The New York State (Online) Journal of Applied Research in Criminal Justice

Articles

VOLUME 1 NUMBER 2 December 2025

The New York State (Online) Journal of Applied Research in Criminal Justice

AN INTERDISCIPLINARY AND APPLIED RESEARCH JOURNAL IN CRIMINAL JUSTICE

THE OFFICIAL PUBLICATION OF THE CRIMINAL JUSTICE EDUCATORS ASSOCIATION OF NEW YORK STATE (CJEANYS)

Funded by the New York State Department of Criminal Justice Services

---

Articles

Decision-Making in Officer Involved Shooting Simulations: Using Electroencephalography (EEG) to Explore the Effect of Dispatch Information and Suspect Weapon-Type.

Gehan Senthinathan[1,2], Anita Senthinathan[3], Scott W. Phillips[4,], S. Marlon Gayadeen[4], James J. Sobol[4], and Horacio A. Capote[5].

[1]SUNY Buffalo State University, Social and Psychological Foundations Department, NY

[2]SUNY Buffalo State University, Psychology Department, NY

[3]SUNY Buffalo State University, Speech-Language Pathology Department, NY

[4]SUNY Buffalo State University, Criminal Justice Department, NY

[5]DENT Neurologic Institute, NY

Disclosures:

This project was funded by the Research and Creativity Council Incentive Award, SUNY Buffalo State University.

Abstract

Officer involved shootings (OIS) are complex occurrences, involving numerous variables influencing officers' decision-making. To our knowledge, scholarship has not explored the neural processes of officers when a threat or the description of a situation was provided by a dispatcher (i.e., primed). The current study aimed to investigate this by combining electroencephalography (EEG) with a shoot-don't-shoot virtual simulation. A convenience sample of 24 law enforcement officers were included in the analysis. The officers either observed a knife or gun by the perpetrator. At the time of weapon presentation, EEG patterns did not reveal a difference between officers who were primed and those who were not, however, a difference was observed after the decision to shoot/don't shoot. Weapon-type influenced EEG activity at the time of weapon presentation. An improved understanding of the neural processes involved in OIS may facilitate the development of training strategies, inform policing procedures, and investigations.

Key Words: Officer involved shootings, electroencephalography, neural processes, decision-making, virtual simulation

Introduction

In the United States, discussion around police accountability and police shootings have been brought to the forefront for several reasons, including recent and well-publicized cases involving officer involved shootings (OIS) (O'Guinn 2024; Klinger 2021). There is also an assumption that police officers use lethal force in a discriminatory, biased, or disparate manner (Kim, Phillips and Bishopp 2021; Phillips and Kim 2021). A large and growing body of scholarship has found that OIS incidents are complex occurrences involving numerous variables that may influence the decision-making of an officer during these events (e.g., Albrecht 2023; Cubitt and Nix 2023; Keller, Caplan and Kennedy 2023; Perez and Lauritsen 2024). Neural processes in the human brain are responsible for how a police officer responds during an OIS incident. By measuring the neural processes that occur during an OIS event, we may be better able to understand these events. However, the neural processes that underlie these complex decisions are extremely difficult to capture in real-world scenarios. The "shoot/don't shoot" paradigm, which utilizes simulated video tasks or virtual simulation across a variety of scenarios, appears to be the closest analog to the real-world scenarios associated with OIS. Prior work with this paradigm has highlighted variables that may influence decision-making during an OIS incident, including perceived risk, race of a citizen, officer anxiety, working memory capacity, fatigue, training, and previous decisions in similar circumstances (Correll et al. 2002, 2007; Kahn and Davies 2017; Kleider et al. 2010; Ma et al. 2012; Moore-Berg, Karpinski and Plant 2017). However, the use of computers rather than a virtual training simulator is a potential limitation of some of the prior work. Virtual simulators have been used for training purposes, with ecological validity emerging such that prior work has found certain psychophysiological

factors including average heart rate, perceived stress, and self-reported mental effort, mirror that of real-world events (Kleygrewe et al. 2024).

In uncertain situations that require visual attention, intention, and hand-eye coordination, specific neural regions of the human brain are involved. An improved understanding of the neural processes involved in OIS may facilitate the development of training strategies and inform policing procedures (Fonseca et al. 2023). Since electroencephalography (EEG) can be used to explore neural activity patterns, in the current study, we utilized a combined method of EEG and virtual simulation to explore neural activity during OIS. The purpose of this study was to analyze the association between various scenarios and particular electrophysiological responses. To our knowledge, how information on the possibility of threat or description of a situation (officer dispatch information) influences underlying neural processes when the threat is encountered has not been explored; thus, we aimed to investigate this in the current study. What follows is an overview of EEG research in policing, including explanations of electrophysiology and cognitive processes. Thereafter, the methods that guided the current research are presented, along with results. We conclude with a discussion of the benefits of the study and policy implications.

Decision-making in Shoot/Don't Shoot Scenarios

Previous work has used EEG to examine subconscious aspects and neural activity during simulated "shoot/don't shoot" scenarios (James, Klinger and Vila 2014; Johnson, et al. 2014). These studies show that in a virtual simulator, threatening scenarios induce suppression of alpha-waves and illustrate that neurophysiological change is associated with cognitive and psychological factors that influence behavior. In non-police participants, James and colleagues (2014) analyzed alpha-wave suppression and found that participants showed greater alpha-wave

suppression in response to Black suspects compared to Hispanics or Whites. They also found that this bias influenced speed to pull a trigger, demonstrating that alpha-wave activity can be used as a physiological biomarker to explore factors related to decision-making. Further, Johnson and colleagues (2014) investigated alpha-wave suppression between police and military personnel with >10 years of experience (experts), police and military with <10 years of experience (intermediates), and non-police/military participants (novices). They found that alpha-suppression was greatest in experts, suggesting alpha-wave suppression might be associated with increased alertness or focused attention.

While there is some data to support that EEG can be used to better understand what might influence the decision-making processes of police officers (James, et al. 2014; Johnson, et al. 2014), there are still many unanswered questions related to the complex factors relevant to shoot/don't shoot scenarios. Our work extends this early EEG research by exploring how priming (information received prior to the virtual simulation) and the type of weapon encountered (gun vs. knife) influences alpha-wave activity.

Electrophysiology and Cognitive Processes

Neural processes that underlie shoot/don't shoot decisions are likely complex and involve distributed activity across several neural structures. EEG is a noninvasive tool for exploring activation of the brain's neural circuits that provides excellent temporal resolution when compared to other tools used for exploring functional activity in the brain. For this reason, EEG has been used in prior studies (e.g., Attar 2022) and could potentially be used in the area of criminal justice to quantify the impact of acute stressors (e.g., information given to a police officer prior to arriving on the scene), attentional processes (e.g., focused attention to a suspect's

identifying characteristics), and active decision-making (e.g., shoot/don't shoot). EEG can be used to record electrical signals produced by neurons in the brain. These signals are categorized as frequency bands (e.g., alpha, beta, gamma, etc.). Alpha frequency band activity has been linked to a calm or relaxed awake state, and it has been suggested that changes in alpha band activity show the best correlation with mental stress or cognitive demand (Wheeler, Davidson and Tomarken 1993).

It is well established that the frontal cortex is involved in rational decision-making and inhibiting impulsive responses (Mesulam 2000; Stuss and Benson 1986). Uncertainty is a critical feature in police shoot/don't shoot scenarios. The ambiguous nature of such events presents intense cognitive demand and thus requires focus of attentional resources. As information accumulates towards a decision to shoot, posterior parietal areas are likely recruited (Huettel, Song and McCarthy, 2005). In uncertain situations that require quick judgments, parietal regions, including the parieto-occipital sulcus appear to be critically involved in coding of intention in response to briefly presented visual stimuli and early planning of limb movements (Vingerhoets 2014). In addition, the posterior parietal cortex is thought to play a critical role in the shifting and maintenance of spatial attention (Corbetta et al. 1993; Nobre et al. 1997).

Increased alpha power ratio (alpha band activity compared to other frequencies) has been termed 'synchronization of EEG' (Benedek et al. 2011). Engaging in tasks that involve cognitive demands, such as focused attention, results in reduced alpha power ratio as alpha activity decreases and other frequencies become more prevalent, and this shift is termed 'desynchronization of EEG'. Thus, desynchronization of EEG serves as an indicator of cortical activity or arousal. A study by Vagnoni and colleagues (2015) suggested that threatening stimuli, compared with non-threatening stimuli, induced desynchronization of EEG. Therefore, we may

expect greater desynchronization when officers observe a perpetrator with a gun compared to a knife. However, this, and similar studies were conducted on picture perception and may not reflect the complex processing involved in real-world scenarios or simulated stressful events relevant to OIS (for review, see Codispoti et al. 2023).

In complex emotional scenes that require attention to task-relevant stimuli and suppression of irrelevant information, the influence of specific stimuli (e.g., gun or knife) on alpha band activity (and thus, alpha power ratio) is not well understood. Some work suggests that suppression of task-irrelevant stimuli is associated with increased alpha power ratio (i.e., synchronization of EEG) in parietal-occipital regions (Handel et al. 2011; Foxe and Snyder 2011; Womelsdorf and Fries 2007). If a dangerous interaction with a perpetrator holding a gun produces a greater emotional response and thus more focused attention and increased suppression of task-irrelevant stimuli compared to a perpetrator with a knife, then we might expect a difference in alpha power ratio between the two weapon scenarios, with greater synchronization of EEG in the gun scenario compared to the knife scenario. In other words, we might expect greater desynchronization of EEG in the knife scenario compared to the gun scenario.

In the current study, we utilized a combined method of EEG and virtual simulation to explore neural activity in the parieto-occipital region during potentially life-threatening events. The OIS simulation methodology has been previously published (Gayadeen, Phillips and Sobol 2022; Phillips et al. 2019). The current research aims to explore how information on the possibility of threat in a situation (officer dispatch information) influences underlying neural processes when the threat is actually encountered. Specifically, we investigate the influence of

prior dispatch information (prime vs. no prime), as well as the influence of a suspect's weapon (gun vs. knife) on activity in the parieto-occipital region.

As previously stated, police officer behavior can be influenced by a variety of factors. One understudied area we explored is whether information about the encounter, obtained from the dispatcher, influences underlying neural processes when a threat is encountered. Referred here, and elsewhere as "priming" (e.g., see Eitam and Higgins, 2010; Molden, 2014; Taylor, 2020), we investigate how the activation of certain mental processes prior to the event shapes EEG activity. The concept of priming, as Molden (2014) has written, may facilitate a host of "impressions, judgements, goals, and actions" (pg. 4). Being told that there is a weapon prior to arrival on the scene may form the basis for how the officer proceeds in the encounter. Labeled as the "phase of anticipation" by Binder and Scharf's (1980) classic research, officers react emotionally and intellectually to certain cues prior to encountering the citizen or situation. Other scholars maintain that police tend to "pigeonhole" (Muir 1977) or create "symbolic assailants" (Skolnick 1966) based on information they receive before reaching the physical environment of the encounter. Such pre-event indicators might impact how an officer diagnoses a situation and enters the encounter. Because officers may need to make split-second decisions (Fyfe 1989), the cognitive heuristics they use may allow them to quickly evaluate situations or persons. In many ways, officers are often cued in on potential threats or danger to themselves or others. Thus, what is communicated to the officer by the dispatcher can affect the way an officer enters the encounter. This "final-frame" of the encounter, as Binder and Scharf (1980) note, is likely determined by choices and information determined at an earlier phase (pg. 118).

Based on the literature discussed, the current study builds on existing research using pre-event information from a dispatcher (prime vs. no prime), on activity in the parieto-occipital region.

Methods

Procedure

A convenience sample of 36 law enforcement officers volunteered to participate in this study. The officers were recruited from their employment agency which was in Erie County and Niagara County in New York state. See Table 1 for key participant demographic variables.

The virtual simulator was housed at the Orchard Park, New York Police Department. Following consent, all participants were fitted with a 16-point EEG electrode cap and armed with a modified Glock 22 semiautomatic handgun, which would emit an infrared laser that could be detected by the simulator screen. In the room housing the simulator, a researcher who would read pre-written 'dispatch' information (i.e., as if the officer had been sent to a call via a radio transmission) was present. The video simulation depicted a male walking in a residential area (see Figure 1 taken from Phillips et al. 2019). The suspect in the video demonstrated himself to be somewhat irritated by the officer's presence, displaying a passive resistance toward the officer (see Terrill, Leinfelt and Kwak 2008). He shifts his weight and briefly places his hands in his pockets, while stating to the officer that he has not done anything wrong. There were three possible suspect behaviors to end the encounter and the officers were assigned to the scenarios in a quasi-random manner using a random number generator to ensure equal groups: the suspect pulls a knife from his rear waistband and attacks the officer, the suspect pulls a gun from his rear waistband and shoots at the officer, or a third scenario that was not analyzed for this study. The total scenario lasted just under 30 seconds. The third scenario was not available for the analysis

due to technological barriers related to EEG signal mistiming; thus, this data was removed from the analysis leaving 24 participants in the current study (n=12 in the gun scenario and n=12 in the knife scenario). The sample was part of a larger study in which officers were also asked to recall information about the perpetrator depicted during the simulation. The recall data was published in a separate manuscript that did not examine EEG data (Phillips et al., 2019).

Priming

Officers in this study were randomly assigned to be either presented with priming information prior to the virtual simulation, or not, regardless of scenario type. Officers in the "prime" condition were provided with scripted information that the suspect may be armed. For officers that were not primed, no additional information was provided. Analysis will include examining how prime compared to no prime influences alpha power ratio (i.e., synchronization or desynchronization of EEG) in the parieto-occipital region.

Weapon Type

All officers in the virtual simulation were presented with a suspect wielding either a gun or a knife from the rear waist band of his pants. In the gun scenario, the suspect pulls out the gun and aims to fire at the officer. In the knife scenario, the suspect pulls out the knife and lunges towards the officer with the knife aimed forward. Although one of two types of weapons was revealed by the perpetrator, officers were justified to use deadly physical force in either scenario.

Electroencephalogram Data

Data was segmented into non-overlapping epochs of 1s. Alpha is the dominant frequency in scalp EEG of adults, except for some irregular activity in the delta range and below (Klimesch 1999). Alpha (8-13Hz) frequency band power was extracted from electrodes using Fast Fourier

Transform (FFT) and power ratio (8-13/1-20Hz) during each condition was calculated. Electrodes P3-O1 were used for the analysis.

Baseline data was captured while participants were seated quietly with eyes closed for a two-minute time frame. An averaged 10-second time frame of alpha power ratio EEG data was used for the baseline condition analysis. This was compared to the EEG data at Time 1 and Time 2. Time 1 and Time 2 include alpha power ratio EEG data after a weapon was revealed by the perpetrator at one and two seconds, respectively.

Though OIS scholarship is obscure, with regards to reporting when deadly force decision-making will occur, it stands to reason an officer will discharge their weapon at or very near the point when they perceive an immediate threat to themselves or another (e.g., within one or two seconds). As such, alpha power ratio at Time 1 is likely to indicate the officer's initial response to the visual stimuli (i.e., gun or knife) and threatening scenario (i.e., suspect lunging with a weapon). Time 2 was explored to investigate whether there is an impact of continued cognitive processing. It was hypothesized that should an officer be primed to anticipate a weapon, then reduced alpha power ratio would be observed. The authors hypothesized that greater EEG desynchronization would be observed for the gun group and the group that was primed, given that both scenarios were likely to be construed as an elevated threat compared to the knife group and the group that was not primed.

Statistical Analysis

All statistical analysis were completed using SPSS v 28.0 using a $p < .05$. Effect sizes as measured by partial eta squared (η_p^2) were calculated, and following from previous work, the thresholds of (η_p^2) adopted in this study are small $\eta_p^2 > 0.01$, medium > 0.06, and large > 0.14 (Cohen, 1988; Cohen, Miles, & Shevlin, 2001).

Results

A paired samples t-test was used to analyze the alpha power ratio differences between Baseline and Time 1 and Baseline and Time 2. The alpha power ratio was significantly higher at Baseline (M=.569, SD=.113) compared to both Time 1 (M=.270, SD= .140), t(23) = 8.284, p =.000 and Time 2 (M=.250, SD=.149), t(23) = 8.539, p =.000.

MANOVA did not reveal a significant prime by weapon interaction at Time 1 or Time 2. The effects of priming and weapon type on alpha power ratio at the first two time points were also explored. Results from the MANOVA indicate that priming had a statistically significant effect on alpha power ratio at Time 2 (F (1, 20) = 4.380; $p < .05$; $\eta_p^2 = .18$) but not Time 1. Descriptive statistics are provided in Table 2. Table 2 and Figure 2 indicate that priming led to greater desynchronization of EEG at Time 2 compared to no prime.

The type of weapon had a statistically significant effect on alpha power ratio at Time 1 (F (1, 20) = 4.855; $p < .05$; $\eta_p^2 = .19$) but not at Time 2. Descriptive statistics are provided in Table 3. As seen in Table 3 and Figure 3, there is a statistically significant difference in alpha power ratio at Time 1 when a gun is viewed by the officers compared to a knife, with the knife scenario showing greater desynchronization of EEG (reduced alpha power ratio).

Discussion

Using EEG and a virtual simulator to mimic real-world OIS, we explored neurophysiological changes in law enforcement officers associated with the decision to shoot. We examined how information provided to officers prior to an OIS scenario (dispatch information) and weapons encountered in each scenario influence physiological biomarkers associated with threat detection and focused attention. This work expands on previous proof of concept research (James, et al. 2014; Johnson, et al. 2014) that has demonstrated the value of

combining EEG and virtual simulator tasks to explore neural activity associated with the decision to shoot in threatening scenarios. Across four conditions (prime-gun; prime-knife; no-prime-gun; no-prime-knife) and two time points, we found a significant effect of weapon (at Time 1) and prime (at Time 2). It should be noted that all officers in the current study fired their weapon following suspect weapon presentation.

