus carry” laws affecting public universities, which generally allow for faculty, students, staff, and visitors to carry concealed handguns into campus premises. Existing research has largely focused on how students would feel, hypothetically, if such legislation were implemented on their campus. The present research extended this work by assessing students’ actual perceptions of safety (i.e., explicit levels of fear and perceived likelihood of crime in Study 1, and implicit perceptions of campus safety in Study 2) before and after the implementation of campus carry legislation using a quasi-experimental design. The same measurements were taken from students enrolled at a comparable university where campus carry was not allowed. Thus, the two main independent variables were the presence or absence of campus carry legislation and the time of assessment. Students’ levels of fear and likelihood of crime (assessed via a questionnaire) were the main dependent measures in Study 1, and students’ implicit attitudes about campus safety (assessed via the Go/No-Go Association Task, GNAT) were the main dependent measures in Study 2. Based on prior research, it was predicted that students would report increased perceptions of fear and risk, and lower perceptions of safety, after the legislation was implemented on their campus, whereas students at the control university would show no significant changes over time. Such results would suggest that subjective externalities should be considered in addition to objective factors (e.g., crime rates,

negligent discharges, etc.) when evaluating the impact of campus carry legislation on campuses.

I. INTRODUCTION

Gun law has become an increasingly contentious topic in the United States over the past few decades (Patten, Thomas & Wada, 2012). Public discourse has often concentrated on the second amendment to the United States Constitution. For example, much discussion has centered on “right-to-carry” laws, which allow for persons in a population to hold a weapon in public spaces. In addition to exercising a constitutional right, pro-gun advocates have argued that armed populaces can increase safety in a community by acting as deterrents to crime, because armed and responsible citizens can retaliate rapidly in the event of a public shooting (Bouffard, Nobles, Wells & Cavanaugh, 2012). For example, in 2015 a Chicago rideshare driver successfully shot an active gunman before anyone else was killed (Ziezulewicz, 2015). On the other hand, gun-control activists argue that the negative consequences of firearms can outweigh the benefits of deterrence. In addition to increasing the lethality of violent events, the increased presence of guns may introduce entirely new threats such as accidental discharges, suicides, alcohol-related incidents, irresponsible placements of firearms, and intimidation tactics.

Anxieties over gun violence are not baseless. In the year 2015 alone, firearms killed 13,449 people (“Gun Violence Archive,” 2015). Additionally, there were 332 incidents of mass shootings, and 1,963 shooting accidents (“Past Summary Ledgers,” 2015). Pro-gun groups argue that the number of mass shootings can be reduced with armed populations. Indeed, at least ten shootings have been stopped by an armed gunman acting in self-defense (Volokh, 2015). However, there are concerns about the accuracy of well-intentioned, armed individuals. The Brady Campaign to Prevent Gun Violence notes

that even experienced police officers hit their targets only 20% of the time (“No Gun Left Behind,” 2007).

Researchers have been unable to draw firm conclusions as to the objective implications of firearms being used as a counter-measure in the event of a shooting (Jang, Dierenfeldt & Lee, 2014). Analyzing multiple-person public shooting data in the United States from 1977-1997, Lott and Landes (2000) determined that “right-to-carry” laws did significantly reduce the number of multi-victim shootings. However, other researchers have criticized their use of a Poisson regression model, and suggested that such laws are, in fact, not effective in reducing the number of mass shootings (Duwe, Kovandzic & Moody, 2002). In addition, at least one study has positively correlated firearm prevalence with homicide rates (Siegel, Ross & King, 2014). Without consistent evidence, debate over firearms continues at both the federal and state levels (Bouffard et al., 2012).

Recent state legislation allowing, and in some cases compelling, colleges to permit handguns on campus has generated intense, emotional discourse on both sides of the issue. For example, the state of Texas passed Senate Bill 11 in 2015, which allowed for concealed handgun license (CHL) holders to carry firearms in public university buildings effective August 1, 2016 (“Senate Bill 11,” 2015). This decision stirred public debates about safety and the means by which it might best be attained. Many public universities in Texas formed task forces, held public forums, administered surveys, and ultimately put forth protocols to implement the law.

Proponents for campus carry on college campuses claim that arming faculty, staff, and students deters would-be school shooters (“Common Arguments,” n.d.). Further, the organization “Students for Concealed Carry” notes that campus carry laws have been

implemented in many states without any serious calamities or increases in gun violence. The group also contests the argument that responding police officers might have trouble identifying the original shooter, stating the shootouts can be quickly resolved, even before law enforcement officers can respond. It is also emphasized that concealed handgun licensees must go through proper training procedures and tend to be law abiding. In 2015, CHL holders in one state accounted for only 0.2459 percent of all convictions, or 108 out of 43,924 (“Conviction Rates,” 2016).

Others have argued that the need for an armed campus community is overblown, as campus shootings remain a statistically rare event (Jang et al., 2014; Patten et al., 2012). In addition, opponents have argued that student populations are especially vulnerable to stress and mental health issues, and have high rates of substance abuse. Research supports the idea that college populations have high incidences of mental health issues and are more inclined to partake in risky behavior (Mandrachia & Pendleton, 2015). The lethality of these issues can be increased if such students are armed. Finally, concerns exist as to the adequacy of the training courses necessary to secure concealed handgun licenses. Opponents insist instead that crisis de-escalation and defense courses for students provide a more strategic, rational response to dangers on college campuses.

Much previous research has examined the “objective” effects of increased access to firearms, such as changes in violence or crime rates (Siegel et al., 2014). However, relatively few studies have examined the more “subjective” effects. The present study is designed to examine changes in levels of fear and perceptions of safety on a university campus following the implementation of campus carry legislation.

II. LITERATURE REVIEW

Externalities of Firearms

The presence of firearms can have pronounced effects on individuals and groups in society. Hemenway, Solnick and Azrael (1995) described unwanted, residual consequences, due to the presence of a firearm (or firearms) within one's social network, as "psychic costs" or "externalities." Rather than impacting only owners, the presence of firearms can impose marked externalities on others, specifically those who interact with the owners or carriers. The possession of weapons, or even the presumed presence of weapons in areas where concealed carry is lawful, may influence perceptions of safety in a community.

Externalities from firearms can be positive or negative. The presence of firearms may engender feelings of safety to gun owners, whereas for non-owners, the externality can be a reduced sense of safety. In the United States, about 30% of individuals own a firearm (Smith & Son, 2015). Hemenway et al. (1995) noted that those without firearms tend to report feeling less safe around those who are armed. In contrast, the authors note, individuals with firearms tend to cite inadequate feelings of safety as the catalyst that compelled them to secure such weaponry (Hemenway et al., 1995). Overall, there is no greater predictor of attitudes toward gun control than gun ownership (Kleck, 1996).

Simpson (1996) argued that the construct of "safety" is largely unobservable. For persons to believe that they are safe, they must ignore or habituate themselves to the many potential dangers that surround them. Whereas some signs of danger can be easily observed, achieving a sense of safety is an effortful process of pruning wherein one must first ignore or come to terms with objects in the environment that have the potential to

harm. Thus, Simpson's research implies that firearms may introduce unwelcome corollaries, as a person must first dismiss all of the dangers inherent in firearms before he or she can feel safe by their presence. In environments where campus carry is lawful, it may be difficult or even impossible to establish feelings of safety, because the actual presence or absence of firearms is difficult to ascertain. Even when, or perhaps especially when, the presence of firearms is established, a person must either ignore or come to terms with the potentials for danger associated with them.

Attitudes Towards Firearms on College Campuses

In 2015, Texas became the 8th state in the United States to allow campus carry on college campuses, joining Colorado, Idaho, Kansas, Mississippi, Oregon, Utah, and Wisconsin ("Guns on Campus' Laws," n.d.). In recent years, additional states have considered similar legislation, including Florida, South Dakota, Virginia, West Virginia, and Wyoming (Bouffard et al., 2012; Cavanaugh, Bouffard, Wells & Nobles, 2012; Jang, Dierenfeldt & Lee, 2014; Lipka, 2008; Mulhere, 2015).