Priming

To our knowledge, this is the first study to investigate how priming an officer with information might impact neural activity associated with the decision to shoot in a life-threatening scenario. We found no differences between prime and no-prime at Time 1, but a difference emerged at Time 2, with greater EEG desynchronization in the group that was primed. This result suggests that priming did not immediately impact alpha-wave activity when the threat was encountered, as the authors hypothesized, but once a decision to shoot was made, officers who were primed showed elevated cognitive load evidenced by greater EEG desynchronization. We suggest the following rationale for this finding. Priming did not impact alpha-wave activity when the threat was observed (Time 1) because officers were more attentive to the passive resistance behavior of the offender. Thus, the officers were broadly cautious during the earlier stages of the scenario. Priming was potentially more impactful following their decision to fire (Time 2) because the officer may have visually investigated the scene to confirm if the priming information was accurate. Non-primed officers would not be concerned about confirming that information. Future work should explore how neural processes associated with priming an officer influence the decision to shoot, and the speed to pull a trigger in shoot/don't shoot scenarios.

Weapon Type

The type of threating stimuli (gun vs. knife) observed by officers in the virtual simulator task induced differences in alpha power ratio at Time 1 (1 second after the weapon was visible), and this temporal pattern aligns with previous work on picture perception that reported threat related alpha-suppression began approximately 500ms after the stimulus presentation (Vagnoni et al. 2015). When a weapon is witnessed in a crime, officers tend to focus on 'threat details' such as the weapon, and thus, are less likely to remember other details from the event (non-threat details such as the color of the suspect's clothing) (Phillips et al. 2019; Porter, Ready and Alpert 2018). This phenomenon has been described as the weapon focus effect (Loftus, Loftus and Meso 1987). Given this effect might be related to alterations in alpha band activity in the parietal-occipital regions, and to our knowledge, how type of weapon influences alpha band activity had not been explored, we directly compared the influence of gun vs. knife on alpha power ratio in the parietal-occipital regions. A gun might be construed as a more dangerous weapon and thus an elevated threat level, we expected greater EEG desynchronization for the gun group. However, we found opposing results, which appear to be in line with the research on focused attention (Johnson, et al. 2014). While the gun scenario presents an elevated threat, it also might require less cognitive resources and focused attention when compared to the knife scenario, as the latter requires at least two cognitive decisions (Is the item a weapon or not; Is the item immediately life threating?).

Relevance to the Field of Criminal Justice, Limitations and Conclusions

Our work contributes to the literature by uncovering neural processes associated with OIS and demonstrating how priming (dispatch information) and suspect weapon type induce

dissociable differences in neurophysiological processes related to focused attention and decision-making. Future work could expand on these findings by exploring how alpha power ratio in shoot/don't shoot scenarios relates to decision to shoot and speed to shoot and explore how training might possibly alter physiological processes and behavioral outcomes. For example, shooting performance accuracy can be improved using electrocortical neurofeedback training (Rostami et al. 2012; Gong et al. 2020). It is possible that implications for the current study include the first steps in determining neurofeedback mechanisms for optimal outcomes in potential OIS scenarios.

With respect to prior research, Taylor (2020) reported that "dispatched information altered the decision to pull the trigger for a significant number of officers, at least within the context of a simulated environment" (pg. 314). In the current study, no impact of priming on the decision to shoot/don't shoot of officers in the simulated environment was observed. Given that the current study suggests priming has some impact on neural processes, it is possible that priming may influence speed to shoot.

It is important to note that there are many factors that may influence OIS - including race, anxiety, fatigue, training, and previous decisions in similar circumstances (Correll et al. 2002, 2007; Kahn and Davies 2017; Kleider et al. 2010; Ma et al. 2012; Moore-Berg Karpinski and Plant 2017). As such, further work in this area is needed to elucidate the relative impact of each of these factors on decision-making in OIS scenarios.

Data analysis in the current study was limited to occipital-parietal areas and alpha-band activity. EEG desynchronization refers to reduced alpha-band activity relative to all other bands; however, investigation of changes in other bands may be an area for future research. For example, future work may consider differentiating decreases in alpha from increases in faster

(gamma or beta) or slower (theta or delta) waves. Future studies should explore how age, years of experience, sex, gender, and training, influence EEG activity.

Despite the above limitations, there are three central implications to the current study. First, most police behavior studies center on social science analysis, which relies on written documents or verbal information from participants. A fundamental limitation to social science research is the reliability of the data provided by participants (e.g., participants are not forthcoming; memory/recall issues). The current research is aligned to evolving efforts to bridge neuroscience with the social sciences to better understand behavior. From a policing perspective, advancement in the collaborative efforts between disciplines can better inform and develop training strategies for officers. If law enforcement understands the psychological stressors involved with gun-related incidents, then specific training strategies can be employed to help officers manage deadly force scenarios.

Second and in line with the above implication, law enforcement might consider including EEG measures with simulators during academy and in-service training. Law enforcement's use of technology in scenario-based training (SBT)[1] is gaining momentum (Martindale et al. 2024). In a recent study, researchers utilized virtual reality (VR) technology, along with analyzing saliva measurements, to assess if there were similarities in stress levels between SBT and VR (Martindale et al. 2024). The study concluded that the VR participants' stress was comparable to those who engaged in in-person SBT (Martindale et al. 2024). While it could be more challenging for most smaller police agencies, the use of EEG in academy and in-service training would be a further advancement and tool in understanding of cognitive and physiological responses in OIS scenarios.

Third, this study suggests when an officer fires their weapon, central to the decision is the perception of threat. When determining a police officer's legal culpability, it is reasonable to suggest the OIS investigators integrate known psychological dimensions, whenever possible. For example, on Sunday, April 17, 2016, an OIS event occurred in Troy, NY. When discussing witness statements, including the officers, the report stated, "the officer's account cannot be regarded as a reliable narrative of the immediate circumstances surrounding the shooting" (Schneiderman n.d.). There is a single footnote supporting this assertion: "the effects of stress and trauma on memory and recall are becoming increasingly known. . . But, here, the officer provided a highly detailed account of what transpired after at least three sleep cycles" (Schneiderman n.d.). This implies that the officer's information was presumed to be more accurate simply because he had slept for three nights. This is not necessarily supported by research (Phillips et al. 2019; Porter et al. 2018). OIS investigations cannot ignore the research associated with neural activity and psychological recall of officers involved in these events. The current study findings may suggest that confirming known information occurs after the shooting. This indicates that the decision is not linear, and OIS incidents are more complex than may be appreciated.

Lastly, the use of neuroscience to explain OIS may help to advance community relations efforts. Social science research has proffered explanations for police behavior for decades (e.g., Adams 2024; Klinger 1997; Van Maanen 1978), but seemingly, there is minimal resonance with the general population. By incorporating the use of objective neuroscience methodology, citizens might better recognize the complexities involved with deadly force encounters.

Previous studies have shown that the combination of EEG and virtual simulator tasks can be used to uncover the neural correlates that underlie the decision to shoot. The current study

adds to previous literature by demonstrating that priming might increase cognitive load, but only after the decision to shoot has been made. This work also highlights how differences in weapon type encountered by officers might increase cognitive load when officers are faced with challenging shoot/don't shoot scenarios. This research area can help improve officer training, neurofeedback models, and policing policies.

Acknowledgements

DENT Neurological Institute

Town of Orchard Park Police Department

Larry Eggert, Director of the Niagara Intelligence and Crime Analysis Center.

References

Adams, I. T. (2024). Fuck: The police. *Police Quarterly.* DOI 10.1177/10986111241241750

Albrecht, J.F. (2023). Analyzing and understanding police-involved shootings in the United States (In: Albrecht, J.F., den Heyer, G. (Eds), Police use of force. Springer, Cham. DOI 10.1007/978-3-031-22705-9_2

Attar E. T. (2022). Review of electroencephalography signals approaches for mental stress assessment. *Neurosciences (Riyadh, Saudi Arabia), 27*(4), 209–215. DOI 10.17712/nsj.2022.4.20220025

Benedek, M., Bergner, S., Könen, T., Fink, A. & Neubauer, A. C. (2011). EEG alpha synchronization is related to top-down processing in convergent and divergent thinking. *Neuropsychologia, 49*(12), 3505–3511.

Binder, A. & Scharf, P. (1980). The violent police-citizen encounter. *The ANNALS of the American Academy of Political and Social Science, 452*(1), 111 121. DOI 10.1177/000271628045200111

Codispoti, M., De Cesarei, A. & Ferrari, V. (2023). Alpha-band oscillations and emotion: A review of studies on picture perception. *Psychophysiology, 60*(12), e14438. DOI 10.1111/psyp.14438

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed., p. 174). Hillsdale, NJ: Erlbaum.

Cohen, J., Miles, J., & Shevlin, M. (2001). Applying regression and correlation: A guide for students and researchers (p. 272). London: Sage.

Corbetta, M., Miezin, F.M., Shulman, G.L. & Petersen. S.E. (1993). A PET study of visuospatial attention. *Neuroscience,13*, 1202–1226.

Correll, J., Park, B., Judd, C. M. & Wittenbrink, B. (2002). The police officer's dilemma: using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology, 83*(6), 1314–1329.

Cubitt, T. I. & Nix, J. (2023). A multi-site study of firearms displays by police at use of force incidents. *Police Quarterly, 26*(3), 379-408.

Fonseca, D., Heim, I., Houser, R., Cook, R. & O'Donnell, J. (2023). Assessment of the neurological activation in law enforcement under high threat situations: A fuzzy logic approach. *World Journal of Neuroscience, 13*(1), 67-89.

Foxe, J. J. & Snyder, A. C. (2011). The role of alpha-band brain oscillations as a sensory suppression mechanism during selective attention. *Frontiers in Psychology, 2*, 154. DOI 10.3389/fpsyg.2011.00154

Fyfe, J. J. (1989). The split-second syndrome and other determinants of police violence. (In R. G. Dunham & G. P. Alpert (Eds.), Critical issues in policing: Contemporary readings (pp. 465–479). Prospect Heights, IL: Waveland Press.)

Gayadeen, S. M., Phillips, S. W. & Sobol, J. J. (2022). Further mitigating the academic-law enforcement research divide. *Journal of Applied Social Science, 16*(1), 305–317. DOI 10.1177/19367244211058730

Händel, B. F., Haarmeier, T. & Jensen, O. (2011). Alpha oscillations correlate with the successful inhibition of unattended stimuli. *Journal of Cognitive Neuroscience, 23*(9), 2494–2502. DOI 10.1162/jocn.2010.21557

Huettel, S. A., Song, A. W. & McCarthy, G. (2005). Decisions under uncertainty: probabilistic context influences activation of prefrontal and parietal cortices. *The Journal of Neuroscience: The Official Journal of the Society for Neuroscience, 25*(13), 3304–3311. DOI 10.1523/JNEUROSCI.5070-04.2005

James, L., Klinger, D. & Vila, B. (2014). Racial and ethnic bias in decisions to shoot seen through a stronger lens: Experimental results from high-fidelity laboratory simulations. *Journal of Experimental Criminology, 10,* 323-340.

Johnson, R. R., Stone, B. T., Miranda, C. M., Vila, B., James, L., James, S. M., ... & Berka, C. (2014). Identifying psychophysiological indices of expert vs. novice performance in deadly force judgment and decision making. *Frontiers in Human Neuroscience, 8,* 512.

Kahn, K. B. & Davies, P. G. (2017). What influences shooter bias? The effects of suspect race, neighborhood, and clothing on decisions to shoot. *Journal of Social Issues, 73*(4), 723-743.

Keller, T., Caplan, J. & Kennedy, L. (2023). The influence of the environment on officer involved shootings. *Homicide Studies, 27*(1), 97-119.

Kim, D. Y., Phillips, S. W. & Bishopp, S. A. (2022). Exploring the police use of force continuum with a partial proportional odds model. *Policing: An International Journal, 45*(2), 252 265.

Kleider, H. M., Parrott, D. J. & King, T. Z. (2010). Shooting behaviour: How working memory and negative emotionality influence police officer shoot decisions. *Applied Cognitive Psychology, 24*(5), 707-717.

Klimesch, W. (1999). EEG alpha and theta oscillations reflect cognitive and memory performance: *A review and analysis. Brain Research Reviews, 29*(2-3), 169-195.

Klinger, D. (2021). Prioritization of life as a guiding principle for police use of deadly force (In Jones, B. and Mendieta, E. (Eds), The ethics of policing: New Perspectives on Law Enforcement. (New York University Press).

Loftus, E. F., Loftus, G. R. & Messo, J. (1987). Some facts about "weapon focus". Law and *Human Behavior, 11*(1), 55-62.

Ma D. S., Correll J., Wittenbrink B., Bar-Anan Y., Sriram N., Nosek B. A. (2012). When fatigue turns deadly: the effects of cognitive depletion and sleep deprivation on the decision to shoot. *SSRN Electronic Journal,, 35,* 515–524.

Martaindale, M. H., Sandel, W. L., Duron, A. & McAllister, M. J. (2024). Can a virtual reality training scenario elicit similar stress response as a realistic scenario-based training scenario? *Police Quarterly, 27*(1), 109-129. DOI 10.1177/10986111231182729

Mesulam, M.-M. (2000). Behavioral neuroanatomy: large-scale networks, association cortex, frontal syndromes, the limbic system, and hemispheric specialization (In Principles of Behavioral and Cognitive Neurology, 2nd Edn, M.-M Mesulam (Ed) (pp. 1-120) New York, NY: Oxford University Press).

Molden, D. C. (2014). Understanding priming effects in social psychology: What is "social priming" and how does it occur? (In D. Molden (Ed.), Understanding priming effects in social psychology (pp. 3–13). New York, NY: The Guilford Press).

Moore-Berg, S., Karpinski, A. & Plant, E. A. (2017). Quick to the draw: How suspect race and socioeconomic status influences shooting decisions. *Journal of Applied Social Psychology, 47*(9), 482–491.

Muir, W. K. (1977). Police: Streetcorner politicians. (Chicago, IL: The University of Chicago Press.)

Nobre, A. C., Sebestyen, G. N., Gitelman, D. R., Mesulam, M. M., Frackowiak, R. S. & Frith, C. D. (1997). Functional localization of the system for visuospatial attention using positron emission tomography. *Brain: A Journal of Neuorlogy, 120*(3), 515–533. DOI 10.1093/brain/120.3.515

O'Guinn, B. J. (2024). Police training and accountability: A remedy or an impediment for reducing unarmed police shootings? *Crime & Delinquency, 70*(2), 313-338. DOI 10.1177/00111287221074959

Perez, N. M. & Lauritsen, J. (2024). Predictors of fatal officer-involved shootings from eight municipal police agencies in the USA (2015-22). *Policing: A Journal of Policy and Practice, 18*, paae085.

Phillips, S. W. & Kim, D. Y. (2021). Exploring officer-involved shootings with interaction effects: a deeper understanding of how race/ethnicity interacts with other factors in the use of deadly force. *Criminal Justice and Behavior, 48*(6), 755-775.

Phillips, S.W. Kim, D.-Y., Sobol, J.J. & Gayadeen, S.M. (2019). Total recall?: A quasi experimental study of officer's recollection in shoot – don't shoot simulators. *Police Practice & Research, 22*(3), 1229-1240.

Porter, L. E., Ready, J. & Alpert, G. P. (2018). Officer-involved shootings: Testing the effect of question timing on memory accuracy for stressful events. *Journal of Experimental Criminology, 15*(4) (2019) 543-566.

Schneiderman, E.T. (n.d.). Report on the investigation into the death of Edson Thevenin. Retrieved September 28, 2024, from oag_report_-_edson_thevenin.pdf (ny.gov)

Stuss, D. T. & Benson, D. F. (1986). The frontal lobes. (New York, NY: Raven Press).

Skolnick,J. H. (1966). Justice without trial. (New York: Wiley.)

Taylor, P. L. (2020). Dispatch priming and the police decision to use deadly force. *Police Quarterly, 23*(3), 311-332.

Terrill, W., Leinfelt, F. H. & Kwak, D. H. (2008). Examining police use of force: A smaller agency perspective. *Policing: An International Journal of Police Strategies & Management, 31*(1), 57-76.

Vagnoni, E., Lourenco, S. F. & Longo, M. R. (2015). Threat modulates neural responses to looming visual stimuli. *The European Journal of Neuroscience, 42*(5), 2190–2202. DOI 10.1111/ejn.12998

Van Maanen, J. (1978). The asshole. (In P. K.Manning & J. Van Maanen (Eds), Policing: A view from the street (pp. 221–238). (Santa Monica, CA: Goodyear Publishing.) Reprinted (In V. E. Kappeler (Ed.). (1999) The police and society (2nd ed., pp. 346–367).

Vingerhoets G. (2014). Contribution of the posterior parietal cortex in reaching, grasping, and using objects and tools. *Frontiers in Psychology, 5*, 151. DOI 10.3389/fpsyg.2014.00151

Wheeler, R. E., Davidson, R. J. & Tomarken, A. J. (1993). Frontal brain asymmetry and emotional reactivity: A biological substrate of affective style. *Psychophysiology, 30*(1), 82–89.

Womelsdorf, T. & Fries, P. (2007). The role of neuronal synchronization in selective attention. *Current Opinion in Neurobiology, 17*(2), 154–160. DOI 10.1016/j.conb.2007.02.002

Footnotes

[1] SBT replicates realistic encounters for an officer (Martindale, et al., 2024).

Tables

Table 1. Participant demographics.

Variable/Group	Total N=24 (%)
Experience (years)	13.04
Education	
HS or Some College	12 (50)
Bachelor or Higher	12 (50)
Sex	
Male	22 (91.67)
Female	2 (8.33)
Rank	
Patrol	20 (83.33)
Supervisor or Other	4 (16.67)
Military Experience	
Yes	7 (29.16)
No	17 (70.83)
Shooting Experience	
Yes	2 (8.33)
No	22 (91.67)

Table 2. Descriptive statistics for effect of priming on Time 2.