Despite the increase of campus carry legislation, survey research has shown that most members of college communities do not want campus carry laws to be implemented on their own campuses (Brinker, 2008; Cavanaugh et al., 2012; Jang et al., 2014; Patten et al., 2012; Thompson et al., 2009; Thompson, Price, Dake & Teeple, 2012; Thompson et al., 2013). Jang et al. (2014), for example, surveyed students at Missouri Western State University about their attitudes towards campus carry, and in particular the proposition that campus carry should be legalized at their universities. Attitudes were analyzed as a function of many demographic variables, including gender, ethnicity, age, victimization experience, confidence in the police, and weapon socialization (peer/parental gun

ownership). Nearly 50% of students strongly disagreed or disagreed with the premise that campus carry should be legalized on their campus. By contrast, only 32.4% strongly agreed or agreed with the same statement. The most substantial determinant of campus carry attitudes was weapon socialization. Students with gun-owning parents or friends that carried weapons were significantly more likely to approve of more weapons on campus. Additionally, gender was an important factor in student perceptions of campus carry: men were more supportive of weapons on campus than women. This finding is replicated consistently throughout the research (Brinker, 2008; Cavanaugh et al., 2012; Patten et al., 2012; Thompson et al., 2012; Thompson et al., 2013), and it should not be overlooked. On most college campuses, women currently outnumber men. Between 2013 and 2024, female enrollment is expected to increase by another 15%, compared to only 9% for men (“Undergraduate Enrollment,” 2015).

Patten et al. (2012) recorded attitudes at two universities: California State University, Chico and Chadron State College in Nebraska. Students, staff, and faculty at both universities were surveyed to determine their attitudes towards campus carry. For example, one question asked participants to report the extent to which they agreed with the following statement: “I would feel safe on campus with qualified faculty/students/staff carrying concealed firearms.” Overwhelmingly, participants indicated that they would oppose campus carry: 73% of faculty, students and staff were against qualified individuals carrying concealed handguns on their campus. Additionally, 70% stated they would not feel safer with more concealed guns being present on campus. Lastly, 72% did not think that armed faculty, students, and staff would promote campus safety. In regard to the demographic data, the largest discrepancies in responses were

found between men and women, with 85% of women being against campus carry. The number of men against such legislation was only somewhat lower, with 80% stating that they would not feel safe with more guns on campus.

Patten et al. (2012) noted that approximately 30% of those sampled carried firearms. Thus, despite the high rates of opposition, ownership rates in this sampling were representative of national estimates. The findings here contradict the premise that gun-ownership is the primary indication of attitudes towards gun control. In this study, a majority (71%) of firearm owners reported opposition to the hypothetical presence of concealed firearms on campus. Moreover, 67% of gun owners stated that they would feel less safe, and 82% rejected the idea that more guns would create a safer campus environment. Ultimately, a super-majority of gun owners were against the prospect of firearms on campus.

In another survey, Brinker (2008) administered questionnaires to students at Missouri State University. In line with Patten et al. (2012), only 24% of students responded positively to the prospect of other students carrying guns on campus. When asked whether or not they would support faculty carrying concealed weapons, 34% responded positively. Here, male respondents were significantly more likely to support guns on campus. This was especially true for those with more extreme preferences for or against campus carry. Interestingly, female respondents were significantly more likely to believe that a shooting on campus was possible. Students responded to this possibility on a ten-point scale, ranging from extremely unlikely to extremely likely. The mean response for men was only 3.55, while for women it was 4.53. Ultimately, students at that university were responding negatively to the prospect of firearms on campus.

Cavanaugh et al. (2012) surveyed students at anonymous public universities in both Texas and Washington. This study was conducted before the current campus carry law was passed in Texas, although a similar bill had passed the state Senate, only to be struck down in the House. Students at both universities reacted negatively to the proposal of campus carry legislation. Students attending the university in Washington were three times more likely to report being “not at all comfortable” compared to “very comfortable.” At the university in Texas, the ratio was similar, with a ratio greater than 2:1 showing opposition to the idea. Of note, students were divided more evenly when questioned about off-campus gun laws. About half of all students surveyed were “very comfortable” with armed citizens in public, off-campus spaces, while the other half were “very uncomfortable” with that same prospect. In other words, when considering right-to-carry laws off campus, opinions were far more evenly split. These results suggest that college students tend to regard universities differently than they do other public spaces.

Thompson et al. (2012) recorded the attitudes of faculty as they pertained to campus carry. Faculty members at 15 randomly selected universities in Michigan, Ohio, Indiana, Illinois, and Wisconsin were chosen for participation. Overall, 97% of faculty reported that they felt safe on their campus. Only 9% of faculty reported being a victim of a crime on campus, while 22% reported that someone they were close to had been. The majority of these instances, specifically 86%, were non-violent property crimes. Of all college faculty members surveyed, 94% were against concealed handguns on campus and 93% of the respondents further felt that most faculty would feel unsafe if concealed handguns were allowed on campus. In contrast to Cavanaugh et al.’s 2012 study, respondent’s attitudes towards “right-to-carry” laws did not change drastically when

considering off-campus spaces in this case. That is, 84% of respondents reported that they were not supportive of citizens carrying concealed weapons off college property.

Thompson et al. (2009) noted the lack of research investigating attitudes of campus police officers; despite the increasingly important role of these individuals as the rates of firearm violence on campuses rise. To address this gap, they surveyed a national random sample of campus police chiefs. Overall, 25% reported having a firearm incident on campus within the past year, and 35% reported a firearm incident in the past 5 years. Only 5% of university police chiefs agreed with the statement, “If students were allowed to carry concealed firearms on campus, it would prevent some or all killings.” In contrast, 89% of police chiefs agreed that the most effective way to deal with firearm violence is to prevent firearm use. Unfortunately, only 66% of respondents felt that police officers on their campus were adequately trained to deal with an active shooter.

In another study, Thompson et al. (2013) examined undergraduate student attitudes towards campus carry at 15 public Midwestern universities spread across 5 states. The universities utilized in this study were chosen for their diverse, primarily in-state student populations. Of all students questioned, 93% felt safe on their college campus. Similarly, 81% did not fear being victims of violence on campus. Students were not supportive of campus carry, with 79% responding negatively to the idea. Similarly to the findings of Cavanaugh et al. (2012), 53% of students were not supportive of concealed weapons off campus. Unique to this study, participants were asked if they would feel more able to protect themselves with a concealed weapon. In response, 51% stated that they would, while 49% reported that they would not.

The Thompson et al. (2013) study identified political party affiliation as a significant factor in attitudes about campus carry. Other existing research has shown that a conservative political attitude can be a significant mediating factor (Patten et al., 2012). However, this research is not clear-cut. Patten et al. (2012) found that a majority of conservatively minded persons sampled did not support more concealed weapons on campus. To date, no studies have found student majorities at universities in traditionally conservative states to be in favor of campus carry laws.

Because concealed handgun holders are not required to self-identify as such, there remains a question as to how many weapons can be expected on a campus once a campus carry law is implemented. For example, only 5% of respondents in Thompson et al.'s (2013) study claimed ownership of a permit to carry a concealed firearm. To address this question, Bouffard et al. (2012) surveyed students in various campus buildings at Sam Houston State University in Huntsville, Texas. They found that in certain buildings, 82% of classrooms had at least one CHL holder. However, in other buildings the number was as low as 10%. To explain this large range, the authors noted that these buildings offered classes to students in very different majors. For example, one building offered primarily criminal justice courses, and students enrolled in these courses were more likely to report having a concealed handgun license.

Bouffard et al. (2012) next asked students whether they would secure a concealed handgun license if campus carry were made legal. In all buildings except one, more than three quarters of classrooms had at least one person that reported a very high likelihood that they would acquire a concealed handgun license if such weapons were allowed on campus (Bouffard et al., 2012). If accurate, the results suggest a 500% to 1,000%

increase of concealed handgun licensees on that campus following the implementation of campus carry. Thompson et al. (2013) found an even greater potential increase. Their results indicated that there could be a 1,500% increase of armed students at the colleges they surveyed.