Priming	Mean Power Ratio	Standard Deviation
No Prime	.312	.159
Prime	.188	.112

Table 3. Descriptive statistics for effect of weapon on Time 1.

Weapon	Mean Power Ratio	Standard Deviation
Knife	.209	.131
Gun	.331	.126

Figures

Figure 1.

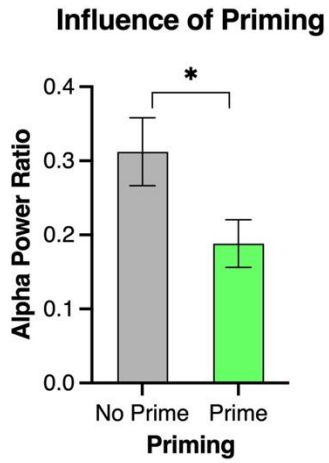


Figure 2.

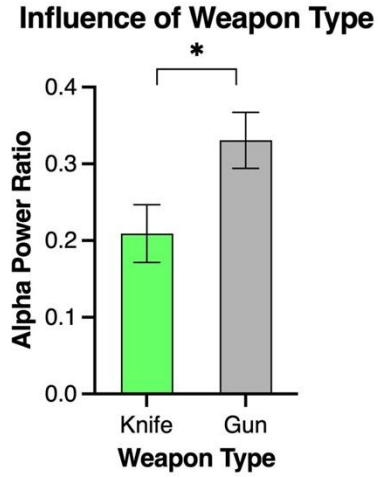


Figure 3.

Figure Captions

Figure 1. Suspect image from video simulator (image is from Ti Training. http://www.titraining.com/).

Figure 2. Estimated marginal means for alpha power ratio at Time 2 for no prime and prime conditions.

Figure 3. Estimated marginal means for alpha power ratio at Time 1 for knife and gun conditions.

Extremist Attitudes and Violence

Colum Mecca

Department of Criminal Justice Administration, Hilbert College

Submitted as partial requirements for a Master of Science in Criminal Justice Administration

Abstract:

On May 4th, 2022, an 18-year-old Caucasian male named Payton Gendron drove 200 miles to a small Tops grocery store in Buffalo, New York, started a live stream on the popular website Twitch, and proceeded to gun down and kill 10 innocent shoppers and injure 4 others (ABC News, 2022). Every life taken during this horrific act of terror was African American (ABC News, 2022). The rifle the gunman used had the phrase “The Great Replacement” written across it. During the FBI’s investigation, a 180-page document, written by the shooter, was uncovered, which detailed how non-white people are replacing whites with immigrants and higher birth rates (ABC News, 2022). The FBI investigated the incident as a racially motivated act of Domestic Violent Extremism (ABC News, 2022). America in 2025 feels increasingly fragile; the mutual respect and societal niceties of American politics seem to have all but disappeared. Families, friendships, and even romantic relationships have been fractured and broken by the current political landscape. As America's 250th birthday draws closer, it seems relevant to measure the extremist tendencies of young Americans who identify ideologically with either the Republican or Democratic Party. The results of this study found that participants who identified as Democrats were more likely to agree with breaking the law as a means to achieve political goals, whereas participants who identified as Republicans were more inclined to agree with using violence as a means to achieve their political ends.

Keywords:

Extremism, Terrorism, Left Wing Extremists, Right Wing Extremists, Lone Wolf Actors, White Nationalists.

Introduction:

Political Extremist groups may vary in ideology and belief structure, but they can generally be categorized into the binary of Left-Wing and Right-Wing Extremism. Historically, Left-Wing extremists are primarily concerned with animal Rights and Environmental protection (Freilich et al., 2013; Chermak & Gruenewald, 2015). Left-Wing groups believe in protecting the environment and animal rights by any means necessary. They normally engage in destructive behavior against corporations, property, and Governments. Left-wing actors are less inclined to harm or kill people, as it is against their worldview (Freilich et al., 2013; Chermak & Gruenewald, 2015). However, some data suggest that left-wing terrorists are becoming more willing to use physical violence against people (Hickson, 2024). Left-wing extremists remained relatively dormant since the end of the Cold War until the mid-2010s; their resurgence is a direct result of the increased activity of right-wing extremist groups (Hickson, 2024). Some of their newly stated goals include protecting minorities, animals, the environment, and Democratic norms and institutions (Hickson, 2024).

The Right side of the Extremist spectrum has a uniquely dangerous focus. Right-wing extremists are categorized by fierce nationalism, anti-government, and anti-globalism sentiments (Freilich et al., 2013; Chermak & Gruenewald, 2015). These organizations are a breeding ground for Racist and anti-Semitic conspiracies that frame various racial, ethnic, and religious groups as being an enemy here to destroy their way of life (Freilich et al., 2013; Chermak & Gruenewald, 2015). Right-Wing extremism has a specific focus on using violence to achieve its goals (Bowman-Grieve, 2009). The data support this; the USA Crime Database compared Islamist, Left-Wing, and Right-Wing extremist organizations and found that Right-Wing extremists plotted to carry out the most murders out of all three groups. Right-wing groups committed over

100 homicides, Islamist groups killed 20 people, and Leftist groups didn't plan to kill anyone (Chermak & Gruenewald, 2015).

Violent acts of political extremism have become more frequent in recent years. A 2023 report from the US Government Accountability Office reports that over the last 10 years, Domestic Extremism-related investigations have grown by 357% (U.S. Government Accountability Office, 2023). A deeper analysis of the plots, attempted attacks, and carried-out attacks reveals that Right extremists are responsible for the vast majority of the political violence that is occurring (U.S. Government Accountability Office, 2023). From 2010 to 2021, there were 231 Domestic Extremist attacks. The largest category was attacks that were racially/ethnically motivated; these attacks made up 35% of all incidents in the United States, and these attacks were also the most lethal (U.S. Government Accountability Office, 2023). Thirty-two percent of all attacks were anti-government/anti-authority related. Four percent were abortion-related, and 6% were Animal Rights/Environmental Extremists (U.S. Government Accountability Office, 2023).

Right-Wing Extremism is the focus point of this study, not because Left-Wing Extremism doesn't exist or because it's not a problem, but for the simple fact that Right-Wing Extremists are far more active and far more violent. There is a reason why the Department of Homeland Security classifies Right-Wing Extremist groups as hate-based organizations that focus specifically on racial, ethnic, and religious minorities (DHS/Office of Intelligence and Analysis 2009; Hale, 2012). The Department of Homeland Security also asserts that "Lone wolves and small terrorist cells embracing violent right-wing extremist ideology are the most dangerous domestic terrorism threat in the United States' (Department of Homeland Security (DHS)/Office of Intelligence and Analysis, 2010, p. 7). To reinforce the claim that DHS is

making, the Anti-Defamation League reported that 95% of all extremist-related killings between 2008 and 2017 were committed by white nationalists and Right-Wing Extremists (Anti-Defamation League 2018; Wells, 2023).

Experts on the subject believe the rise of these organizations is related to a few factors, some of which are economic downturn, the immigration debate, international conflict, and the election of the first African American President. (Hale, 2012; Simi, 2010; DHS/Office of Intelligence and Analysis, 2009). A more recent example is the Covid-19 pandemic, while the world was trying to put itself back together amid chaos and death, Right-Wing extremist groups spent that time disseminating anti-Asian and anti-immigrant propaganda (Liang & Cross, 2020; Pauwels, 2019). (Hale, 2012) states that extremism should be thought of as a precursor to terrorism, often utilized to motivate and justify acts of terror. To stop the spread of these dangerous and hateful ideologies, it is important to know the risk factors for becoming an extremist. Some of those risk factors are radicalized peers, radicalized family members, mental illness, having a criminal record, being young, and being male (Lafree, 2018).

The spread of extremism is a terrifying reality in many Western Nations around the world, and with mounting evidence of a racist, radical, and violent Right-Wing rising and becoming ever more prevalent, it is important to ask the question, Do young people associated with the Republican Party have more extreme viewpoints than those who identify with the Democratic Party?

Methodology:

This study was a quantitative, cross-sectional availability survey that was approved by the Hilbert College IRB. The participants of this survey were chosen based on their willingness to

participate, and the participants were either students or staff members at one of Hilbert College, Buffalo State College, or the University of Buffalo. The population of this study was voting-age individuals in the United States. The sample for this study was 122 individuals present on college campuses. The recorded ages of the participants ranged from 17-60. 74.7% of participants were between the ages of 18-21. The Race and Gender of participants were collected along with the participants' political affiliation. Participants were not asked to provide any identifying information. Participants were asked to select either Democrat or Republican to simplify the measurement of extremist attitudes. In this way, conclusions could be drawn while only having to categorize participants into two groups. The sample was gathered by having individuals around campus scan a QR-Code which would take the participant to a Google form survey.

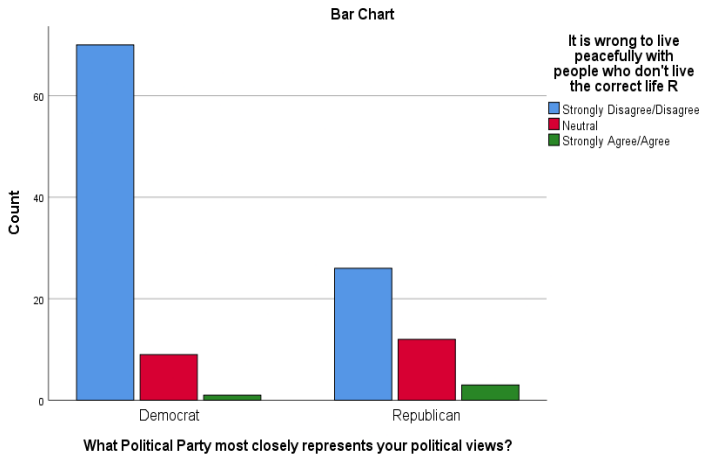
The survey itself was validated and a reliable measure from the journal article Capturing Violent Radicalization: Developing and Validating Scales Measuring Central Aspects of Radicalization. The survey was built on a 5-point scale from strongly disagree to strongly agree. The more in agreement the participant was, the more extreme they were considered to be. In total, there were two separate measures that the scale consisted of. The first measure looked at generalized extremist attitudes, and the second was aimed at measuring the acceptance of using illegal means and/or violent extremism. To validate the scales, the original researchers used factor analysis to conceptualize an understanding of radicalization that could fit the data through validation of the scale, then the scales were examined in two separate areas of the world that differ both in language and culture to test invariance and cross-cultural compatibility. Finally, the relationship between the two scales was analyzed to assess construct validity. The variables that were collected for comparison in this study are: Gender, Age, Race, and Political Affiliation.

Results:

The data gathered indicated that the gender of the participants was evenly distributed (M-58, F-60), and 4 individuals identified as "other". The majority of participants were White 52.8%, followed by Black or African 13.1%, Hispanic, Latino, or other Spanish origin 6.6%, Asian 13.1%, and Other 9.0%. In terms of how participants identified themselves according to Political Party, 81 identified as Democrats and 41 identified as Republicans.

"It is wrong to live peacefully side by side with those who do not live the correct life."

Chart 1



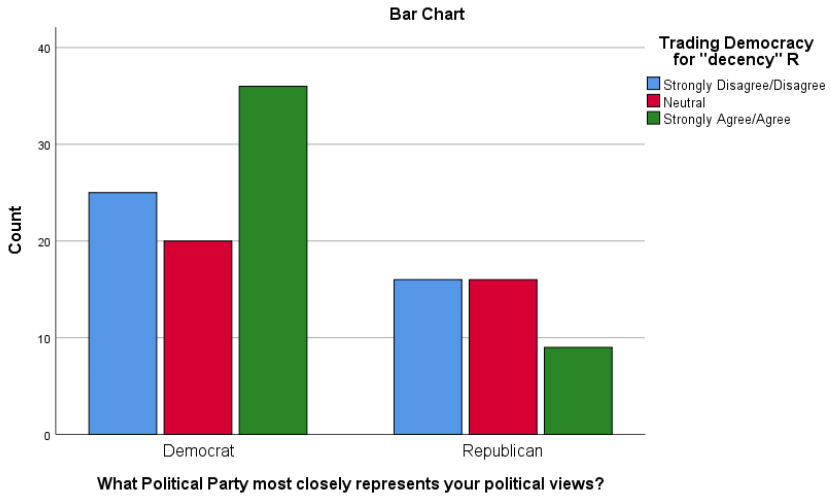
- 86% of Democrats disagreed / 63% of Republicans disagreed.
- 11% of Democrats selected neutral / 29% of Republicans selected neutral.
- 1% of Democrats agreed / 7% of Republicans agreed.
- p=0.007

Table 1 indicated that although the majority of participants, both Democrat and Republican, disagreed with the prompt, participants who aligned with the Republican party agreed with the prompt more or, or selected the neutral option, indicating an increased level of

openness to the statement. The results of this table were highly significant, which indicates a statistical difference between Democrats and Republicans.

"Trading Democratic Government for a good and decent society"

Chart 2



- 30% of Democrats disagreed / 39% of Republicans disagreed.
- 25% of Democrats answered neutral / 39% of Republicans answered neutral.
- 44% of Democrats agreed / 22% of Republicans agreed.
- p=0.046

Chart 2's results were a concerning mix; Republicans were more likely to disagree with the prompt, but they were more likely to be neutral, which once again indicates that those participants were at least somewhat open to the removal of Democracy. Ultimately, the most concerning data point came from a shocking 44% of Democratic participants who not only agreed with the prompt, but agreement with the prompt was the most selected answer. The results of this table were significant, once again indicating a statistical difference between Democrats and Republicans.

Chi-Square Tests

The second measure that was used to conduct this study was focused on two kinds of statements. The first type of prompt was related to the participants' willingness to break the law, and the second focused on the participants' willingness to use physical violence. The participants were asked to answer the following prompts.

- Using physical violence is the only thing that really works when it is a matter of creating proper conditions for those with whom one feels solidarity.
- Using physical violence is the only thing that really works when it is a matter of creating a new and better society.
- Using physical violence is the only thing that really works when it is a matter of creating proper conditions for those one is closely connected to.
- Using physical violence is the only thing that really works when it is a matter of creating respect for one's own rights and security.
- Using physical violence is the only thing that really works when it is a matter of preventing repression and assault of my people.
- Using physical violence is the only thing that really works when it is a matter of advancing a higher ideological cause.
- Using physical violence is the only thing that really works when it is a matter of advancing a higher religious cause.
- Breaking the law is the only thing that really works when it is a matter of creating proper conditions for those with whom one feels solidarity.
- Breaking the law is the only thing that really works when it is a matter of preventing repression and assault of my people.
- Breaking the law is the only thing that really works when it is a matter of creating a new and better society.
- Breaking the law is the only thing that really works when it is a matter of creating proper conditions for those one is closely connected to.
- Breaking the law is the only thing that really works when it is a matter of creating respect for one's own rights and security.

- Breaking the law is the only thing that really works when it is a matter of protecting a higher cause.

Chart 3

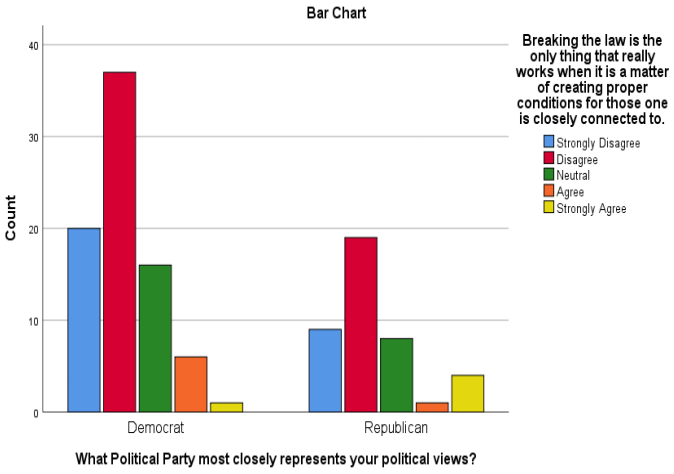
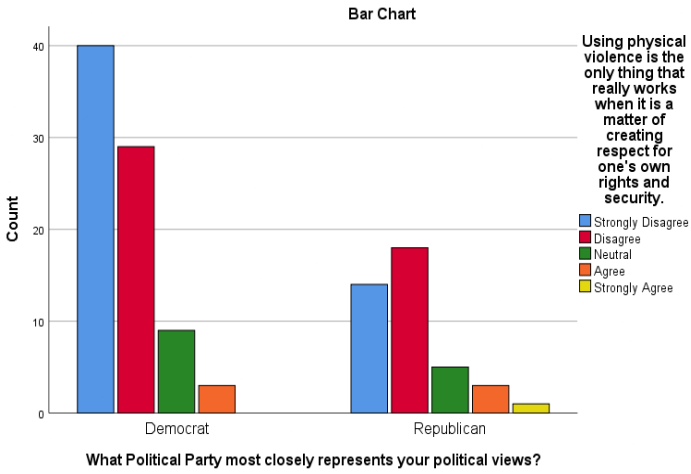


Chart 4



Charts 3 and 4 are not only of single prompts, but they are also of a visual that demonstrates the overall trends that were present for each category of statement. Both Democrats and Republicans had distinct opposite trends from the other, and in each set of prompts, there was one in which the trend did not apply.

Breaking the Law

Participants who identified themselves as Democrats were observed to be less likely to strongly disagree and more likely to select disagree, neutral, and agree. The responses that Democrats gave were not normally distributed; Democrats selecting "Strongly Disagree" were statistically under-represented, which indicated that Democrats selected that option less than would be considered normal. The selections for disagree, neutral, and agree were an over-

representation, which showed that Democrats disagreed with the prompt more but chose an answer that showed the level of disagreement was to a lesser extent than normal. Finally, Democrats were either more open to the idea of breaking the law or simply answered that they believed breaking the law was an acceptable solution related to the prompt. Republican responses demonstrated the opposite trend; Republicans were over-represented when selecting strongly disagree. However, Republicans were statistically under-represented when answering disagree, neutral, and agree. The responses from Republicans demonstrated that they were less willing to even consider breaking the law as an option when facing adversity or trying to achieve their political goals.