The increased frequency of gun ownership on campus can have many implications. First, it is likely that students might learn about peers arming themselves. Although campus carry licensees are not required to identify themselves as such, they might disclose this information to friends and acquaintances. Further, acquiring a handgun may be a fear-related response in some cases. If so, then the act of some students arming themselves might compel others to do the same, thus escalating overall rates of firearms and fear on campus. Overall, this cycle could cause higher levels of fear at universities with campus carry, especially among students who do not carry concealed firearms.

These abovementioned studies have utilized self-report questionnaires about hypothetical changes in gun laws. So far, no study has examined perceptions of safety directly. LaGrange, Ferraro, and Supancic (1992) devised a particularly useful metric for gauging perceptions of safety in a community. This instrument measures a participant's fear of crime and their perceived likelihood of a crime befalling them. Hereafter, these concepts are referred to as "fear of crime" and "likelihood of crime" respectively. Jang et al. (2014) compared these ratings amongst students. Support for firearms on campus was not significantly linked to participants' fears of crime. However, participants' "likelihood of crime" was related. Differences in the ways these measures have been reported can be found consistently in the existing research, although the ways in which they differ are not

necessarily uniform (Jang et al., 2014; Jennings, Gover & Pudrzynska; LaGrange et al., 1992).

Hemenway et al. (1995) created a survey to measure attitudes towards firearms specifically. Participants were asked to specify the extent to which they agreed or disagreed with statements pertaining to the potential benefits or problems with the presence of firearms in a community. One such item stated that firearms in the community “deter people from unlawful behavior by increasing the risk to criminals.” A second states that firearms in the community “increase the likelihood of gun accidents.”

It is well established that self-report measures are susceptible to a myriad of issues (LaGrange et al., 1992). Greenwald, Poehlman, Uhlmann and Banaji (2009) note that aside from demand characteristics, social desirability biases and the like, self-report measures often fail to fully capture subjects’ beliefs, because they might be unknown even to the subject. Apathy is an enemy to the self-report measure as well. Both “naysaying” and “yaysaying” may be observed in such endeavors. Indeed, demand characteristics and social desirability biases each have the potential to mar experimental findings, but even for reasons besides these effortful deceptions, problems can arise. Therefore, researchers have devised several ways to avoid these pitfalls.

Implicit Measures

Implicit tasks measure “automatic” responses, which may reflect attitudes outside of awareness (Fazio & Olson, 2003; Greenwald et al., 2009). They are often paired with explicit measures of attitudes (Fazio & Olson, 2003; Greenwald et al., 2009; Tulving & Craik, 2000). In many cases, both types of measures are included to assess potential incongruities, as participants tend to respond differently on each measure. For example, a

subject who reports little racial bias on a survey might show greater evidence of racial stereotyping on an implicit task (Boniecki & Jacks, 2002; Greenwald et al., 2009).

Implicit tasks are fast paced, and they do not allow participants time to think about or plan their responses. Compared to explicit tasks, it is claimed that implicit tasks generate more honest responses, and may even negate attempts at ‘faking’ responses that may appear socially undesirable (Greenwald et al., 2009). Often, participants are not even aware what attitudes are being assessed (Fazio & Olson, 2003). Indeed, the presence or absence of awareness is most often thought to differentiate explicit from implicit attitudes (Ashcraft & Radvansky, 2010; Tulving & Craik, 2000). Greenwald et al. (2009) conducted a large meta-analysis, which found that, when measured by implicit tasks, items such as race and sexual orientation were overwhelmingly inconsistent with explicit measures evaluating the same concepts. In other words, the implicit tests were detecting biases that the explicit tests were not.

Compared with attitudes about race or sexuality, perceptions of campus safety may be a less controversial subject. People are not expected to feel shame when reporting beliefs about their own welfare. Campus carry itself is largely a political issue, and people tend to respond similarly to political issues on both explicit and implicit tasks. For example, Greenwald et al. (2009) found that political topics were some of the most consistent between both types of measures. Nonetheless, implicit measures allow for yet another valuable way in which attitudes can be measured, and subtle differences in performance noted on an implicit test may be detected when explicit responses do not differ. Further, discrepancies between the two types of measures could indicate that students may be not comfortable honestly reporting their perceptions of campus safety. In

fact, no published study has yet examined whether or not students might produce different explicit versus implicit responses when asked about campus-specific safety issues.

The most popular implicit measure of attitudes is the Implicit Association Task (IAT; Fazio & Olson, 2003). Its popularity is due primarily to its ease of use and administration: Using two keys, respondents press one or the other based on the presentation of opposing categories. Commonly, these tasks measure attitudes about race. In these conditions, the speed with which a person acknowledges positive stimuli in the presence of pairings of *White/Positive* and *Black/Positive* might be compared to the speed by which they respond to the same stimuli against a pairing of *Black* and *Negative*. A faster response time to the former indicates a white preference and bias against African Americans. Thus, reaction time is typically the primary dependent measure in the IAT, but accuracy is also monitored.

A key methodological issue is that the IAT necessitates two ends of a continuum be present for all concepts (Fazio & Olson, 2003). For example, *White* must be compared with *Black*, and *Positive* must be compared with *Negative*. To overcome this limitation, Nosek and Banaji (2001) created the Go/No Go Association Task (GNAT). This task allows for implicit attitudes to be measured without the need for contrasting categories. Instead of two buttons, the GNAT only utilizes the space bar. Target signals can be paired without other category stimuli. Thus, signals (e.g., *Black*) can be paired only with attributes (*Positive* or *Negative*). Again using the above example, implicit attitudes towards only African Americans can be assessed without reference to any other group using the GNAT.

Despite their widespread use, debate exists as to what implicit tasks actually measure. Often, words such as “unconscious” and “automatic” are used to describe what is being assessed (Ames, Grenard, He, Stacy, Wong, Xiao, Xue & Bechara, 2013; Forbes, Cameron, Grafman, Barbey, Solomon, Ritter & Ruchkin, 2012; Gozzi, Raymond, Solomon, Koenigs & Grafman, 2009; Greenwald et al., 1998; Greenwald et al., 2009; Fazio & Olson, 2003; Nosek & Banaji, 2001). Many researchers have expressed criticism towards this understanding of implicit tasks and attitudes (Fazio & Olson, 2003; Forbes, Cameron, Grafman, Barbey, Solomon, Ritter & Ruchkin, 2012; Healy et al., 2015; Williams & Thermanon, 2011). To critics, discrepancies between implicit and explicit tasks do not by themselves legitimize implicit tasks as measurers of unconscious or automatic reactions. Further, time-limited assortment tasks do not guarantee an absence of conscious thought. Fazio and Olson conclude that it is not consistent with the scientific evidence to consider attitudes measured by implicit tasks to be implicit, or unconscious, themselves (Fazio & Olson, 2003).

Nonetheless, implicit tasks such as the IAT and the GNAT provide a unique opportunity to gauge multiple positions of perspective. As abovementioned, responses in such tasks may be harder to fake than explicit questionnaires. Additionally, the results of implicit and explicit tasks can support the findings of each other, even if they do not stand in contrast. Each can provide tangential means by which conclusions can be drawn.

Hypotheses and Rationale

The present study examined perceptions of safety at a public university in Texas before and after implementation of campus carry legislation, compared with a public university in California where such legislation was not implemented. Study 1 measured

self-reported attitudes on a survey instrument adopted from LaGrange et al. (1992) and Hemenway et al. (1995), and Study 2 assessed implicit attitudes using the GNAT. In both cases, attitudes were measured before and after the implementation of campus carry legislation. Consistent with survey research (Brinker 2008; Cavanaugh et al., 2012; Jang et al. 2014; Patten et al., 2012; Thompson et al., 2009; Thompson et al., 2012; Thompson et al., 2012), Texas students were expected to experience greater levels of fearfulness after concealed handguns were allowed into classrooms on their campus. The universities were not expected to show significant differences in their reported perceptions of safety until after implementation of the law. At that point, Texas students should have shown lower perceptions of safety, whereas California students should have showed no change.

III. RESEARCH METHODS AND DESIGN

Participants

Participants were recruited from the Psychology Departments at Texas State University and California State University, Long Beach. Students were required to have normal or corrected to normal vision. In Study 1, there were 339 participants from Texas, and 180 from California. In Study 2, there were 229 from Texas, and 127 from California. Compensation for participation was provided in the form of course credit. The appropriate Institutional Review Boards approved the procedures for both experiments.

Sampling

Texas State University is a state-supported public university in San Marcos, Texas, which had an enrollment of 37,979 total students in Fall 2015 (“Facts and Data,” 2015). California State University, Long Beach is a comparable state-supported public university in Long Beach, California, which had an enrollment of 32,079 in Fall 2015 (“Campus Facts Fall 2015,” n.d.). Available Texas State University demographics listed the university as 50% Caucasian, 33% Hispanic, 10% African American and 5% other (“Facts and Data,” 2015). California State University Long Beach by comparison is 39.0% Latino/Latina, 18.7% Caucasian, 23.4% Asian-American/Pacific Islander, 3.8% African-American, and about 15% other (“Campus Facts Fall 2015,” n.d.).

Study 1

Self-report measure

Participants were administered a questionnaire adopted from the Fear of Crime in America survey sponsored by the AARP Andrus Foundation (See Appendix). Validity had been established in part by LaGrange et al. (1992), who used the survey to measure neighborhood attitudes towards both social and physical incivilities. The survey reported a respondent's "fear of crime" and what LaGrange et al. (1992) refers to as "perception of risk." That is, the first section (i.e., 10 items) corresponded with fears of crime, while the second section (i.e., 10 items) asked students to report their perceived likelihood of a crime befalling them. Participants responded on a 5-point scale, with 1 indicating "not afraid at all" in the first section and "not likely at all" in the second, and a response of 5 indicating "very afraid" in the first section and "it's very likely" in the second section. In the current questionnaire, a final section was added, which was adopted from Hemenway et al. (1995). It was added to gauge participants' attitudes towards campus carry specifically. Participants were asked to rate the extent to which they agreed or disagreed with statements concerning campus carry. Mean responses to each of the three sections were computed, creating three dependent measures. The first section corresponded with "fear of crime," the second with "likelihood of crime," and the third to campus carry attitudes. The respondents were then asked to provide demographic data, including their name, age, major, and gender. Finally, two questions asked whether the participant currently owned a gun, or whether there was a gun in the house in which they were currently residing.

Procedure

Some students received the survey in paper format during regular class time, while others logged into web-based survey software and completed the survey online. In both cases, participants were informed that they could decline to answer any questions or refuse to participate in the study at any time. The time required to complete the questionnaire was approximately 10 minutes. The data were collected at Texas State University during the Spring 2011, Summer 2011, Fall 2011, Spring 2012, Fall 2015, Spring 2016, and Fall 2016 semesters. Data for California State University, Long Beach students was collected during the Spring 2011, Summer 2011, Spring 2016, and Fall 2016 semesters.

Analytic Strategy

This experiment measured the main effects of campus location and time of measurement, as well as any possible interactions between these variables. All tests were conducted using $\alpha = .05$. Because students could not be randomly assigned to conditions, this experiment utilized a quasi-experimental 2 x 2 between-subject factorial design. The main dependent measure was “perception of safety,” which was comprised of two separate measures: “Fear of crime” and “likelihood of crime.” “Fear of crime” was calculated as the mean response to items 1-10 on the survey, whereas “likelihood of crime” was calculated as the mean response to items 11-20. A 2 x 2 between-subjects analysis of variance (ANOVA) using campus location (Texas State University/California State University, Long Beach) and time (Pre-August 1, 2016/After August 1, 2016) also was conducted. A significant interaction was predicted such that means would increase over time in Texas, but not in California. Additionally, the two campuses should not differ at Time 1, but they should differ at Time 2. Each dependent variable was also

subject to multiple *a priori* Independent Samples *t* tests, using location and pre-to-post scores on all independent variables as factors.

To assess the impact of campus carry on perceptions of safety related solely to firearms (rather than the composite score noted above), two additional analyses were conducted on the questionnaire items, “How afraid are you that you and/or a friend will be attacked on campus by someone with a weapon?” and “How likely do you think it is that you and/or a friend will be attacked on campus by someone with a weapon?” As before, 2 x 2 (location x time) ANOVAs were conducted on responses to each of these items, followed by *a priori* Independent Samples *t* tests.

Finally, taking the mean response to the survey’s 7 final questions created an “attitudes towards campus carry” measure. Four separate Pearson correlates were run in order to determine any relationship between “attitudes towards campus carry” and any of the four dependent variables.

Study 2

Implicit Task

Students participated in a GNAT created for the purposes of this research. This task was modified from the GNAT procedure used by Lee, Rogge, and Reis (2010). Participants were instructed to press their space bar or phone face as quickly as possible after target stimuli appeared, and to withhold their response in the presence of distractor stimuli. Stimuli were presented for 600 ms each, and intertrial intervals lasted for 400 ms. After each stimuli was presented, a green *O* was displayed in the event of a correct response, whereas a red *X* was displayed after an incorrect response. The task was accessible by computers, as well as mobile devices.

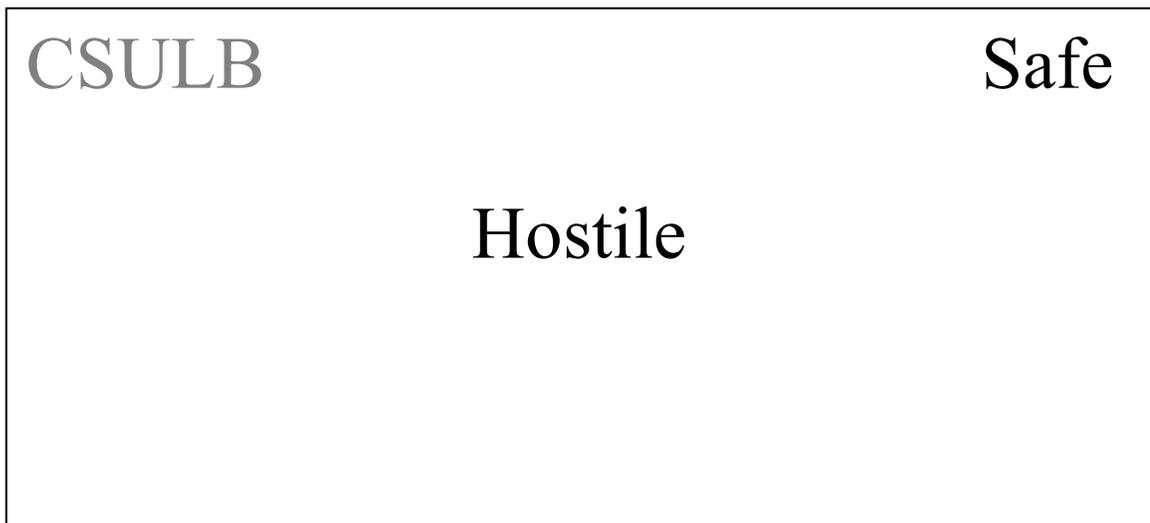


Figure 1. Example screen of the GNAT. Participants were expected to press the space bar when a presented concept matched the target concept, in this case “safe.” The participant should not have pressed the spacebar here.

The GNAT used was comprised of 172 trials spread over four blocks. Practice trials displayed three safe and unsafe words chosen by the researchers that were not used in test trials. Participants were asked only to press the spacebar when a presented word corresponded with the target category. For example, if the word *Safe* is at the top right-

hand side of the screen, participants were only to press the spacebar when stimuli corresponding to that concept were presented. On test trials, participants were shown a target concept at the top right-hand side of the screen, and either *Texas State University* or *California State University, Long Beach* at the top left, depending on the university attended by the participant. If the top right-hand side of the screen read *Safe*, and the top left-hand side reads *Texas State University*, then participants were expected to press the spacebar only in the presence of stimuli related either to Texas State University or safety. In this condition, unsafe words constituted distractor stimuli. Safe stimuli (“Positive,” “Secure,” and “Harmless”) and unsafe stimuli (“Negative,” “Scary,” and “Hostile”) were chosen by the researchers and matched by word frequency per million words (“SUBTLEXus word frequency,” 2015). For each university, three terms were chosen (“Bobcat,” “TXST,” and “Maroon and Gold” for Texas State University Students; “CSULB,” “49ers,” and “Black and Gold” for California State University, Long Beach students).