"Breaking the Law is the only thing that works when creating respect for one's own rights and security"

Chart 5

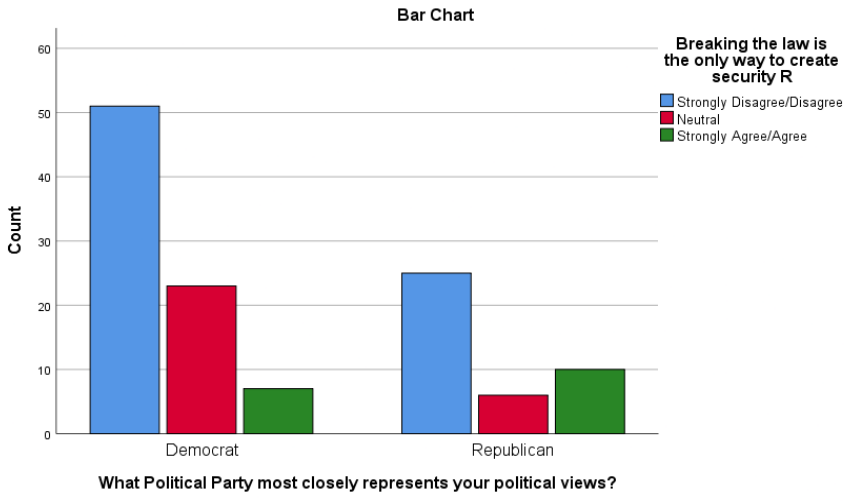


Chart 5 combined the strongly agree/agree categories and the strongly disagree categories to test if the combined categories would lead to statistically significant results. Chart 5 was the

outlier for the Breaking the Law category of prompts. All 5 of the other prompts relating to Breaking the Law showed Democrats being statistically over-represented in agreeing to breaking the law as a means to achieve political goals or overcome adversity. This prompt showed Republicans as being the over-represented party in agreement, while Democratic participants were under-represented in the agree category. Chart 5 was statistically significant and had a p-value of p=0.030, which once again indicated a statistical difference between Democrats and Republicans.

Physical Violence

Republican participants were statistically under-represented in the strongly disagree category and were over-represented in the disagree, neutral, and agree categories of prompts relating to physical violence. Just like the Democrats' responses to prompts about breaking the law, the distribution of responses was not normal. The under-representation in the strongly disagree category indicated that Republicans were not in opposition to the prompts to a degree that would be considered normal. The over-representation in disagreement illustrated that Republicans' disagreement with the use of physical violence was less than it should have been. The other concerning areas of over-representation showed that Republicans were statistically more open to or in agreement with the use of physical violence. Democrats were over-represented in strongly disagree and under-represented in disagree, neutral, and agree.

"Physical Violence and preventing the repression and assault of my people"

Chart 6

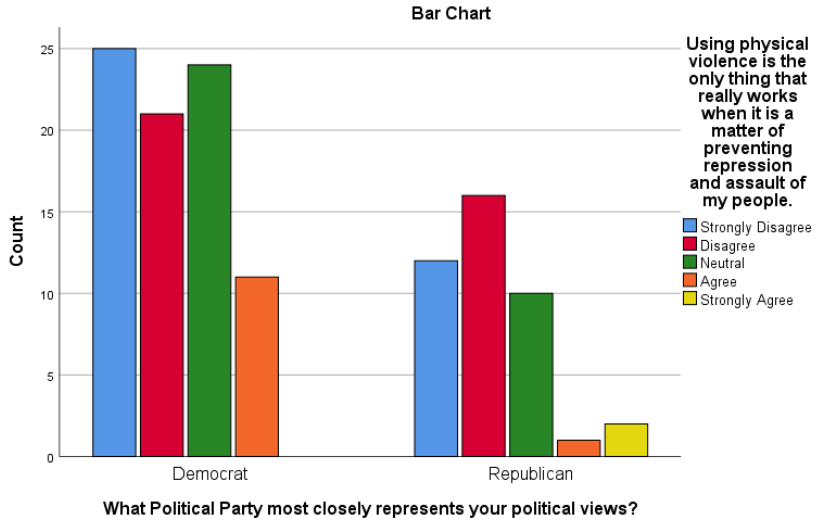


Chart 6 was the outlier for the "physical violence" prompts. Republicans were over-represented in the disagree category and under-represented in the agree category. Democrats were under-represented in the disagree category and over-represented in the agree category. The responses showed that for this particular question, participants who identified as Democrats felt that physical violence was an acceptable solution to this prompt; Republican participants' responses seemed to indicate that Republicans did not feel that this prompt was worthy of using physical violence. With a P value of p=0.056, Chart 5 would not be considered statistically significant.

The responses to Chart 5 were so out of the ordinary that an additional Chi-Square test was created to test Chart 5's question against the ethnicity of the respondents. The results of that test showed that White participants were far more likely to strongly disagree with the prompt, but participants who identified as Black or African were over-represented in the agree category. Asian or Pacific Islander participants were over-represented in the strongly agree category, and

the participants whose ethnicity was classified as “other” were also over-represented in the agree category. The result of the secondary test was p=0.145, which was not statistically significant.

Scales 1 and 2

In the interest of finding a more comprehensive answer to the original hypothesis, two scales were created, which combined all the data from the breaking the law prompts, and another which combined all the data from the physical violence prompts. Each question was graded from 1-5, from strongly disagree to strongly agree. The higher the score, the more extreme the participant. For each scale, participants were placed into a high acceptance or a low acceptance categorization based on their answers.

Scale 1

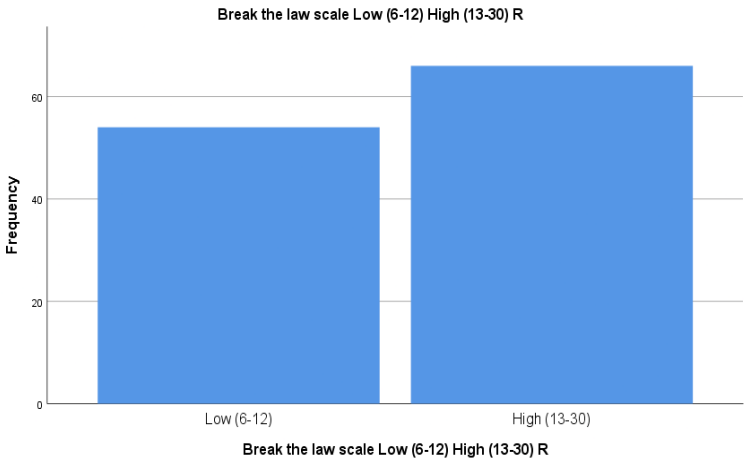
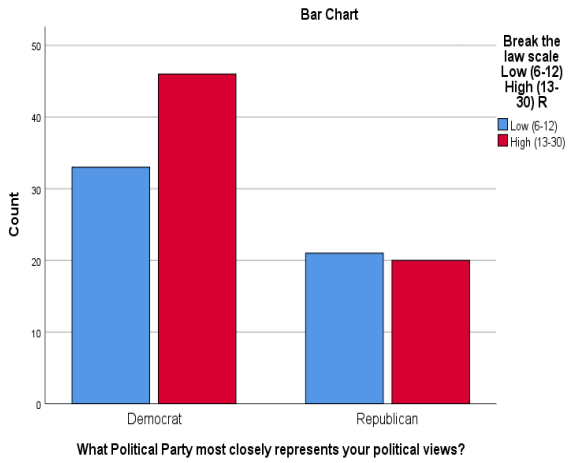


Chart 7



Democratic participants were under-represented in the “Low Crime” categorization and over-represented in the “High Crime” category. These results indicate that the majority of Democratic participants were more extreme in their support of Breaking the Law as a means to achieve political goals. The majority of Republican responses, although very close, had a “Low Crime” categorization, which shows that they were less willing to break the law to achieve political goals. Overall, between both parties, the majority of participants were categorized as “high crime,” which showed a higher level of extremism than normalcy among the participants. The Breaking the Law scale was not significant (p=0.324).

Scale 2

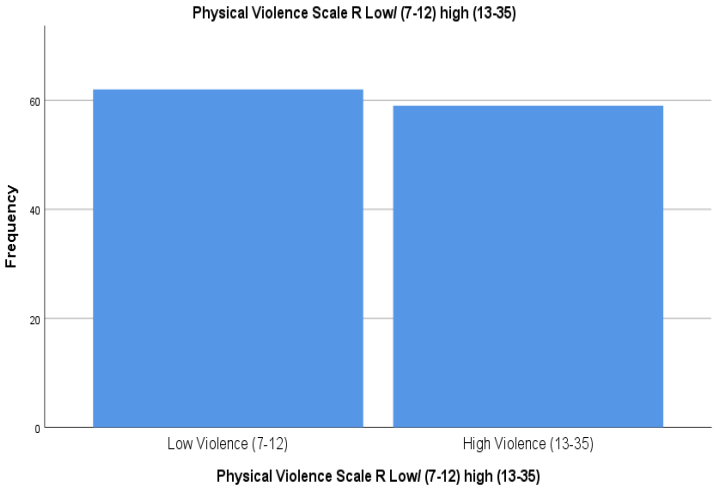
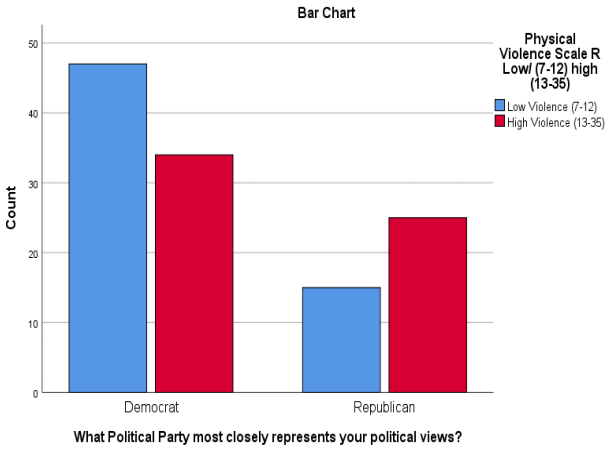


Chart 8



The Republicans were over-represented in the “High Violence” category. The majority of Republican participants answered the prompts in a way that indicated a higher level of extremism and willingness to engage in physical acts of violence to achieve political goals. Democrats were under-represented in the “Low Violence” category; the responses showed that Democrats were less likely to think physical violence was an acceptable way to achieve political goals. Overall, the majority of participants of this study

would be categorized as being “Low Violence,” but the results were shockingly close. The Physical Violence Scale was statistically significant, the P value was p=0.034, which showed a statistical difference between Democrats and Republicans.

Conclusion:

The majority of participants in this study disagreed with the prompts provided, but unfortunately, there was a large enough group of participants who answered neutral or strongly agree/agree, which should raise concerns about the state of American politics. The participants who agreed were the minority, but still definitely a concerning factor, after all, extremism should be viewed as a precursor to terrorism (Hale, 2012).

The result that is arguably the most dangerous was the number of participants who claimed to be neutral on some of the prompts provided. The two examples provided asked the participants if they would be willing to forgo Democracy, and asked if it’s wrong to live peacefully alongside others who don’t conform to their idea of a “good and correct life.” Neutrality in the context of this study either means the participant did not read the question and just selected neutral, or the far more insidious explanation is that the participants really were torn on how they felt about the prompt. If that latter is the case, then each of those individuals is at least somewhat at risk of becoming an extremist if they aren’t already. Chart 1 and 2 also seem to indicate an increasing unwillingness to compromise or reach across the political aisle. That could mean the world of American politics is shifting or has already shifted into a team game dedicated to complete political and cultural victory instead of a collaboration of all Americans dedicated to a prosperous future.

Although the trend showed that Republicans agreed more and disagreed less with Extremist ideas, that does not mean that Democrats showed no affinity towards extreme views. When asked if Democracy should be traded for a decent society, Democrats were over-represented in agreeing to this radical idea. It should be taken into account that the 2024 Presidential election was one of the most divisive in American history. Compared to the rest of the data, it seems most likely that this response is an emotional one born from the loss of the Congress, Senate, Presidency, and Supreme Court to a political figure who holds at least some responsibility for the January 6th, 2021, attack on the United States Capitol.

Republicans were more likely to agree with the statement that breaking the law is the only thing that works when it is a matter of protecting my rights and security. One possible reason for the shift in responses is that the Republican platform is far more focused on a person's “individual ”freedom. The two freedoms that specifically come to mind are the freedom to keep and bear arms, as well as the right to freedom of speech. These two Constitutional Rights are always part of Republican campaigns as freedoms that are “under attack,” which could explain why their constituents would break the law to stop a perceived attack on those rights.

The scales showed that Democrats are more likely to agree that breaking the Law is an acceptable solution to various societal issues, while Republicans were more likely to view using physical violence as an acceptable solution to societal problems. Both scales present a scary reality where almost 50% of participants fall into the high violence or high crime categorizations. It seems clear that more study is required to determine for certain that the relationships between Democrats and breaking the law and Republicans and violence are correlated.

Gender and Age, when measured as variables for comparison, did not show any significant relationship to how extreme a participant's answers were. The literature has stated that

Gender and Age are significant variables for determining who is at risk for becoming an extremist (Liang & Cross, 2020); because of this, more study is needed to fully grasp the relationship between Gender and Age when it is a matter of determining the level of risk for someone becoming an extremist.

The variable of race did correlate with a question regarding using physical violence to prevent the repression and assault of a group of people. For that question, the groups that answered in agreement to a statistically relevant degree were people of color. It seems rational that people of color would answer more in agreement with that particular prompt because of the oppression, repression, and even the physical enslavement of people of color around the world, especially in the United States. It is understandable that with a history of atrocity after atrocities being committed against your ethnic group, violence would not only be considered but accepted. Regardless, more study is needed to determine what relationships exist between ethnicity and political extremism.

Generalizability was a limitation of this study; 122 people's responses are not a small number, but that number only represents 30-50 responses from each college. That number may not be large enough to fully be able to generalize the population of those colleges. Internal selection bias could be a limitation as well. A great deal of effort was made to gather a representative sample from each of the 3 institutions from which data was gathered. It is possible that a representative sample was not gathered. Representative bias was a limitation; the researcher is not immune to having certain views regarding politics and the extreme nature of America's political system. The final limitation of this study was that the Breaking the Law and Physical Violence Scales were not validated, as there was not enough time to do so. The

information gathered and the data compiled were done with research ethics at the forefront of all decision-making; however, researcher bias was a present factor.

Based on the data gathered for this study, the original hypothesis that people who identify more with right-wing politics will be more accepting of violence to achieve political means than people who identify with left-wing politics is correct. Although respondents from both parties had extreme members, the political right agreed more and disagreed less with the extreme ideas provided in the prompts. The original intent of this study was to determine which party was more accepting of violence, and the physical violence scale very clearly showed that Republicans have a higher affinity for violence than Democrats.

References

U.S. Government Accountability Office. (2023, March 2). *The rising threat of domestic terrorism in the U.S. and federal efforts to combat it*. Www.gao.gov; U.S. Government Accountability Office. https://www.gao.gov/blog/rising-threat-domestic-terrorism-u.s.-and-federal-efforts-combat-it

News, A. B. C. (2022, May 15). *Suspect fired 50 rounds in Buffalo supermarket hate crime shooting that killed 10: Police*. ABC News. https://abcnews.go.com/US/reported-mass-shooting-upstate-york-tops-supermarket/story?id=84721175

Chermak, S., Gruenewald, J. (2015). Laying a foundation for the criminological examination of right-wing, left-wing, and Al Qaeda-inspired extremism in the United States, *Terrorism and Political Violence*, *27*(1), 133-159,

Hale, C.W. (2012). Extremism on the world wide web: a research review. *Criminal Justice Studies*, *25*(4), 343–356.

Lafree, G., Jensen, M. A., James, P. A., & Safer, L. A. (2018). Correlates of Violent Political Extremism in the United States. *Criminology*, *56*(2), 233–268.

Hickson, A. (2024, January 16). *Operating Under the Radar: Violent Left-Wing Extremism Is Becoming More Dangerous*. New Lines Institute. https://newlinesinstitute.org/nonstate-actors/operating-under-the-radar-violent-left-wing-extremism-is-becoming-more-dangerous/

Freilich, J. D., Chermak, S. M., Belli, R., Gruenewald, J., & Parkin, W. S. (2013). Introducing the United States extremist crime database (ECDB). *Terrorism and Political Violence, 26*(2), 372–384.

Bowman-Grieve, L. (2009). Exploring "Stormfront": A virtual community of the radical right. *Studies in Conflict & Terrorism*, *32*(11), 989–1007.

Extremism and Radicalization Branch, Homeland Environment Threat Analysis Division. 2009. Rightwing extremism: Current economic and political climate fueling resurgence in radicalization and recruitment (IA-0257–09), *Washington, DC: DHS/Office of Intelligence and Analysis*.

Ozer, S. & Bertelsen, P. (2018). Capturing violent radicalization: Developing and validating scales measuring central aspects of radicalization. Scandinavian Journal of Psychology, 59, 653– 660.

Liang, C. S., & Cross, M. J. (2020). White Crusade: How to Prevent Right-Wing Extremists from Exploiting the Internet. *Geneva Centre for Security and Policy,* (11)

Pauwels, A. (2019). Rising right-wing violence and its impact on the fight against terrorism. In *Global Terrorism Index 2019: Measuring the impact of terrorism* (pp. 80–81). Institute for Economics & Peace.

Simi, P. (2010). Why study white supremacist terror? A research note. *Deviant Behavior, 31*, 251–273.

Wells, G., Romhanyi, A., Reitman, J., Gardner, R., Squire, K., Steinkuehler, C. (2023, April 11). right-wing extremism in mainstream games: A review of the literature. *Games and Culture*.