Procedure

Students accessed the task through their university’s online human subjects pool. After choosing to participate in the study and logging on, participants were shown and asked to agree to the consent form. Participants were informed that they could refuse to participate in the study at any time. Participants then followed a link to a GNAT pre-screen. Here, they were instructed to download software that would enable them to participate. Then, participants took a GNAT with stimuli tailored to their university. After completing the task, participants were shown the de-briefing form, and asked to click a link to secure participation credits. The GNAT data was hosted on servers provided by

Millisecond.com. Each experimental session lasted approximately 10 minutes. Data were collected on both campuses immediately before and after implementation of the new law (i.e., Spring 2016 and Fall 2016 semesters).

Analytic Strategy

As before, Study 2 utilized a quasi-experimental 2 x 2 (campus location x time) between-subjects factorial design. All tests were conducted using $\alpha = .05$. In this case, the main dependent measure was d' , which is a measure of sensitivity that accounts for both hit rates and false alarm rates among participants independent of response bias (Macmillan & Creelman, 2005). In this measure, hit rates and false alarm rates are standardized using z scores. When participants cannot discriminate (in our study, between safe and unsafe concepts), their d' score would be 0. A participant reporting more hits than false alarm rates will always have a d' score higher than 0, and participants with more false alarms than hits would have a negative d' score.

To test for change in implicit perceptions of safety over time, participants who did not respond at all (i.e., hit rates = 0 and false alarm rates = 0) were disqualified. The safe/university condition was analyzed using a 2 x 2 (location x time) between subjects analysis of variance (ANOVA). If implementation of campus carry reduced perceptions of safety, then a significant interaction should emerge: school-safe d' scores should decrease over time in Texas, but not in California. Conversely, d' scores in the unsafe/university condition should increase over time in Texas, but not in California.

IV. RESULTS

Study 1

For all four dependent variables, the survey data for both universities showed a clear, upward trend as implementation approached (see Figures 2-5). The data did not show clear differences immediately pre versus post implementation. Instead, the increase in all cases was steady over time. Immediately after implementation, however, the lines appear to be trending downwards.

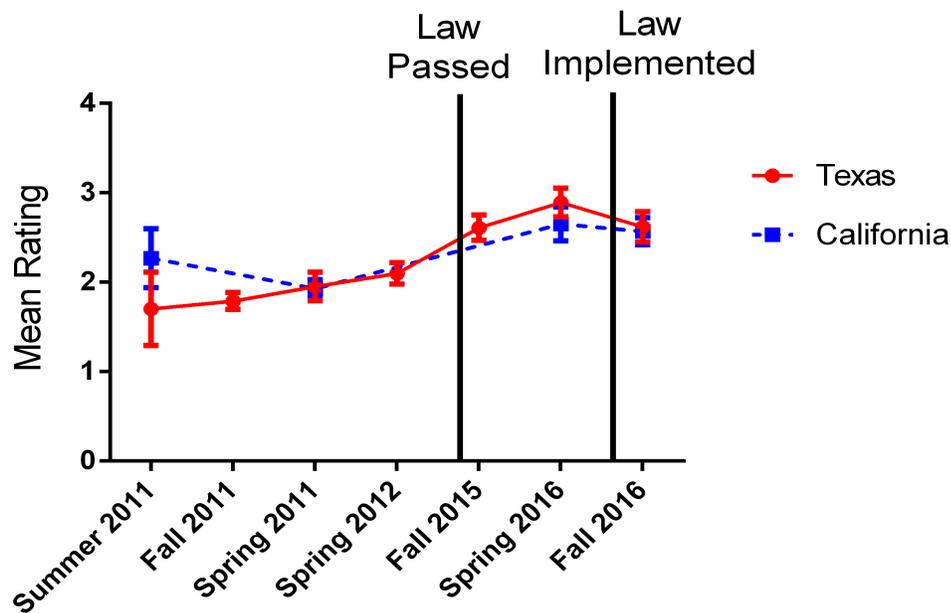


Figure 2. Mean “fear of crime” at both universities.

The mean “fear of crime” score was subjected to a 2 X 2 analysis of variance (ANOVA), with two levels of university (Texas vs. California) and time (Pre vs. Post implementation) as factors. Summer 2011, Fall 2011, Spring 2011, Spring 2012, Fall 2015, and Spring 2016 were summated and compared to Fall 2016. The main effect of university was statistically non-significant, $F(1, 513) = .04, p = .85$, suggesting that students at both universities were showing the same attitudes towards “fear of crime.”

The main effect of time yielded an F ratio of $F(1, 513) = 10.01, p = .00$, indicating that both Texas State University ($MI = 2.22, SD1=1.05; M2 = 2.62, SD2 = 1.21$) and California State University, Long Beach ($MI = 2.23, SD1=1.06; M2 = 2.57, SD2 = 1.12$) students showed a significant increase in levels of fear after implementation. The interaction effect was non-significant, $F(1, 513) = .07, p = .79$, indicating that students at one university were not showing significantly greater levels of fear post implementation compared to students at the other university.

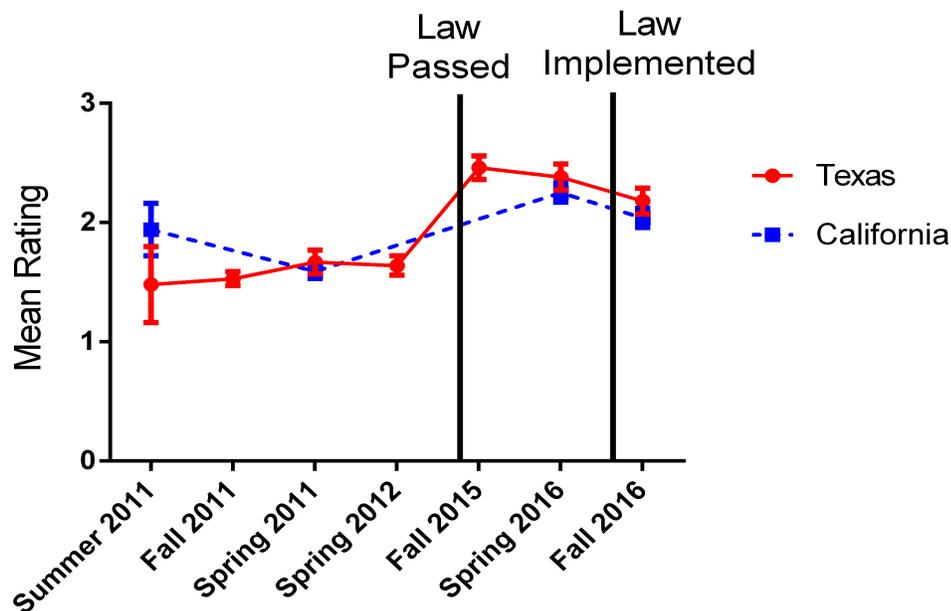


Figure 3. Mean “likelihood of crime” at both universities.

For “likelihood of crime,” university as a main effect was non-significant, $F(1, 512) = .92, p = .34$, suggesting that neither university showed more or less perceived “likelihood of crime.” Time once again showed significance, yielding an F ratio of $F(1, 512) = 9.02, p = .00$, indicating that students at Texas State University ($MI = 1.88, SD1=.76; M2 = 2.18, SD2 = .82$) and California State University, Long Beach ($MI = 1.86, SD1=.63; M2 = 2.04, SD2 = .62$) showed higher estimates of the likelihood of

crime after implementation. There was no significant interaction, $F(1, 512) = .63, p = .43$, suggesting that students at neither university showed significantly more or less perceived “likelihood of crime” pre or post implementation.