Anti-Defamation League (2018). New hate and old: The changing face of American white supremacy. ADL Center on Extremism. Retrieved December 9, 2021.

Critical incidents and police domestic violence: A study of five mediators

Jeong Kim, Ph.D.*
Mercy University,
Department of Social Sciences

Mary Cuadrado, Ph.D.
Mercy University,
Department of Social Sciences

Illya Lichtenberg, Ph.D.
Mercy University,
Department of Social Sciences

Abstract

This study investigates the relationship between police officers' exposure to critical incidents and their involvement in domestic violence, using Agnew's General Strain Theory (GST) as the guiding framework. It focuses on the mediating roles of five psychosocial variables: negative emotions, depression/anxiety, nonviolent values, authoritative spillover, and spiritual worship. Secondary data were drawn from a survey conducted with 1,100 full-time officers from the Baltimore City Police Department. Structural equation modeling (SEM) examined direct and indirect relationships between critical incidents and domestic violence.

The findings demonstrate a statistically significant direct association between critical incidents and domestic violence. Among the proposed mediators, only depression/anxiety showed a statistically significant indirect effect, thereby partially mediating the relationship. In contrast, negative emotions, nonviolent values, authoritative spillover, and spiritual worship failed to demonstrate significant mediation. These results suggest that while various psychosocial factors are often considered protective, depression and anxiety play a unique and substantial role in linking occupational stress to violent behaviors in the domestic sphere.

The study underscores the necessity of targeted mental health interventions for officers, especially after critical incidents, to reduce the risk of domestic violence. While the other mediators did not yield significant effects in the structural model, their potential for resilience-building and long-term mental wellness should not be dismissed. Methodological limitations include the reliance on dated cross-sectional data, which limits causal inference and may not capture contemporary dynamics. Nevertheless, the inclusion of recent theoretical insights and literature helps contextualize the findings within modern law enforcement realities.

The results carry significant implications for policing policy and mental health strategies. Structured debriefings, resilience training, early warning systems, and peer support mechanisms are recommended to mitigate psychological risks. The findings also point to the value of integrating psychological health screenings and interventions into police department protocols to proactively manage the consequences of stress exposure. Future research should adopt longitudinal designs to establish causality, consider additional contextual variables, and further explore the nuanced roles of values and spirituality in moderating stress-induced aggression. Ultimately, the study advances understanding of police occupational stress and its potential to permeate private life, emphasizing the critical role of depression and anxiety in this relationship.

Keywords: Critical incidents; Police domestic violence; Structural equation modeling (SEM); Depression and anxiety; Law enforcement stress; General strain theory

Critical Incidents and Police Domestic Violence

Policing is widely recognized as a demanding occupation due to officers' frequent exposure to unpleasant, dangerous, and high-pressure situations (Brown & Campbell, 1990, 1994; Buker & Wiecko, 2007; Crank & Caldero, 1991; Liberman et al., 2002; Lee, 2002; Maguen et al., 2009; Roberg et al., 2022; Wexler & Logan, 1983). These situations encompass a variety of incidents, including arrests, encounters with violence, crime scenes, traffic accidents, and other scenarios faced by first responders. As a public institution, police services are available 24/7, often responding to individuals and families in crisis.

A key area of focus in understanding police stress is the impact of critical incidents, which can affect officers both physically and psychologically. These incidents include violent arrests, shootings, internal investigations, responses to hazardous scenes, personal connections to victims, hostage situations, police funerals, active shooter events, high-speed chases, interactions with mentally disturbed individuals, and exposure to serious accidents (Gershon, 2000). In this study, Agnew's General Strain Theory (GST) provides as the theoretical framework to examine how these critical incidents may lead to stress, potentially resulting in domestic violence. GST posits that individuals under strain, especially when exposed to negative stimuli, may experience emotional distress that increases the likelihood of coping through deviant behaviors, including aggression and violence (Agnew, 1992). This framework enables us to explore the relationship between critical incidents and officers' involvement in domestic violence through the lens of strain and emotional response.

This research explores the impact of critical incidents on domestic conflicts among police officers. The literature indicates that these incidents significantly contribute to stress, which may lead to violence as a coping mechanism (Anderson, Litzenberger, & Plecas, 2002; Anshel, 2000;

Goodman, 1990; Griffin & Bernard, 2003). Police work often requires force and aggression, creating challenges when transitioning from a professional mindset to personal life. Aggressive behaviors developed in the line of duty can spill over into personal relationships, potentially resulting in domestic violence. In this context, police domestic violence refers to unreasonable or illegitimate aggressive behaviors directed at family members, including spouses, children, and pets.

The primary objective of this study is to investigate the direct influence of critical incidents on police domestic violence. While critical incidents are variably defined, they are generally understood as highly stressful and emotionally charged events that significantly impact officers and communities. These events differ from routine police work and often require specialized skills and training. To further explore these effects, the study examines five mediators—negative emotions, depression/anxiety, nonviolent values, authoritative spillover, and spiritual worship—to assess the indirect connections between critical incidents and instances of police domestic violence.

The current study utilizes data from the "Police Stress and Domestic Violence in Police Families in Baltimore, Maryland, 1997-1999" (ICPSR2976). Gershon (2000) examined the stressors faced by police officers in the late 1990s, revealing that many of these challenges persist today. Despite advancements in policing, the fundamental psychological and physical stressors of the profession remain relatively unchanged (Jaeckle et al., 2021). This data provides valuable insights into the root causes of domestic violence in police families, as human responses to stress and trauma are deeply ingrained and slow to evolve (Thakur et al., 2023).

While this study offers important insights, it is limited by the age of the data. To address this limitation, more recent literature and theoretical frameworks have been incorporated to situate the findings within a modern context. This approach helps bridge the gap between historical data and current policing practices, mitigating the challenges posed by the dataset's age (Papazoglou & Tuttle, 2018).

Literature Review

Critical incidents in policing are defined as high-stress, emotionally charged events that significantly impact an officer's mental and physical well-being (Kenny, 2017). Such events—like violent arrests, shootings, involvement in internal investigations, and responses to hazardous situations or tragic accidents—can induce trauma and stress. Research indicates that officers exposed to these incidents may experience long-term psychological effects, including post-traumatic stress disorder (PTSD), depression, and anxiety (Papazoglou & Tuttle, 2018). Over time, the accumulation of these stressors can spill over into their personal lives, potentially leading to domestic conflicts.

Statistics on police-involved domestic violence are limited due to the sensitive nature of the topic; however, existing research suggests that such incidents occur significantly more frequently than in the general population. A U.S. survey found that 40% of police officers admitted to committing violence against a spouse or child within the previous six months (Johnson, 1991). Similar findings indicate that 40% of officers experienced violence in their relationships over the past year (Neidig et al., 1992; Schut et al., 2020; Thornton, 2017). Additionally, 8% admitted to severe violence, including strangulation, spousal battery, or the use of weapons (Neidig et al., 1992).

Police work, with its intense emotional demands and exposure to critical incidents, can exacerbate stress levels, potentially leading to aggression or violence as coping mechanisms. Studies suggest that between 24% and 40% of officers may engage in domestic violence at some point in their careers, in stark contrast to the approximately 10% rate in the general population (Johnson et al., 2005; Tjaden, 2000). Additionally, the hierarchical and authoritative culture of law enforcement can reinforce dominance and control behaviors that may transfer into personal relationships, heightening the risk of domestic violence within police families (Stinson & Liederbach, 2013).

Existing research also highlights the connection between police trauma and domestic violence (Johnson et al., 2005). Officers often face barriers to seeking mental health treatment due to concerns about stigma, job security, or being perceived as weak (Karaffa & Tochkov, 2013). This reluctance to address trauma-related stress can exacerbate issues at home, as untreated stress and PTSD may increase the likelihood of aggressive behavior. Studies have shown that officers who experience critical incidents are more likely to exhibit signs of hypervigilance, emotional numbness, and irritability—all of which can strain family dynamics and elevate the risk of domestic violence (Violanti, 2004).

Despite the prevalence of these issues, police domestic violence remains underreported and understudied. Factors such as the "blue wall of silence," where officers protect one another from public scrutiny, complicate efforts to accurately assess the extent of domestic violence in police families (Stinson et al., 2014). Additionally, the unique nature of police work—characterized by access to firearms, authority over civilians, and the normalization of force—creates a complex environment for understanding and addressing these behaviors.

In this context, the significance of studying critical incidents and police domestic violence becomes evident. This research aims to deepen our understanding of how the stressful nature of police work influences officers' behavior at home, shedding light on a critical issue that has long been difficult to address. By examining the connection between critical incidents and domestic violence, this study seeks to contribute to ongoing efforts to provide better support and interventions for law enforcement officers and their families.

While General Strain Theory does not explicitly focus on nonviolent values, it implicitly acknowledges their potential role in mitigating strain and reducing the likelihood of criminal coping, including violence. Nonviolent values—beliefs and principles that emphasize resolving conflicts peacefully—can serve as a moral compass, discouraging individuals from resorting to violence even in the face of stress (Charny, 2019). These values can promote the adoption of healthy coping mechanisms, such as seeking social support, engaging in positive activities, or using cognitive reappraisal to manage negative emotions, thereby reducing the appeal of violence as a coping strategy (Charny, 2019).

Police officers are typically trained to uphold a set of beliefs and principles that endorse peaceful and non-aggressive behavior as part of their professional ethics. However, when faced with significant strain or stressors, these nonviolent values may clash with their emotional responses. In some cases, under extreme strain, even deeply held nonviolent values can be overridden by intense negative emotions or a perceived sense of necessity (Agnew, 1992).

Spiritual worship, encompassing religious beliefs and practices, can play a multifaceted role in the lives of police officers. On one hand, engaging in spiritual worship can provide officers with a sense of support, community, and values that promote nonviolent behavior, counterbalancing

aggressive predispositions (Emmons, 2005; Jang, 2005). Studies suggest a protective role for church attendance, indicating that individuals who attend regularly are roughly half as likely to experience or engage in physical aggression within their intimate relationships (Ellison et al., 1999; Fergusson et al., 1986).

While religious values generally correlate with reduced marital violence, Ellison et al. (1999) identified a potential caveat: in couples with significant disparities in biblical beliefs—especially where husbands held more conservative views than their wives—the risk of male aggression increased 2.5-fold. This suggests that although religion often acts as a protective factor, further research is needed to understand how religious justifications for aggression and experiences of domestic violence differ among perpetrators and victims with varying levels of devoutness (Mahoney & Tarakeshwar, 2005).

In summary, negative emotions, depression, anxiety, and authoritative spillover can act as mediating factors that increase the risk of domestic violence among officers. Conversely, nonviolent values and spiritual practices can either amplify or mitigate the effects of critical incidents on officers' behavior at home.

Critical Incidents and Domestic Violence

Research indicates that police officers may respond to real, potential, or perceived threats to their safety or authority with violence (Griffin & Bernard, 2003). Kurtz et al. (2015) explored the influence of strain—specifically critical incidents in the work environment—on officers' engagement in violence against their colleagues. Using Structural Equation Modeling (SEM), they found that strains increased the likelihood of violence among officers. In this study, psychological stress served as a mediating variable, while childhood exposure to violence or

abuse acted as a moderating variable. Their findings revealed that critical incidents significantly impact officers' stress, directly and indirectly influencing engagement in peer violence.

Conversely, Anderson and Lo (2011) found that critical incidents did not have a statistically significant impact on police domestic violence toward spouses or significant others in their logistic regression model.

Based on this literature, it is hypothesized that critical incidents, due to the stress they generate, increase the likelihood of domestic violence among police officers (Hypothesis 1).

Negative Emotions and Domestic Violence

According to Agnew's General Strain Theory, a variety of negative emotions—such as anger, anxiety, and frustration—can foster a desire for rectification, with criminal behavior being one potential outcome. Bartollas and Hahn (1992) noted that "the emotional reaction to the stressors then creates a physiological response" (p. 195). Anderson and Lo (2011) investigated the impact of work-related stress, mediated by an officer's negative emotions, on their engagement in aggression against intimate partners. They identified negative emotions as significant predictors of intimate partner violence (IPV).

Zavala (2013) further explored the relationship between job stress, police strain, and negative emotions in the context of IPV perpetration and victimization. His findings indicated a significant relationship between job-related negative emotions and IPV perpetration. Angry arousal, as highlighted by Bernard (1990), can be redirected toward targets that are not responsible for the initial stressor, particularly when the individual attributes

causality and blameworthiness to that target. This tendency to transfer aggression to visible and vulnerable targets can manifest in harmful behaviors, such as "kicking the cat," yelling at children, or, in more severe cases, domestic violence (Griffin & Bernard, 2003).

Therefore, it is hypothesized that negative emotions mediate the relationship between exposure to critical incidents and the predisposition of police officers to engage in domestic violence (Hypothesis 2).

Depression/Anxiety and Domestic Violence

Clear et al. (2020) investigated correlations among depression, anxiety, and aggression within a sample of 383 students aged 16–23 years from a university in Queensland, Australia. They found that higher levels of anxious attachment were associated with increased symptoms of depression and aggressive behavior, both directly and indirectly through emotion dysregulation. Their study revealed statistically significant correlations between depressive symptoms, social anxiety symptoms, and aggressive behavior.

While there is a well-established body of research examining the development of depression and anxiety in victims of domestic violence, a significant gap exists in understanding the potential predictive role of these mental health conditions in perpetrating domestic violence. This study aims to address this gap by investigating depression and anxiety as risk factors for domestic violence, offering a novel perspective on their potential etiological contributions.

It is hypothesized that depression and anxiety mediate the relationship between exposure to critical incidents and the likelihood of police officers engaging in domestic violence (Hypothesis 3).

Nonviolent Values and Domestic Violence

In their investigation of the influence of stressors (critical incidents) on police officers' involvement in Intimate Partner Violence (IPV), Zavala et al. (2015) found a negative association between nonviolent values and engagement in IPV. In this context, nonviolent values represent a rejection of beliefs that endorse male dominance over females in intimate relationships. Feminist sociologists view these gender and power differentials as foundational to domestic violence (Anderson, 1997).

Despite the intuitive assumption that nonviolent values may mitigate domestic violence, empirical research exploring this potential association is limited. This study aims to illuminate a previously understudied area within domestic violence research—the potential mediating effect of internalized nonviolent values on the incidence of domestic violence.

We propose that nonviolent values serve as a mediator in the relationship between critical incidents and the predisposition of police officers toward domestic violence (Hypothesis 4).

Authoritative Spillover and Domestic Violence

Police families often express concerns that their loved ones struggle to leave work behind, a phenomenon known as authoritarian spillover (Johnson, 1991). Johnson et al. (2005) demonstrated that the mediating effect of authoritative spillover on spousal violence in response to exposure to violence was significantly stronger and statistically more significant than the effect of alcohol use. This builds upon the established link between stressful events, physical aggression, and intimate partner violence (IPV).

Anderson and Lo (2011) investigated the potential mediating role of "spillover authoritarian attitudes" in IPV perpetration. Their findings suggest that an increased spillover of authoritarian attitudes may elevate the likelihood of IPV. They further propose that in contexts with high levels of spillover, these attitudes may not only mediate the relationship between stress and IPV but also act as significant independent risk factors for domestic violence within police families. Generally, police officers who exhibit a rigid and critical demeanor toward their families—characterized by a citizen-like expectation of obedience and strict adherence to rules—are more likely to contribute to elevated levels of family strain (Johnson, 2005).

Therefore, it is proposed that authoritative spillover serves as a mediator in the relationship between critical incidents and the predisposition of police officers toward domestic violence (Hypothesis 5).

Spiritual Worship and Domestic Violence

Beehr et al. (1991) investigated coping mechanisms for occupational strain among police officers and their spouses. They found that while religion was not a universal buffer against stress, it demonstrated some indirect positive effects on spouses' well-being and potentially on the relationship by reducing the likelihood of divorce. In another study, Sigler and Thweatt (1997) examined the impact of religion on the stress levels of police officers and firefighters in Tuscaloosa, Alabama. Surprisingly, they discovered that higher levels of religiosity among police officers were associated with increased stress levels. They proposed two possible explanations: stress might drive officers to seek solace in religion, potentially amplifying anxiety if expectations for comfort were unmet, or the clash between religious ideals and job realities, such as exposure to violence, could lead to cognitive dissonance and emotional strain.

Rogers (2018) focused on the impact of spirituality among Black police officers, revealing a weak relationship between spirituality and lower levels of job stress. However, this already weak association vanished when controlling for job burnout and demographic variables.

It is proposed that spiritual worship acts as a mediator in the relationship between critical incidents and the predisposition of police officers toward domestic violence (Hypothesis 6).

Gender and Domestic Violence

Female police officers have been found to experience greater stress than their male counterparts (Roberg et al., 2022). Some studies suggest that females tend to employ less destructive coping mechanisms compared to males (Brown & Campbell, 1994; Haar & Morash, 1999; He et al., 2002; Jang & Johnson, 2005; Kurtz, 2012; Robbers, 2004). However, data from the Baltimore Police study indicate that non-White females with high levels of job-related stress were more likely to engage in Intimate Partner Violence (IPV) (Anderson & Lo, 2011; Zavala et al., 2015). Anderson and Lo attribute this to a higher likelihood of burnout among African American female officers, while Zavala et al. (2015) suggest it may stem from female officers being more willing than males to admit in surveys that they perpetrate violence against their partners.

Roberts and Levenson (2001) noted that male officers often bring occupational strain into their relationships, negatively impacting both themselves and their partners. The strain and fatigue experienced by officers likely have adverse effects on family members. Given these dynamics, gender is included as a control variable in this study.

Race/Ethnicity and Domestic Violence

Repasky et al. (2020) examined differences in stress between White and Black officers using data from the Baltimore Police. While they found no significant differences in how each group manifests or perceives stress, they noted that White officers tend to focus on stress stemming from institutional culture, whereas Black officers often perceive personal mistreatment as a significant source of stress. In a related study, Anderson and Lo (2011) discovered that non-White females with high levels of job-related stress were more likely than their White counterparts to engage in Intimate Partner Violence (IPV). They attribute this finding to a greater likelihood of burnout among African American female police officers.

Overall, existing research on the association between police stress and aggressive behavior, while valuable, lacks a comprehensive examination of potential mediating factors. Understanding these mediators is not only theoretically significant but also holds practical implications for mitigating police aggression. This study posits that critical incidents, inherent to police work, exert significant physical and psychological impacts on officers, which may influence their attitudes, including a potential propensity for domestic violence. Mediating factors between critical incidents and domestic violence may exacerbate or alleviate this situation. A thorough examination of these mediators could provide deeper insights into police domestic violence.

Utilizing structural equation modeling, this study investigates the relationship between critical incidents and police domestic violence, considering five potential mediators: negative emotions, depression/anxiety, nonviolent values, authoritative spillover, and spiritual worship. The hypotheses previously outlined are as follows:

Hypotheses

1. Critical incidents, due to the stress they generate, increase the likelihood of domestic violence among police officers.

2. Negative emotions mediate the relationship between exposure to critical incidents and the predisposition of police officers to engage in domestic violence.

3. Depression and anxiety mediate the relationship between exposure to critical incidents and the likelihood of police engaging in domestic violence.

4. Nonviolent values serve as a mediator in the relationship between critical incidents and the predisposition of police officers toward domestic violence.

5. Authoritative spillover serves as a mediator in the relationship between critical incidents and the predisposition of police officers toward domestic violence.

6. Spiritual worship acts as a mediator in the relationship between critical incidents and the predisposition of police officers toward domestic violence.

Methodology

Sample Data

This study utilized data from a survey conducted by Gershon (2000) on the relationship between stress and domestic violence among police officers in Baltimore, Maryland, from 1997 to 1999. The survey gathered information on psychological and physical stress, its causes, current stress levels, coping strategies, and health problems related to stress. Gershon initially analyzed this data to examine how stress affects domestic violence in police families, and it has

since been used to explore connections between stress, burnout, and gender. The survey was completed by 1,104 sworn, full-time employees of the Baltimore City Police Department, who volunteered from a pool of over 2,500 officers present at nine precincts during morning and/or evening roll calls, yielding a 68% response rate.

While the data were collected over two decades ago, the core issues of police stress and domestic violence remain pertinent today (Jaeckle et al., 2021). The survey's focus on psychological and physical stress, coping mechanisms, and health issues offers valuable insights into the potential impact of these factors on officer behavior (Thakur et al., 2023).

Variables

Dependent Variable

To assess police officers' engagement in domestic violence, participants were asked: "Have you ever gotten out of control and been physical (e.g., pushing, shoving, grabbing) with your children, spouse, or pets?" Respondents answered with '1 = Yes' or '2 = No.' To ensure that higher scores indicated greater levels of aggressiveness, the three items were reverse-coded. These indicators collectively constitute the measure of police aggressive behavior. The variable for police domestic violence was operationalized as a latent variable using confirmatory factor analysis (CFA). The measurement model showed a good fit to the data ($\chi^2 = 4.78$ (1), RMSEA = .032, CFI = .97, TLI = .98).

Independent Variables

The assessment of critical incidents included nine questions about work-related events. Respondents were asked whether they had ever experienced: 1) making a violent arrest, 2) shooting someone, 3) being the subject of an internal investigation, 4) responding to a call related to a chemical spill, 5) responding to a bloody crime scene, 6) personally knowing a victim, 7) being involved in a hostage situation, 8) attending a police funeral, and 9) experiencing a needle stick injury or other exposure to blood and bodily fluids.

If a respondent indicated they had experienced any of these events, they were then asked to rate how much it emotionally affected them using the following categories: 1 = not at all, 2 = a little, 3 = very much, and 4 = not experienced. The critical incidents variable was operationalized as a latent variable through confirmatory factor analysis (CFA). The measurement model showed a good fit to the data (χ^2 = 120.40 (26), RMSEA = .057, CFI = .96, TLI = .94).

Mediators

Negative Emotions

The assessment of respondents' emotional health involved eleven questions. Participants were asked to indicate how often the following statements were true: 1) I feel tired at work even with adequate sleep, 2) I am moody, irritable, or impatient over small problems, 3) I want to withdraw from the constant demands on my time and energy from work, 4) I feel negative, futile, or depressed about work, 5) I think I’m not as efficient as I should be, 6) I feel physically/emotionally depleted, 7) I have lowered resistance to illness because of work, 8) I

have lowered interest in doing fun activities because of work, 9) I feel uncaring about the problems and needs of the public at work, 10) I find it difficult to concentrate on the job, and 11) I go to work because it is required. The response categories were 1 = never, 2 = sometimes, 3 = frequently, and 4 = always. The negative emotions variable was operationalized as a latent variable using confirmatory factor analysis (CFA), which showed a good fit to the data (χ^2 = 258.94 (44), RMSEA = .067, CFI = .96, TLI = .95).

Depression/Anxiety

The assessment of respondents' psychological stress specifically focused on signs of depression and anxiety, involving ten questions. Participants were asked how often they had experienced the following symptoms in the past six months: thoughts of ending your life, feeling blue, having no interest in things, feeling hopeless about the future, suddenly feeling scared for no reason, trouble getting your breath, experiencing spells of terror or panic, feeling so restless you couldn't sit still, crying easily, and feeling that something bad was going to happen. The response options were 1 = never, 2 = sometimes, 3 = frequently, and 4 = always. Due to multicollinearity issues between the depression and anxiety variables (Pearson r = .699), both variables were combined to address redundancy. The depression/anxiety variable was operationalized as a latent variable through CFA, with a good fit to the data (χ^2 = 199.08 (34), RMSEA = .066, CFI = .95, TLI = .93).

Nonviolent Values

The measurement of nonviolent values in police officers involved four statements. Respondents indicated their level of agreement with the following: 1) A person who refuses to have sex with his or her spouse/significant other is asking to be beaten, 2) It is okay for a person

to get physical (e.g., shoving, grabbing, smacking) with their spouse/significant other if they've been unfaithful, 3) Getting physical once in a while can help maintain a marriage/relationship, and 4) There is no excuse for people getting physical with their spouse/significant other. The response options were 1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, and 5 = strongly disagree. To ensure higher scores corresponded with higher levels of nonviolent values, the last item's numerical assignment was reverse-coded. The nonviolent values variable was operationalized as a latent variable through CFA, showing a good fit ($\chi^2 = 2.36$ (2), RMSEA = .013, CFI = 1.00, TLI = .99).

Authoritative Spillover

Participants were asked to indicate their agreement with the following statements: 1) I feel like I need to take control of the people in my life (reverse-coded), 2) I catch myself treating my family the way I treat suspects (reverse-coded), 3) At home, I can never shake off the feeling of being a police officer (reverse-coded), and 4) I expect to have the final say on how things are done in my household (reverse-coded). The response options were 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree. Authoritative spillover was operationalized as a latent variable through CFA, with a good fit to the data ($\chi^2 = 19.67$ (2), RMSEA = .059, CFI = .98, TLI = .92).

Spiritual Worship

Police officers were asked about their coping mechanisms when dealing with stressful events at work, specifically regarding how often they 1) pray for guidance and strength, and 2) rely on their faith in God to see them through rough times. The response options were 1 = never, 2 = sometimes, 3 = frequently, and 4 = always. Due to the limited number of indicators (only two),

which provided insufficient unique information to estimate all parameters reliably, these two items were averaged to create a spiritual worship variable (Cronbach's alpha = .89).

Control Variables

The control variables used in this study included gender and race/ethnicity, as these factors have been shown to influence domestic violence among law enforcement officers (Anderson & Lo, 2011; Zavala et al., 2015). Gender was dummy-coded, with 1 representing male and 2 representing female. Similarly, race/ethnicity was dummy-coded, with 1 indicating White and 2 indicating Nonwhite.

Analytic Approach

A structural equation model (SEM) generated using AMOS version 29 was employed to investigate the influence of critical incidents on police domestic violence, along with the potential mediating roles of negative emotions, depression/anxiety, nonviolent values, authoritative spillover, and spiritual worship. SEM was chosen for its ability to assess both direct and indirect effects, a capability not available in traditional multivariate regression analyses. Maximum likelihood estimation was utilized to minimize bias in the computed parameter estimates.

To explore the direct and indirect effects of critical incidents on police domestic violence, six models were developed, progressively building toward the full structural equation model. Confirmatory factor analyses (CFA) were conducted to establish the latent variables for critical incidents and police domestic violence. The model fit indices for all CFA models indicated that the latent variables were well-constructed. A good-fitting model is accepted when the value of

CMIN/df is < 5, and goodness-of-fit indices—including the Tucker-Lewis index (TLI) and the Confirmatory Fit Index (CFI)—are > 0.90 (Hair et al., 2009). Additionally, a model is considered adequately fitting if the standardized root mean square residual (SRMR) is < 0.08 and the root mean square error of approximation (RMSEA) is ≤ 0.08 (Hair et al., 2009). The fit indices for the final model (Table 2) fell within these acceptable ranges: CMIN/df = 2.282, goodness-of-fit = .916, TLI = .919, CFI = .927, SRMR = .059, and RMSEA = .034.

Model 1 assessed the direct effects of critical incidents on police domestic violence. Model 2 included negative emotions to examine its mediating effects between critical incidents and police domestic violence. Model 3 added depression/anxiety as an additional mediator. Model 4 incorporated nonviolent values, while Model 5 included authoritative spillover. Finally, Model 6 added spiritual worship, completing the full model. To evaluate the indirect effects of the mediators, bootstrapping procedures with 5,000 bootstrap samples were employed. Indirect effects were assessed using bias-corrected confidence intervals at the 95% level, as recommended by Kline (2016).

Data Analyses and Findings

Descriptive Statistics

The final sample size consisted of 1,100 police officers after excluding cases with missing data. Table 1 presents all the variables, latent variables, indicators, and control variables utilized in the study. The latent variables in Table 1 are deemed appropriate for analysis, with Cronbach's alpha values ranging from 0.7 to 0.8 considered acceptable, and values between 0.8 and 0.9 considered very good (Kline, 2016).

Demographic data revealed that 85.7% (n = 943) of the participants were male, while 14.3% (n = 157) were female. Additionally, 63.8% (n = 702) identified as White, and 36.2% (n = 398) identified as Nonwhite. The average age of the participants was 37.04 years (SD = 9.09), with an average tenure of 13.6 years (SD = 16.13) at the Baltimore Police Department.

Table 1. Latent variables, indicators, and control variables (*n* = 1,100, Cronbach's alpha under a latent variable).

Latent Variable	Indicator	M	SD	Min	Max
Domestic Violence (.701)	To child(ren)	0.85	.52	0	2
	To spouse	0.87	.50	0	2
	To pets	0.86	.52	0	2
Critical Incidents (.796)	Making a violent arrest	1.79	.86	0	3
	Shooting someone	0.50	.95	0	3
	Being the subject of an internal investigation	1.56	1.27	0	3
	Responding to a bloody crime scene	0.74	.90	0	3
	Responding to a call related to a chemical spill	1.63	.85	0	3
	Personally knowing the victim	1.19	1.16	0	3
		1.03	1.00	0	3

	Being involved in a hostage situation				
	Attending a police funeral	2.17	1.11	0	3
	Experiencing a needle stick injury or other exposure to blood and body fluids	1.32	1.31	0	3
Negative Emotion (.896)	Feel tired at work even with adequate sleep	2.02	.62	1	4
	Moody, irritable, or impatient over small problems	1.82	.65	1	4
	Want to withdraw from the constant demands on my time and energy from work	1.73	.67	1	4
	Feel negative, futile or depressed about work	1.65	.71	1	4
	Think I'm not as efficient as I should be	1.73	.65	1	4
	Feel physically, emotionally and spiritually depleted	1.62	.64	1	4
	My resistance to illness is lowered because of my work	1.49	.69	1	4
	My interest in doing fun activities is lowered because of my work	1.64	.74	1	4
	Feel uncaring about the problems and needs of the public at work	1.53	.67	1	4
	Difficult to concentrate on the job	1.46	.57	1	4
	I get up and go to work because I have to	1.78	.86	1	4

Depression/ Anxiety (.848)	Thoughts of ending life	1.07	.30	1	4
	Feeling blue	1.73	.63	1	4
	Suddenly scared for no reason	1.53	.63	1	4
	Feeling no interest in things	1.28	.54	1	4
	Trouble getting breath	1.16	.42	1	4
	Feeling hopeless about future	1.20	.46	1	4
	Spells of terror or panic	1.08	.29	1	4
	So restless, couldn't sit still	1.40	.62	1	4
	Crying easily	1.21	.48	1	4
	Feeling that something bad was to happen	1.43	.61	1	4
Nonviolent values (.784)	A person who refuses to have sex with his/her spouse/significant other is asking to be beaten	4.64	.68	1	5
	It is okay for a person to get physical with his/her spouse/significant other if they've been unfaithful	4.49	.79	1	5
	Getting physical once in a while can help maintain a marriage/ relationship	4.60	.70	1	5
	There is no excuse for people getting physical with their spouse/significant other	4.09	1.36	1	5

Authoritarian spillover	I feel like I need to control of the people in my life	2.62	.97	1	5
(.699)	I catch myself treating my family the way I treated suspects	2.02	.97	0	5
	At home, I can never shake off the feeling of being a police officer	2.36	1.13	0	5
	I expect to have the final say on how things are done in my household	2.35	1.13	1	5
Spiritual worship	Pray for guidance and strength	2.29	.99	1	4
(.885)	Rely on faith in God to see through the rough time	2.43	1.04	1	4
Control variable	Gender	1.14	.35	1	2
	Race/ethnicity	.36	.48	0	1

Structural Equation Modeling

The study examined the mediating roles of negative emotions (NE), depression/anxiety (DA), nonviolent values (NV), authoritative spillover (AS), and spiritual worship (SW) in the relationship between critical incidents (CI) and domestic violence among police officers. To explore the impact of critical incidents on police domestic violence and the roles of these five mediators, six models were developed. The summary results of the mediation tests are presented in Table 2. The construction of the structural models was successful, with each model demonstrating a good fit between the data and the proposed models.

Model 1 addressed the first research question by examining the direct impact of critical incidents on police domestic violence while controlling for gender and ethnicity (Figure 1). As shown in Table 2, critical incidents had a statistically significant positive impact on aggressive behavior (b = .246, SE = .036, p < .001).

Figure 1. Trimmed basic structural model (Model 1) with predictor of critical incidents and outcome of domestic violence.

When the negative emotions variable was introduced to Model 1, it created Model 2 for research question 2, controlling for gender and race/ethnicity. In Model 2, both the direct effects of critical incidents on domestic violence (b = .202, SE = .036, p < .001) and the indirect effects through negative emotions were statistically significant, with a negative direction (b = .038, SE = .011, p < .01).

Model 3, addressing research question 3, was developed by incorporating depression/anxiety into Model 2. In this model, while controlling for gender and race/ethnicity, the direct effects of critical incidents on domestic violence (b = .186, SE = .036, p < .001) and the indirect effects of depression/anxiety demonstrated statistical significance (b = .060, SE =

.021, p < .01). However, the indirect effects of negative emotions between critical incidents and domestic violence lost statistical significance (b = -.009, SE = .021, p > .05).

Model 4, created by introducing nonviolent values to Model 3 and addressing research question 4, showed that the direct effects of critical incidents (b = .187, SE = .036, p < .001) and the indirect effects of depression/anxiety (b = .058, SE = .023, p < .05) remained statistically significant. In contrast, the indirect effect of negative emotions (b = -.009, SE = .022, p > .05) and the newly added nonviolent values (b = .004, SE = .003, p > .05) on domestic violence were not statistically significant while controlling for gender and race/ethnicity.

In Model 5, which addressed research question 5 by adding authoritative spillover, the direct effects of critical incidents (b = .189, SE = .036, p < .001) and the indirect effects of depression/anxiety (b = .059, SE = .024, p < .05) remained statistically significant. However, the indirect effects of negative emotions (b = -.010, SE = .025, p > .05), nonviolent values (b = .004, SE = .004, p > .05), and the newly added authoritative spillover (b = -.002, SE = .020, p > .05) on domestic violence were not statistically significant.

Finally, the full model (Model 6) was completed by adding spiritual worship. In Model 6, with gender and race/ethnicity controlled, the direct effects of critical incidents on domestic violence (b = .187, SE = .039, p < .001) remained statistically significant. Among the mediators, only the indirect effects of depression/anxiety (b = .058, SE = .026, p < .05) showed statistical significance, while the indirect effects of negative emotions (b = -.010, SE = .027, p > .05), nonviolent values (b = .004, SE = .004, p > .05), authoritative spillover (b = .003, SE = .020, p > .05), and spiritual worship (b = .001, SE = .002, p > .05) were not statistically significant.

In Model 6, the total effect of critical incidents on domestic violence was .242, indicating that for every one-unit increase in critical incidents, a corresponding .242-unit increase in domestic violence is expected, while controlling for gender and race/ethnicity. Since the direct effect between critical incidents and domestic violence, along with the indirect effect of depression/anxiety, are statistically significant, whereas the indirect effects of negative emotions, nonviolent values, authoritative spillover, and spiritual worship are not, Model 6 is considered a partial mediation.