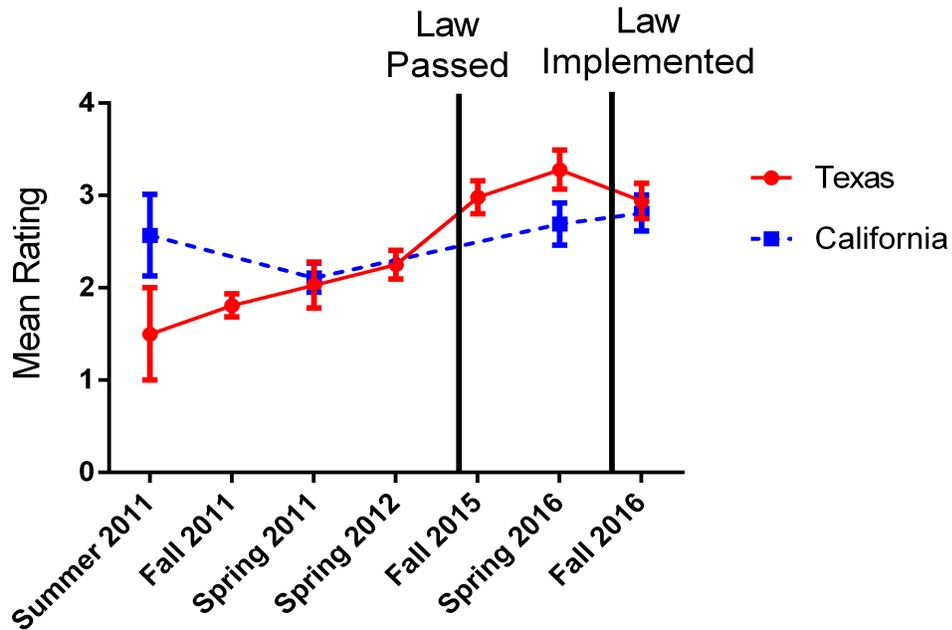


Figure 4. Mean “fear of weapon violence” at both universities.

“Fear of weapon violence” was also measured through a 2 X 2 ANOVA. There was a main effect of time, $F(1, 511) = 9.95, p = .00$, again suggesting that “fear of weapon violence” on both campuses rose pre to post implementation. There was no main effect of school, $F(1, 511) = .30, p = .58$, suggesting no significant differences in “fear of weapon violence” based on school. Finally, there was no significant interaction, $F(1, 511) = .11, p = .74$, which means there was no significant differences in “fear of weapon violence” either pre or post implementation.

“Fear of weapon violence” was the only dependent variable to correlate with “attitudes towards campus carry, $r(147) = .64, p = .04$. Because of this, the latter was

used as a covariate in an Analysis of Covariance (ANCOVA). The “Fear of weapon violence” item of the questionnaire was subjected to a 2 X 2 ANCOVA. There was a non-significant main effect of University, $F(1, 243) = 2.32, p = .13$, indicating neither school showed significantly more “fear of weapon violence.” With the covariate of “attitudes towards campus carry considered,” there was no longer a significant main effect of time, $F(1, 243) = .05, p = .82$. One interpretation for this is that without firerarm attitudes were included, fear no longer increased from pre to post implementation. Finally, there was no significant interaction between time and University, $F(1, 243) = .40, p = .53$, positing no significant differences in “fear of weapon violence” either pre or post implementation.

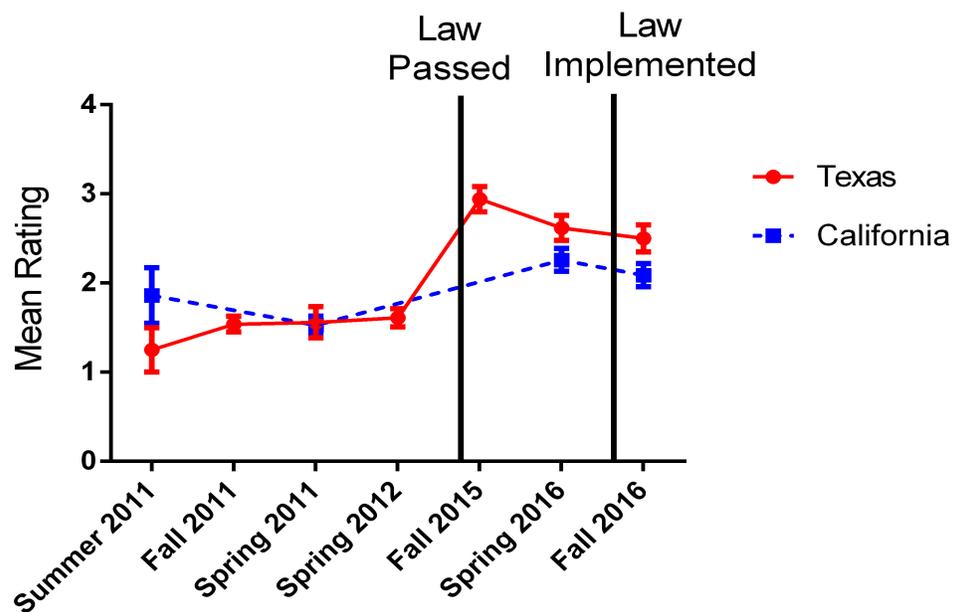


Figure 5. Mean “likelihood of weapon violence” at both universities.

Finally, “likelihood of weapon violence” was measured. The main effect of school yielded an F ratio of $F(3, 512) = 6.02, p = .01$, indicating that Texas students ($M =$

2.06, $SD = 1.12$) perceived weapon violence to be more likely than California students ($M = 1.01$, $SD = .94$). There was also a significant main effect of time, $F(3, 512) = 11.78$, $p = .00$, suggesting that both Texas State University students ($M1 = 1.98$, $SD1 = .1.1$; $M2 = 2.5$, $SD2 = 1.13$) and California State University, Long Beach students ($M1 = 1.83$, $SD1 = .92$; $M2 = 2.09$, $SD2 = .95$) showed increases in their perceived “likelihood of weapon violence” pre vs. post implementation, although the significance of university discussed previously indicates that Texas State University’s increase was more substantial. There was no significant interaction, $F(1, 516) = 1.30$, $p = .25$, indicating no significant changes between campuses in “likelihood of weapon violence” either pre or post implementation.

In addition to the ANOVAS, the researchers were interested in each main effect *a priori*. The ANOVAS and ANCOVA were necessary to test for possible interactions, but additional *t*-tests were used to examine each main effect separately. For all *t*-tests, the same data was used, from 2011-2016.

Mean “fear of crime” increased over time at both universities. Texas students showed significant change in fear attitudes before ($M = 2.22$, $SD = 1.05$) versus after ($M = 2.62$, $SD = 1.21$) the implementation of campus carry legislation in Texas, $t(337) = -2.53$, $p = .01$, whereas this effect did not reach statistical significance for California students before ($M = 2.23$, $SD = 1.06$) or after ($M = 2.57$, $SD = 1.12$), $t(176) = -1.97$, $p = .051$. Unlike the abovementioned ANOVA results, students at Texas students showed significant increases in fear compared to California students.

A second Independent Samples *t* test was conducted, this time using “likelihood of crime” as the dependent variable. Again, Texas students showed significant change in

perceived crime likelihoods before ($M = 1.88, SD = .76$) and after ($M = 2.18, SD = .82$) the implementation of the campus carry legislation in Texas, $t(337) = -2.64, p = .01$. California students did not show any significant increase before ($M = 1.86, SD = .63$) and after implementation ($M = 2.04, SD = .62$), $t(175) = -1.73, p = .09$. Again, unlike the ANOVA results, the t -test results discussed here indicate an increase in fear on Texas State University's campus that was not found at California State University, Long Beach.

Texas students showed a significant increase in "fear of weapon violence" before ($M = 2.4, SD = 1.41$) and after implementation ($M = 2.94, SD = 1.42$), $t(337) = -2.58, p = .01$. California students showed a non-significant increase before ($M = 2.37, SD = 1.4$) and after implementation ($M = 2.81, SD = 1.47$), $t(174) = -1.91, p = .06$, although again here the finding was close to statistical significance. Although an ANOVA did not find significant differences between campuses when measured on this dependent variable, the Independent t -test found that Texas State University students showed a significant increase in "fear of weapon violence" over time, while California State University, Long Beach students did not.

For "likelihood of weapon violence," Texas students showed a significant increase before ($M = 1.98, SD = 1.1$) and after campus carry was implemented on their campus ($M = 2.5, SD = 1.13$), $t(337) = -3.20, p = .00$. California students showed a non-significant change in weapon violence likelihood before ($M = 1.83, SD = 1.4$) and after the new law ($M = 2.09, SD = .95$), $t(175) = -1.75, p = .08$. Similar to the ANOVA run previously, the results here indicate that Texas State University students experienced a significant increase in their perceived "likelihood of weapon violence."

The previous analyses have examined data leading up to implementation, dating all the way back to 2011. In order to look only at data immediately pre and post implementation, a 2 X 2 ANOVA was run, looking at differences in time (Immediately Pre (Spring 2016) vs. Immediately Post (Fall 2016)) and university (Texas State University vs. California State University, Long Beach). The main effect of university was non-significant, $F(1, 201) = .82, p = .36$. The main effect of time was also non-significant, $F(1, 201) = 1.09, p = .30$. Lastly, there was no significant interaction, $F(1, 201) = .34, p = .57$. These results indicate that no significant changes in “fear of crime” occurred immediately pre to post implementation on either campus.

For, “likelihood of crime,” the main effect of university was non-significant, $F(1, 200) = 1.80, p = .18$, indicating no significant differences in perceived “likelihood of crime” between campuses. The main effect of time, however, was significant, $F(1, 200) = 4.28, p = .04$. These results suggest that perceived “likelihood of crime” actually went down on both campuses immediately pre and post implementation. Lastly, there was no significant interaction, $F(1, 200) = .00, p = .96$. This suggests that perceived “likelihood of crime” was not significantly higher or lower at one university either pre or post implementation.

“Fear of weapon violence” was measured next. The main effect of university was non-significant, $F(1, 200) = 3.07, p = .08$. The main effect of time was also non-significant, $F(1, 200) = 1.18, p = .28$. There was no significant interaction, $F(1, 200) = 1.18, p = .28$. These results indicate that there was no significant differences in “fear of weapon violence” either over time or by campus when looking at the two data points immediately surrounding implementation.

A final ANOVA was run in order to measure “likelihood of weapon violence.” There was a main effect of university, $F(1, 200) = 6.80, p = .01$, which indicated that students at both universities showed significantly different perceived “likelihood of weapon violence” scores. Students in Texas ($M = 2.55, SD = 1.14$) perceived weapon violence as more likely than students in California ($M = 2.16, SD = .91$). Both school’s scores trended downwards, suggesting that student’s perceived “likelihood of weapon violence” was decreasing on both campuses immediately pre to post implementation. However, the main effect of time was non-significant, $F(1, 200) = .98, p = .32$, showing no significant changes immediately pre vs. post implementation. There was no significant interaction, $F(1, 200) = .04, p = .85$.

Results Based on Passage Rather Than Implementation

The analyses above were based on *a priori* hypotheses. Based on the data, attitudes appeared to change following the actual passage of the law, rather than implementation. We re-ran the above analyses modifying the time variable to reflect the passage of the bill, which took place in August, 2015, rather than the actual implementation in August, 2016. The statistical outcome in many analyses did not change. The analyses below reflect changes in significance.

First, California State University, Long Beach students showed significant change in fear attitudes before ($M = 2.0, SD = .9$) versus after ($M = 2.6, SD = 1.15$) the passage of campus carry legislation in Texas, $t(176) = -3.93, p = .00$.

Next, when examining crime likelihood, there was a significant interaction $F(1, 512) = .442, p = .04$, indicating that students at Texas State University ($M1 = 1.60, SD1 = .62; M2 = 2.33, SD2 = .77$) showed higher perceived levels of crime likelihood than did

students at California State University post-passage ($M1 = 1.66$, $SD1 = .62$; $M2 = 2.13$, $SD2 = .6$). California State University, Long Beach students also showed significant change in crime likelihood attitudes before ($M = 1.66$, $SD = .58$) versus after ($M = 2.13$, $SD = .6$) the passage of campus carry legislation in Texas, $t(167.64) = -5.31$, $p = .00$.

Next, fear of weapon violence was examined. California State University, Long Beach students showed significant change in fear of weapon violence before ($M = 2.19$, $SD = 1.34$) versus after ($M = 2.76$, $SD = 1.46$) the passage of campus carry legislation in Texas, $t(169.49) = -2.66$, $p = .01$.

A significant interaction for weapon violence likelihood also emerged $F(1, 512) = 9.39$, $p = .00$, indicating that students at Texas State University showed higher levels of weapon violence likelihood than did students at California State University post-passage. Additionally, California State University, Long Beach students showed significant change in weapon violence likelihood before ($M = 1.59$, $SD = .87$) versus after ($M = 2.16$, $SD = .91$) the passage of campus carry legislation in Texas, $t(168.34) = -4.24$, $p = .00$.

Study 2

Study 2 examined implicit perceptions of safety on both campuses using the GNAT immediately pre and post implementation. In contrast to Study 1, data from only 2 semesters were gathered. A number of participants on both campuses accessed the GNAT program multiple times. To determine the impact that this might have had on our data, we conducted all GNAT analyses using two different screening variables. Overall, the results were the same using both methods.

A total of 38 participants in the school-safe condition were excluded for inactivity: 9 were from California State University, Long Beach and 29 were from Texas State University. In the school-unsafe condition, 35 participants were excluded due to inactivity: 14 were from California State University, Long Beach students and 21 were from Texas State University.

University-safe d' was subjected to a 2 X 2 ANOVA having two levels of school. The main effect of university yielded an F ratio of $F(1, 385) = 6.2, p = .01$, indicating that experiences of safety were significantly higher overall at Texas State University ($M = 1.14, SD = 1.25$) compared to California State University, Long Beach ($M = .84, SD = .94$). Hit rates and d' tended to be higher for Texas students, while false alarm rates were more equal across campuses. The main effect of time was non-significant, $F(1, 385) = 2.19, p = .14$. Finally, there was no significant interaction, $F(1, 385) = .62, p = .43$.

Table 1. Descriptive statistics for the school-safe condition using both screening methods.

Dependent Measure	Texas State University	California State University, Long Beach
Screened using subject's first attempt		
Hits	28.76 (9.38)	26.43 (9.84)
False Alarms	10.04 (5.56)	10.94 (5.70)
D'	1.14 (1.25)	.84 (.94)
Screened using subject's best attempt		
Hits	28.79 (9.31)	26.58 (9.82)
False Alarms	10.04 (5.55)	10.85 (5.70)
D'	1.14 (1.24)	.86 (.95)

Note. Main entries are means; entries in parentheses are standard deviations.

Table 2. Descriptive statistics for the school-unsafe condition using both screening methods.

Dependent Measure	Texas State University	California State University, Long Beach
Screened using subject's first attempt		
Hits	26.64 (10.27)	26.66 (10.02)
False Alarms	11.37 (6.30)	12.16 (6.61)
D'	.98 (1.39)	.90 (1.28)
Screened using subject's best attempt		
Hits	26.73 (10.18)	26.45 (10.18)
False Alarms	11.5 (6.33)	12.13 (6.72)
D'	.97 (1.37)	.89 (1.27)

Note. Main entries are means; entries in parentheses are standard deviations.

The main effect of university when measuring university-unsafe d' was non-significant, $F(1, 385) = .19, p = .66$. The main effect of time was also non-significant, $F(1, 385) = .67, p = .18$. Additionally, there was no significant interaction, $F(1, 385) = .05, p = .09$.

Next, we looked at each participant's attempt with the most usable data. The assumption here was that students might have been caught off guard by the GNAT's

speed and demands on their first attempt, and some may have waited to attempt it a second time (thus explaining the inactivity during their first attempt). Six participants who were not included in the previous analyses were included here.

Again, for the school-safe condition, there was a main effect for university, $F(1, 392) = 5.35, p = .02$, and there was no main effect for time, $F(2, 392) = 2.58, p = .17$. There was also no significant interaction, $F(2, 392) = .39, p = .53$. These results suggest that students at Texas State University reported higher levels of implicit safety than did those at California State University, Long Beach.