Table 2. Mediation Analyses Summary (n = 1,100)

Model	Relationship	Direct Effect	Indirect Effect	Confidence Interval		p-value	Conclusion
				Lower Bound	Upper Bound		
1	CI -> DV	.246***				.000	
2	CI -> DV	.202***				.000	Partial mediation
	CI -> NE -> DV		.038**	.019	.061	.009	
3	CI -> DV	.186***				.000	Partial mediation
	CI -> NE -> DV		-.009	-.047	.034	.630	
	CI -> DA -> DV		.060**	.023	.107	.0086	
	CI -> DV	.187***				.000	

	CI -> NE -> DV		-.009	-.046	.043	.751	Partial mediation
4	CI -> DA -> DV		.058*	.006	.102	.016	
	CI -> NV -> DV		.004	.000	.017	.053	
	CI -> DV	.189***				.000	Partial mediation
	CI -> NE -> DV		-.010	-.049	.048	.919	
5	CI -> DA -> DV		.059*	.014	.103	.022	
	CI -> NV -> DV		.004	-.001	.018	.158	
	CI -> AS -> DV		-.002	-.044	.041	.951	
	CI -> DV	.187***				.000	Partial mediation
	CI -> NE -> DV		-.010	-.065	.043	.713	
	CI -> DA -> DV		.058*	.010	.110	.023	
6	CI -> NV -> DV		.004	-.001	.016	.105	
	CI -> AS -> DV		.003	-.038	.039	.917	
	CI -> SW -> DV		.001	-.001	.008	.280	

*$p < .05$, **$p < .01$, ***$p < .001$

Note: DV = domestic violence, CI = critical incidents, NE = negative emotions, DA = depression/anxiety, NV = nonviolent values, AS = authoritative spillover, SW = spiritual worship

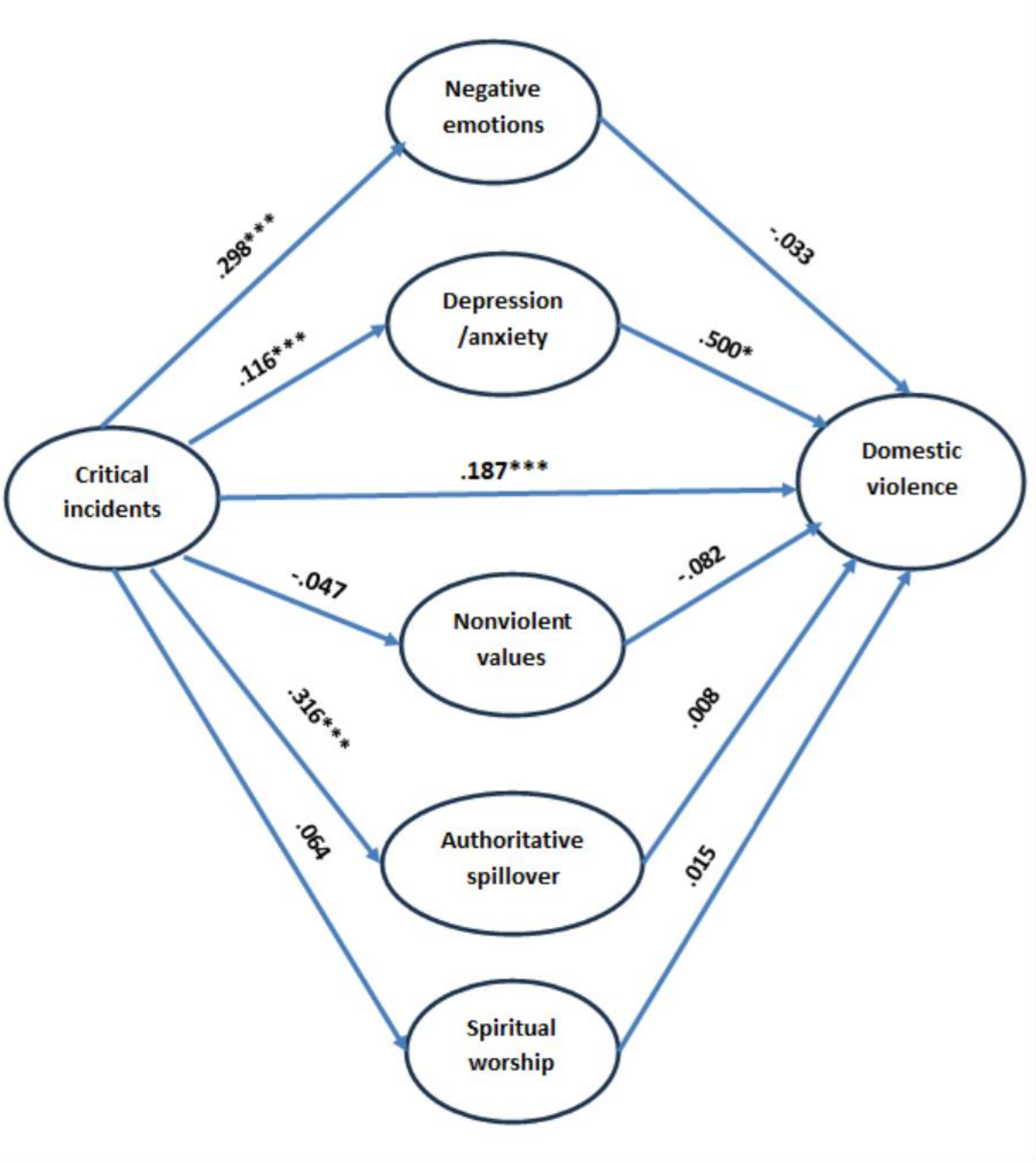


Figure 2. Trimmed full structural model, Model 6, with predictor of critical incidents, outcome of domestic violence, and five mediators. Unstandardized estimates are presented.

*$p < .05$, **$p < .01$, ***$p < .001$

All other relationships between the predictor, critical incidents, and the five mediators – negative emotions, depression/anxiety, nonviolent values, authoritative spillover,

and spiritual worship – as well as the relationships between the five mediators and the outcome of domestic violence, are presented in Table 3.

In Table 3, critical incidents have a statistically significant impact on negative emotions, depression/anxiety, and authoritative spillover, but not on nonviolent values and spiritual worship. Among the five mediators, only depression/anxiety has a statistically significant impact on police domestic violence.

Table 3. Unstandardized, standardized, and significance levels for trimmed full model, Model 6, in Figure 2. Standard error in parentheses; n = 1,100

Parameter estimate	Unstandardized	Standardized	p
Full structural model			
CI -> DV	.187 (.039)***	.246 (.050)	.000
CI -> NE	.298 (.032)***	.395 (.035)	.000
NE -> DV	-.033 (.087)	-.033 (.090)	.834
CI -> NE -> DV	-.010 (.027)	-.013 (.011)	.826
CI -> DA	.116 (.014)***	.385 (.036)	.000
DA -> DV	.500 (.212)*	.198 (.086)	.028
CI -> DA -> DV	.058 (.026)*	.076 (.015)	.043
CI -> NV	-.047 (.032)	-.056 (.040)	.147

NV -> DV	-.082 (.047)	-.090 (.053)	.083
CI -> NV -> DV	.004 (.004)	.005 (.002)	.256
CI -> AS	.316 (.046)***	.347 (.044)	.000
AS -> DV	.008 (.056)	.010 (.074)	.989
CI -> AS -> DV	.003 (.020)	.003 (.005)	.868
CI -> SW	.064 (.058)	.036 (.034)	.256
SW -> DV	.015 (.018)	.035 (.044)	.999
CI -> SW -> DV	.001 (.002)	.001 (.001)	.569
Gender -> DV	.001 (.040)	.001 (.038)	.820
Race/ethnicity -> DV	-.060 (.033)	-.076 (.046)	.709

*$p < .05$, **$p < .01$, ***$p < .001$

Note: DV = domestic violence, CI = critical incidents, NE = negative emotions, DA = depression/anxiety, NV = nonviolent values, AS = authoritative spillover, SW = spiritual worship

Discussion and Implications

This study examined the impact of critical incidents on police domestic violence, focusing on the mediating roles of five variables: negative emotions, depression/anxiety, nonviolent values, authoritative spillover, and spiritual worship. The analyses consistently revealed a statistically significant relationship between critical incidents and police domestic

violence, supporting the first hypothesis that critical incidents increase domestic violence among police officers. Depression/anxiety also showed significant direct effects on domestic violence, along with indirect effects in the relationship between critical incidents and domestic violence, thereby supporting the third hypothesis that depression/anxiety mediates this relationship.

However, in the final model (Model 6), only depression/anxiety emerged as a statistically significant mediator; none of the other proposed mediators – negative emotions, nonviolent values, authoritative spillover, and spiritual worship – demonstrated significant effects. Thus, the second, fourth, fifth, and sixth hypotheses were not supported. These findings diverge from Agnew's general strain theory, which posits that adverse emotional states and authority-related stressors serve as markers that increase the likelihood of aggressive behavior, thus heightening domestic violence. Both nonviolent values and spiritual worship are expected to provide a moral framework that discourages violence and fosters resilience among officers. While they may encourage nonviolent responses, they do not appear to directly mediate the relationship between critical incidents and domestic violence.

The unexpected results highlight that the predicted outcomes based on general strain theory did not materialize as anticipated. Previous studies have also yielded mixed findings regarding the roles of negative emotions, nonviolent values, authoritative spillover, and spiritual worship in the context of domestic violence (Goncalves et al., 2023; Jang & Johnson, 2005, 2017; Rebellon et al., 2012).

Notably, this study found that depression and anxiety uniquely mediated the relationship between critical incidents and police domestic violence, aligning with earlier research (Gershon et al., 2009; Kop et al., 1999). This finding may stem from how depression and anxiety directly

influence behavior, potentially increasing impulsivity and emotional instability – factors known to contribute to violent behavior in high-stress occupations like policing (Violanti & Aron, 1995). Depression and anxiety, as internalizing symptoms, may affect how officers process trauma, making them more likely to exhibit aggression as a coping mechanism (Galanis, Fragkou, & Katsoulas, 2021).

The lack of support for other mediators may suggest that while they contribute to resilience, they do not directly mediate stress-induced violence in policing contexts (Jang & Johnson, 2005). Authoritative spillover and other negative emotions might add to the strain but do not appear to directly provoke aggressive responses leading to domestic violence in this sample (Galanis et al., 2021). These findings underscore the need for targeted mental health interventions focused on depression and anxiety as preventive measures against domestic violence among police officers (Papazoglou & Andersen, 2014).

To effectively prevent and reduce police domestic violence, particularly among officers impacted by critical incidents, a comprehensive approach addressing both individual and organizational factors is essential. Research supports structured debriefing sessions following critical incidents to help officers process traumatic experiences, alleviating stress and negative emotional outcomes. Studies indicate that debriefing and psychological support can significantly reduce symptoms of depression and anxiety (Tuckey & Scott, 2014), fostering healthier emotional responses.

Additionally, ongoing training in conflict de-escalation, crisis intervention, and communication skills is vital for equipping officers to manage high-stress situations without resorting to aggression. De-escalation training has been shown to mitigate symptoms of anxiety and

depression by enhancing officers' confidence in handling conflicts effectively (John, Motsamai, & Modise, 2024). Similarly, communication skills and crisis intervention training can lead to significant improvements in psychological well-being by helping officers feel more prepared for critical situations (Komarovskaya et al., 2011).

To enhance officer well-being, it is crucial to prioritize mental health awareness and support within police departments. This includes establishing mandatory, confidential mental health resources and fostering a stigma-free environment that encourages officers to seek help for depression and anxiety. Developing early warning systems (EWS) within police forces can help identify officers at risk of domestic violence or displaying signs of emotional distress, allowing for timely intervention and support. For instance, the New York Police Department (NYPD) has implemented an EWS using data on officer performance and misconduct to identify those at risk (NYPD, 2023).

Peer support programs also play a vital role in assisting officers with stress management and emotional challenges. Recognizing the importance of family in preventing domestic violence (Cullen et al., 1985; Roberts & Levenson, 2001; Zavala et al., 2015), it is essential to provide support and resources for officers' families, fostering open communication to create a healthy environment. Cultivating a positive work culture that prioritizes respect, empathy, and professionalism is imperative, with department leaders setting an example by emphasizing mental health and well-being.

Limitations and Conclusion

This study has several limitations to consider when interpreting the findings. First, the use of cross-sectional data poses challenges in establishing clear causal relationships. While the

study reveals associations between variables, it cannot definitively demonstrate the direction of causality. Future research could benefit from longitudinal studies or experimental designs to enhance the robustness of the findings.

Second, reliance on survey questionnaires may introduce response bias, particularly regarding sensitive topics like depression, anxiety, and domestic violence. Despite assurances of anonymity, discrepancies between survey responses and actual experiences could affect accuracy.

Additionally, the study lacks comprehensive variables related to the contextual factors surrounding police domestic violence. A deeper analysis requires understanding the contexts in which incidents occur; without this, the study may miss nuanced dynamics contributing to domestic violence in law enforcement.

In conclusion, this study highlights the complex interplay between critical incidents, emotional states, and police domestic violence. While it challenges some existing theories, it offers valuable insights and recommendations for addressing this serious issue. Future research should build on these findings by employing more robust methodologies and investigating contextual factors to gain a comprehensive understanding of police domestic violence.

References

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology, 30*(1), 47-87.

Agnew, R., & White, H. R. (1992). An empirical test of General Strain Theory. *Criminology, 30*(4), 475-500.

Thakur, A., Thakur, A., Mehta, P., & Dhiman, R. (2023). Stress and Coping Strategies among Police Personnel. *Journal of Global Economics, Management and Business Research*, *15*(2), 9-15.

Anderson, K. L. (1997). Gender, status, and domestic violence: An integration of feminist and family violence approaches. *Journal of Marriage and Family, 59*(3), 655-669

Anderson, G. S., Litzenberger, R., & Plecas, D. (2002). Physical evidence of police officer stress. *Policing: An International Journal of Police Strategies and Management, 25*, 399-420.

Anderson, A. S., & Lo, C. C. (2011). Intimate partner violence within law enforcement families. *Journal of Interpersonal Violence, 26*(6), 1176-1193.

Anshel, M. (2000). A conceptual model and implications for coping with stressful events in police work. *Criminal Justice and Behavior, 27*, 375-400.

Arriaga, X. B. (1999). *Violence in intimate relationships*. Thousand Oaks, CA: Sage.

Bartollas, R., & Hahn, W. K. (1992). Stress and coping in child sexual abuse survivors. In D. Paez (Ed.), *Treating child sexual abuse: Issues and strategies* (pp. 189-213). Thousand Oaks, CA: Sage.

Beehr, T. A., Johnson, L. B., & Nieva, R. (1995). Occupational stress: Coping of police and their spouses. *Journal of Organizational Behavior, 16*, 3-25.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238

Bernard, T. J. (1990). Angry aggression among the "truly disadvantaged". *Criminology, 28*(1), 73-96.

Brown, J.M., & Campbell, E.A. (1994). Stress and policing: Sources and strategies. West Essex, England: John Wiley & Sons, Ltd.

Buker, H. & Wiecko, F. (2007). Are causes of police stress global? Testing the effects of common police stressors on the Turkish National Police. *Policing: An International Journal of Police Strategies and Management, 30(2)*, 291-309.

Charny, I. W. (2019). *Strategies against violence: Design for nonviolent change*. New York, NY: Routledge.

Clear, S. J., Gardner, A. A., Webb, H. J., & Zimmer-Gembeck, M. J. (2020). Common and distinct correlates of depression, anxiety, and aggression: Attachment and emotion regulation of sadness and anger. *Journal of Adult Development*, *27*(3), 181-191.

Crank, J. P. & Caldero, M. (1991). The production of occupational stress in medium-sized police agencies: A survey of line officers in eight municipal departments. *Journal of Criminal Justice, 19*, 339-349.

Cullen, F. T., Lemming, T., Link, B.G., Wozniak, J. F. (1985). The impact of social supports on police stress. *Criminology, 23*(3), 503-522.

Ellison, C. G., Bartkowski, J. P., & Segal, M. L. (1996). Do conservative Protestants spank more often?: Further evidence from the National Survey of Families and Households. *Social Science Quarterly, 77*, 663–673.

Emmons, R. A. (2005). Emotion and religion. *Handbook of the psychology of religion and spirituality*, 24, 235 – 252.

Fergusson, D. M., Horwood, L. J., Kershaw, K. L., & Shannon, F. T. (1986). Factors associated with reports of wives assault in New Zealand. *Journal of Marriage and the Family, 48*, 407–412.

Galanis, P., Fragkou, D., & Katsoulas, T. A. (2021). Risk factors for stress among police officers: A systematic literature review. *Work*, *68*(4), 1255-1272.

Gershon, R. (2000). *Police Stress and Domestic Violence in Police Families in Baltimore, Maryland, 1997-1999*. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], DOI: 10.3886/ICPSR02976.v1.

Gershon, R. R. M., Barocas, B., Canton, A. N., Li, X., & Vlahov, D. (2009). Mental, physical, and behavioral outcomes associated with perceived work stress in police officers. *Criminal Justice and Behavior, 36*(3), 275–289. https://doi.org/10.1177/0093854808330015

Gonçalves, J. P. D. B., Lucchetti, G., Maraldi, E. D. O., Fernandez, P. E. L., Menezes, P. R., & Vallada, H. (2023). The role of religiosity and spirituality in interpersonal violence: a systematic review and meta-analysis. *Brazilian Journal of Psychiatry*, *45*, 162-181.

Goodman, A. M. (1990). A model for police officer burnout. *Journal of Business and Psychology, 5*, 85-99.

Griffin, S. P., & and Bernard, T. J. (2003). Angry aggression among police officers. *Police Quarterly, 6*(1), 3–21. DOI: 10.1177/1098611102250365.

Haarr, R. N., & Morash, M. (1999) Gender, race, and strategies of coping with occupational stress in policing. *Justice Quarterly, 16*(2), 303-336. DOI: 10.1080/07418829900094151.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate Data Analysis* (7th ed.) Upper Saddle River, NJ: Pearson Prentice Hall.

He, N., Zhao, J., & Archibold, C. A. (2002). Gender and police stress: The convergent and divergent impact of work environment, work-family conflict, and stress coping mechanisms of female and male police officers. *Policing: An International Journal of Police Strategies and Management, 24*, 687-708.