University-unsafe was also assessed again using a 2 X 2 ANOVA. There was no main effect for university, $F(1, 404) = .25, p = .62$. There was also no main effect for time, $F(1, 404) = .18, p = .68$. The interaction was also non-significant, $F(1, 404) = .029, p = .86$. These results indicate that neither school felt implicity more unsafe than the other, either pre or post implementation.

V. DISCUSSION

The present research was designed to examine both explicit (Study 1) and implicit (Study 2) changes in perceptions of campus safety before and after implementation of campus carry legislation. In Study 1, the main findings were that both universities showed increases in fear, and likelihood of crime over time, but only Texas State University students showed a marked increase in fears related to the likelihood of weapon violence. In Study 2, no changes over time were noted immediately pre and post implementation, although students at Texas State University reported higher levels of safety overall when compared to students at California State University, Long Beach.

These outcomes can potentially be used to support both pro and anti-campus carry arguments. On one hand, the data suggests that fear was present, and yet after implementation it began to waver. This might indicate that students began to habituate or accept the presence of concealed handguns on campus. On the other hand, passage of the campus carry legislation in 2015 raised fears on campus significantly. Although the fears appeared to lessen after implementation, they did not reach levels comparable to those measured in 2011, the earliest data points. In either case, the post-implementation trend warrants further data collection.

Another serious challenge to interpretation was the nature of the increases in each dependent variable. All four dependent variables showed slow increases over time. Less obvious was the difference between the data points immediately pre and post implementation. Statistical tests found no significant difference between only the Fall 2016 and Spring 2016 data points, wherein implementation occurred. Thus, without the

data going back to 2011, this study would have found no differences pre and post implementation in any dependent variable.

It is also important to keep in mind that, by necessity, this research used a non-experimental design. Thus, it was impossible to eliminate possible confounding variables that might have impacted the results at one campus or another. For example, a college campus in close proximity to Texas State University experienced the unfortunate homicide of one of its students during the Spring of 2016. Although this particular incident did not involve a firearm, it is possible that this event might have increased general apprehensions amongst Texas State University students during the Spring 2016 data collection phase.

The reason for including a campus in a state not impacted by campus carry legislation was to control for possible national events that might have impacted perceptions of safety during data collection. For example, university shootings are occurring at an increasing rate (Cannon, 2016). For this reason, students on both college campuses may have felt increasingly vulnerable over time. During data collection, we recorded no incidents of shootings on either campus. Still, events on other campuses may help explain the finding that fears increased on both campuses in some of our analyses.

Following the election in Fall 2016, flyers were posted on Texas State University's campus advocating for white nationalism and violence towards ethnic groups as well as faculty (Skinner, 2017). Indeed, recruitment efforts by white supremacists on college campuses nationwide have seemingly increased in intensity after the election (Svrluga, 2017). These events outside the scope of this study also may have impacted the results. In addition, protests related to the 2016 presidential election took

place on several campuses across the country during the Fall 2016 semester, including both campuses involved in this study (Hall, 2016; Emerson, 2016).

This study is the first to record data related to the implementation of campus carry legislation on a university campus. That is, no other study has tracked changes in student attitudes before, during, and after the implementation of campus carry legislation. These existing data certainly complement the previous survey data asking students about hypothetical changes (Brinker, 2008; Cavanaugh et al., 2012; Patten et al., 2012; Thompson et al., 2013). In this study, a pattern of heightened fear was undoubtedly documented as implementation of the law approached. This echoes student statements in previous research, which stated that they would feel uncomfortable and less safe if campus carry approached.

Given the changes which took place the 5 years prior to implementation, it would be useful to gather additional post-implementation data in future studies. Unfortunately, that is beyond the scope of the present research. It does seem as though “fear of crime” and “likelihood of crime,” as well as “fear of weapon violence” and “likelihood of weapon violence” trended downwards post implementation. Future studies should consider this, and continue to collect data points further past implementation.

Another unique feature of this study was the use of an implicit instrument to measure student attitudes towards safety. It is possible that further work remains to be done in this area. Again, the GNAT data were collected at only two times at both universities. When considering the survey data from the same two points, there was also little variation. Thus, it may be that significant changes in implicit attitudes would have

emerged with additional data over time. Future studies should include more data points both pre and post implementation.

Other research on implicit tasks supports the idea that implicit attitudes are long-standing, and not affected by new or recent environmental changes. Indeed, the overall crime incidences vary greatly between the two cities. A person in San Marcos, TX has a 1 in 272 chance of being involved in a violent crime (“San Marcos, TX crime rates,” n.d.). By contrast, a person in Long Beach, California has a 1 in 169 chance of being a victim (“Long Beach, California crime rates,” n.d.). Students’ reporting safety might reflect these more holistic understandings of crime and danger, rather than more reactionary changes. This finding is in line with some implicit task research, which found that inducing anxiety in participants immediately before taking an IAT based on anxiety did not affect their scores (Schmukle & Egloff, 2004). In other words, the IAT is thought to measure stable traits, whereas a change in attitudes due to a recent event would be a change in state.

Perhaps most importantly, Texas State University showed significantly greater “fear of weapon violence” and “likelihood of weapon violence” when compared to California State University, Long Beach. While measures of “fear of crime” and “likelihood of crime” were more similar across campuses, the measurements here point to a specific fear, which is very likely related to the campus carry legislation. This increase points to the importance of subjective externalities when considering similar legislation in other states.

APPENDIX

Perceptions of Safety on Campus

Currently, state law does not allow students to carry guns into campus buildings. However, several states, including Texas, are now changing legislation to allow concealed weapons into campus buildings. We are interested in students' perceptions of different kinds of crimes on this university campus.

Please rate your fear on a scale of 1 to 5 where: 1 means you are "NOT AFRAID AT ALL" and 5 means you are "VERY AFRAID."

HOW AFRAID ARE YOU THAT YOU AND/OR A FRIEND WILL...

1. Be approached on campus by a beggar or panhandler? _____
2. Be cheated, conned, or swindled out of your money while on campus? _____
3. Have someone break into your home while you are away? _____
4. Have someone break into your home while you are there? _____
5. Be raped or sexually assaulted on campus? _____
6. Be murdered on campus? _____
7. Be attacked on campus by someone with a weapon? _____
8. Have your car stolen while parked on campus? _____
9. Be robbed or mugged on campus? _____
10. Have your property damaged by vandals while on campus? _____

You have already rated your fear of different kinds of crimes, now I want you to rate THE CHANCE THAT A SPECIFIC THING WILL HAPPEN TO YOU DURING THE COMING YEAR. Please rate the likelihood on a scale from 1 to 5 where 1 means "it's not at all likely" and 5 means "it's very likely."

HOW LIKELY DO YOU THINK IT IS THAT YOU AND/OR A FRIEND WILL...

11. Be approached on campus by a beggar or panhandler? _____
12. Be cheated, conned, or swindled out of your money while on campus? _____
13. Have someone break into your home while you are away? _____
14. Have someone break into your home while you are there? _____
15. Be raped or sexually assaulted on campus? _____
16. Be murdered on campus? _____
17. Be attacked on campus by someone with a weapon? _____
18. Have your car stolen while parked on campus? _____
19. Be robbed or mugged on campus? _____
20. Have your property damaged by vandals while on campus? _____

Next, please rate the extent to which you agree with the following statements regarding the concealed carrying of guns into campus buildings using a scale of 1 to 5 where: 1 means you “STRONGLY DISAGREE” and 5 means you “STRONGLY AGREE.”

1. Concealed carry discourages unlawful behavior by increasing the risk to criminals. _____
2. Concealed carry increases the likelihood of capture or killing of current criminals. _____
3. Concealed carry allows people with weapons to assist others in crime resistance. _____
4. Concealed carry by those angry, intoxicated or with bad tempers reduces safety. _____
5. Concealed carry increases the likelihood of gun accidents. _____
6. Concealed carry redirects crime to those without guns. _____
7. Concealed carry increases the availability of guns to criminals. _____

What is your age? _____

What is your major? _____

What is your sex (please circle one)? Female Male

Do you currently own a gun (please circle one)? Yes No

Is there a gun in the house where you currently reside (please circle one)? Yes No

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