Inslicht, S. S., McCaslin, S. E., Metzler, T. J., Henn-Haase, C., Hart, S. L., Maguen, S., Neylan, T. C., & Marmar, C. R. (2010). Family psychiatric history, peritraumatic reactivity, and posttraumatic stress symptoms: a prospective study of police. *Journal of psychiatric research*, *44*(1), 22–31. DOI: 10.1016/j.jpsychires.2009.05.011.

Jang, S. J., & Johnson, B.R. (2005). Gender, religiosity, and reactions to strain among African Americans. *The Sociological Quarterly*, *46*(2), 323-357. DOI: 10.1111/j.1533-8525.2005.00015.x.

Jang, S. J., & Johnson, B. R. (2017). Strain, negative emotions, and deviant coping among African Americans: A test of general strain theory. *Sociological Inquiry, 87*(2), 232-256. https://doi.org/10.1111/soin.12158

John, Motsamai, Modise. (2024). 10. The Guardians of the Streets: Frontline Law Enforcement Officers. *International journal of innovative science and research technology*, doi: 10.38124/ijisrt/ijisrt24jul924

Johnson, L. B. (1991). On the front lines: Police stress and family well-being. *Hearing Before the Select Committee on Children, Youth, and Families House of Representatives: 102 Congress First Session May 20*, U.S. Government Printing Office, Washington, DC. Pp. 32–48.

Johnson, L. B., Todd, M., & Subramanian, G. (2005). Violence in police families: Work-family spillover. *Journal of Family Violence, 20*(1), 3-12.

Karaffa, K. M., & Tochkov, K. (2013). Attitudes toward seeking mental health treatment among law enforcement officers. *Journal of Police and Criminal Psychology, 28*(3), 182–192. https://doi.org/10.1007/s11896-013-9139-8

Kenny, W. P. (2017). *A Grounded Theory Study of the Resiliency Experienced by Police Officers Exposed to Critical Incidents*. Capella University.

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). New York, NY: The Guilford Press.

Komarovskaya, I., Maguen, S., McCaslin, S. E., Metzler, T. J., Madan, A., Brown, A. D., ... & Marmar, C. R. (2011). The impact of killing and injuring others on mental health symptoms among police officers. *Journal of Psychiatric Research, 45*(10), 1332–1336. https://doi.org/10.1016/j.jpsychires.2011.05.004

Kop, N., Euwema, M., & Schaufeli, W. (1999). Burnout, job stress, and violent behavior among Dutch police officers. *Work & Stress, 13*(4), 326-340. https://doi.org/10.1080/02678379950019789

Kurtz, D. L., & Hughs, V. (2021). Using structural equation modeling to explore the role of early strain on later stress responses and aggression by police officers. *Police Practice & Research: An International Journal, 22*(1), 355-369.

Kurtz, D. L. (2012). Roll call and the second shift: the influences of gender and family on police stress. *Police Practice and Research, 13*(1), 71–86.

Kurtz, D. L., Zavala, E., & Melander, L. A. (2015). The Influence of Early Strain on Later Strain, Stress Responses, and Aggression by Police Officers. *Criminal Justice Review, 40*(2), 190–208. DOI: 10.1177/0734016814564696.

Lee, S. (2002). A study of Korean police sergeants stress. *International Journal of Comparative and Applied Criminal Justice, 26*(1), 85-99.

Liberman, A. M., Best, S. R., Metzler, T. J., Fagan, J. A., Weiss, D. S., & Marmar, C. R. (2002). Routine occupational stress and psychological distress in police. *Policing: An International Journal of Police Strategies & Management, 25*(2), 421-441.

Mahoney, A., & Tarakeshwar, N. (2005). Religion's role in marriage and parenting in daily life and during family crises. *Handbook of the psychology of religion and spirituality,* 177–195 .

Maguen, S., Metzler, T. J., McCaslin, S. E., Inslicht, S. S., Henn-Haase, C., Neylan, T. C. & Marmar, C. R. (2009). Routine work environment stress and PTSD symptoms in police officers. *The Journal of Nervous and Mental Disease, 197(10)*, 754-760.

Neidig, Peter H., Russell, Harold E. & Seng, Albert F. (Spring 1992). Interspousal aggression in law enforcement families: A preliminary investigation, Police Studies: *International Review of Police Development 15*, 30-38.

NYPD. (2023). Early Intervention System. New York Police Department. https://www.nyc.gov/site/nypd/stats/reports-analysis/early-intervention-program-reports.page

Papazoglou, K., & Andersen, J. P. (2014). A guide to utilizing police training as a tool to promote resilience and improve health outcomes among police officers. *Traumatology: An International Journal*, *20*(2), 103.

Papazoglou, K., & Tuttle, B. M. (2018). Fighting police trauma: Practical approaches to addressing psychological trauma in law enforcement officers. ***Traumatology****, 24*(3), 193–200. https://doi.org/10.1037/trm0000140

Rapsky, G. R., Rogers, R. L., Bellas, C., Frissora, G. (2020). Racial variation in work-related stress among police officers. *Journal of Ethnicity and Criminal Justice, 18*(2), 167-183

Rebellon, C. J., Manasse, M. E., Agnew, R., Van Gundy, K., & Cohn, E. S. (2012). The relationship between gender and delinquency: An interactionist explanation. *Deviant Behavior, 33*(5), 339-356. https://doi.org/10.1080/01639625.2011.640057

Renzetti, C. M. (2009). Economic stress and domestic violence. *CRVAW Faculty Research Reports and Paper*.

Robbers, M. L. P. (2004). Revisiting the moderating effect of social support on strain: A gendered test. *Sociological Inquiry, 74*, 546−569.

Roberg, R., Novak, K., Cordner, G., & Smith, B. (2022). *Police & Society* (9th ed.) New York, NY: Oxford University Press.

Roberts, N. A., & Levenson, R. W. (2001). The remains of the workday: Impact of job stress and exhaustion on marital interaction in police couples. *Journal of Family and Marriage, 63*(4), 1052-1063.

Rogers, R. L. (2018). Minority status and spirituality among police officers: Blacks and women in a metropolitan department. *Journal of Police and Criminal Psychology, 33*(1), 1-8.

Schut, R. A., Sorenson, S. B., & Gelles, R. J. (2020). Police response to violence and conflict between parents and their minor children. *Journal of Family Violence*, *35*(2), 117-129.

Sigler, R. T. & Thweatt, D. R. (1997). Religiosity and stress for police officers. *Journal of Police and Criminal Psychology, 12(1)*, 13-24.

Stinson, P. M., & Liederbach, J. (2013). Fox in the henhouse: A study of police officers arrested for crimes associated with domestic and/or family violence. *Criminal Justice Policy Review, 24*(5), 601–625. https://doi.org/10.1177/0887403412452426

Stinson, P. M., Liederbach, J., & Freiburger, T. L. (2014). Police sexual misconduct: A national scale study of arrested officers. *Criminal Justice Policy Review, 25*(5), 545–576. https://doi.org/10.1177/0887403412466619

Jaeckle, T., Lavery, C., Grant, H., & Krawczyn, J. (2021). Personal baggage and job stress. In *Practical Considerations for Preventing Police Suicide: Stop Officer Suicide* (pp. 31-54). Cham: Springer International Publishing.

Tjaden, P. G. (2000). *Extent, nature, and consequences of intimate partner violence*. US Department of Justice, Office of Justice Programs, National Institute of Justice.

Tuckey, M. R., & Scott, J. E. (2014). Group critical incident stress debriefing with emergency services personnel: A randomized controlled trial. *Anxiety, Stress, & Coping, 27*(1), 38–54. https://doi.org/10.1080/10615806.2013.809421

Violanti, J. M. (2004). Predictors of police suicide ideation. *Suicide and Life-Threatening Behavior, 34*(3), 277–283. https://doi.org/10.1521/suli.34.3.277.42775

Violanti, J. M., Andrew, M. E., Matsakanova, A., Hartley, T. A., Fekedulegn, D., & Burchfiel, C. M. (2016). Correlates of hopelessness in the high suicide risk police occupation. *Police practice & research : an international journal*, *17*(5), 408–419. DOI: 10.1080/15614263.2015.1015125.

Violanti, J. M., & Aron, F. (1995). Police stressors: Variations in perception among police personnel. *Journal of Criminal Justice, 23*(3), 287–294. https://doi.org/10.1016/0047-2352(95)00012-F

Waters, J. A., & Ussery, W. (2007). Police stress: History, contributing factors, symptoms, and interventions. *Policing: An International Journal of Police Strategies & Management, 30*(2), 169–188. https://doi.org/10.1108/13639510710753207

Wexler, J.G., & Logan, D.D. (1983). Sources of stress among women police officers. *Journal of Police Science and Administration, 11*(1), 46-53.

Zavala, E. (2013). Testing the link between child maltreatment and family violence among police officers. *Crime & Delinquency, 59*(3), 468-483.

Zavala, E, Melander, L. A., & Kurtz, D. L. (2015). The importance of social learning and critical incident stressors on police officers' perpetration of intimate partner violence. *Victims & Offenders, 10*(1), 51-73.

A Comparative Analysis of Cybercrime in Criminal Justice Education: Taking Stock of New York State and the Nation

Jason W. Ostrowe, Ph.D.
St. Joseph's University

Julia Czubak, M.S.
St. Joseph's University, NY

Abstract

This study examined the extent to which undergraduate criminal justice programs in New York State and across the United States integrate cybercrime education into their curricula. Using a content analysis of 50 randomly selected programs (25 in New York State, 25 nationally), course catalogs and program websites were analyzed to determine whether cybercrime courses were required or offered. Results indicate that 36% of New York State programs and 28% of national programs include cybercrime coursework, with New York's four-year institutions demonstrating significantly greater integration than the national sample across both public and private institutions (75% vs. 33.3%). These findings suggest that while New York is leading national trends, substantial curricular gaps remain across criminal justice programs. Strengthening cybercrime education is essential for preparing students to address emerging digital threats faced by the public and justice system at large, ensuring that graduates possess the competencies essential for today's digital environment.

/

Introduction

According to the FBI, various forms of crime involving cyber technologies (cybercrime) have increased from approximately 790,000 in 2020 to 860,000 in 2024 with accompanying financial losses to victims increasing from $6 billion to over $16 billion (FBI-IC3, 2024). Since 2000, when the FBI began tracking complaints of cyber victimization, the Internet Crime Complaint Center (IC3) has received more than 9 million complaints, averaging 836,000 per year (FBI-IC3, 2024). In the past five years alone, the IC3 estimates that 4.2 million complaints of cybercrime have equated to over $50.5 billion in losses to victims, while reports of traditional crime – those reported to the FBI through the Uniform Crime Report (UCR) and National Incident Reporting System (NIBRS) – continue to decrease. Indeed, the most recent publicly available data indicate that both violent and property crime have decreased by 10.3% and 13.1% through the first half of 2024 (FBI, 2024). Similarly, over a similar time period as the existence of IC3, both violent and property crime rates have decreased 25.2% and 46.6% from 2004 through 2023 (FBI, 2024).

Crimes involving cyber technologies reported to IC3 are varied and complex. These include, but are not limited to, investment fraud, ransomware attacks, compromised business email attacks, romance scams, extortion, impersonation, and identity theft. These complexities allow cybercriminals to exploit asymmetries in technical knowledge and intent between some of the most vulnerable people in our society and malicious actors. Indeed, individuals over the age of 60 make up the largest share of cyber complaints and total financial losses due to cybercrime (FBI-IC3, 2024).

It is apparent from these data that those in the criminal justice field, whether as educators, researchers, practitioners, or policymakers, have not kept up with the rapid advancement in

technology and its impact on criminal behavior. Emerging criminological concepts such as computer crime, cybercrime, and cybersecurity have become integral parts of criminal justice and criminological terminology (Payne & Hadzhidimova, 2018). This new reality, along with necessary legal regulations, presents law enforcement and the criminal justice system, writ large, with entirely new and evolving challenges. Despite this, little is known about the extent to which criminal justice programs prepare students to address digital forms of crime. Prior studies have largely focused on cybersecurity education rather than cybercrime within criminal justice. This study addresses this gap by systematically examining the presence of cybercrime coursework in criminal justice programs across New York State and the United States. This understanding will better prepare future criminal justice professionals to respond to emerging cyber and digital threats (Belshaw et al., 2020), thereby better serving the public, helping to ensure public safety, promote cyber awareness, and reduce cyber victimization.

Literature Review

Cybercrime refers to any illegal activity committed using computers, information networks, and digital technologies (Phillips et al., 2022). Early scholars of cybercrime have disaggregated this phenomenon into two typologies: first, those involving one-time attacks using malicious software (e.g., phishing, viruses), and second, those involving prolonged interactions such as cyberstalking and extortion (Gordon & Ford, 2006). More recently, scholars have divided cybercrime into offenses targeting computer systems (e.g., DDoS attacks), and those in which technology facilitates traditional crimes, such as fraud (Phillips et al., 2022). Moreover, with the advent of AI, the definition of cybercrime continues to evolve, incorporating new threats such as anonymous cryptocurrency transactions and offenses related to the Internet of Things (IoT) devices (Phillips et al., 2022).

Cybercrime as a Modern Threat

Due to its worldwide and decentralized character, cybercrime is viewed by many in law enforcement as particularly pernicious to public safety, with considerable obstacles to conventional enforcement agencies (Collier et al., 2021; Curtis & Oxburgh, 2022). In contrast to traditional crime, cybercrime often crosses national borders, and the anonymity offered by digital technology allows criminals to avoid detection (Nouh et al., 2019). To successfully monitor and mitigate cyber risks, law enforcement, businesses, and international organizations must work closely together, as seen by the expanding importance of the private sector in maintaining digital infrastructure (Collier et al., 2021). As a result, cybercrime is not just a technological problem, but a legal, logistical, and sociological one, necessitating the development of contemporary investigative and mitigation tactics, a multidisciplinary approach to prevention, and international cooperation (Collier et al., 2021; Curtis & Oxburgh, 2022). The investigation of which requires highly specialized actors who apply exacting procedures to conduct a forensic investigation across jurisdictions and digital spaces. In this sense, cybercrime is a complex web of interdependencies rather than a collection of individual occurrences. This perspective has been internationally recognized through United Nations resolution 79-243, in which it was announced that there is an "urgent need to strengthen international cooperation to prevent and combat cybercrime, in view of its negative economic and social implications and its ability to undermine sustainable development and the rule of law" (United Nations, 2024).

Cybercrime, in this view, is not just a technical issue, but one that is connected to other pressing global concerns, including corruption, terrorism, human-trafficking, illicit drug trafficking, requiring multidisciplinary experts – a common theme among scholars and

institutions (Phillips et al., 2023). Cybercrime is more than a catalog of online offenses; it is a defining challenge of the modern era, demanding continual adaptation and innovation.

Cybercrime and Criminal Justice Education

Criminal justice education in the United States began in 1916 when August Vollmer launched the first academic courses in this discipline at the University of California (Moriarty & Parsons-Pollard, 2023). It was not until the 1960s, with the support of the federal government, that criminal justice and criminal justice-adjacent programs began to proliferate across the United States (Moriarty & Parsons-Pollard, 2023). Since then, criminal justice as an academic field has continued to grow in popularity with as many as 56,901 bachelor's degrees awarded in 2022 (Sloan et al., 2024). Due to its interdisciplinary nature, criminal justice education incorporates both traditional and emerging fields, including those from the social sciences and ethics to forensics and law (Birzer & Palmiotto, 2002). This rich diversity has led to substantial variation in criminal justice curricula across programs, and students' preparation for a profession with myriad professional possibilities. Indeed, despite establishing standards in criminal justice education programming, the Academy of Criminal Justice Sciences (ACJS) has noted substantial variation among criminal justice programs in educational quality, curriculum requirements, and consistency (Albanese & Tartaro, 2023; Sloan et al., 2024).

Criminal justice programs are intended to provide a foundation in legal, social, and procedural fields, yet cybercrime education includes technical skill development, such as digital investigations and cybersecurity. While students may receive coursework in cybercrime, whether required or through an elective, research indicates that this coursework is typically inadequate and fragmented (Myers & Myers, 2002). As a result, students often lack the specific

skills required to effectively combat cybercrime, despite the increasing importance of digital evidence in law enforcement (Nodeland & Belshaw, 2020). To overcome these limitations, several colleges have developed specialist programs and cybercrime laboratories that provide students with hands-on experience in digital investigations (Nodeland & Belshaw, 2020). These programs enable students to combine academic knowledge with practical experience, better preparing them for employment in cybercrime-focused law enforcement organizations.

Cybercrime Education Across Disciplines

Recent studies have documented emerging multidisciplinary approaches to cybercrime education that bridge criminal justice, computer science, and cybersecurity curricula. For instance, Nodeland, Belshaw, and Saber (2018) found that criminal justice programs collaborating with information technology departments produced more comprehensive student competencies in digital forensics and investigative skills. Similarly, Jacob, Peters, and Yang (2019) identified interdisciplinary cybersecurity initiatives that integrate policy, legal, and behavioral components, demonstrating that collaborative curricular models enhance applied readiness for cyber-related careers. These findings suggest that while dedicated cybercrime coursework remains limited, cross-listed courses represent a
viable strategy for narrowing existing educational gaps. Integrating such models within criminal justice programs could provide a foundation for professional readiness in digital investigations, digital evidence handling, and interagency cooperation.

Cybercrime and Criminology

There is a recognition among criminology scholars of the importance of reevaluating conventional criminological theories for the digital age (Dupont & Whelan, 2021; Tatarinova, et

al., 2016). Some examples of this reevaluation include efforts to combine traditional criminological ideas with digital-specific methodologies like routine activities theory (Cohen & Felson, 1979) to explain vulnerabilities to cyberattacks (Onwuadiamu, 2025). As well, Gottfredson and Hirschi's (1990) control theory has been applied to explain how deficient self-control corresponds with a greater propensity to participate in criminal conduct, such as internet fraud, hacking, and unlawful material distribution (Onwuadiamu, 2025). For example, individuals with impulsivity and a desire for immediate gratification are more likely to engage in cybercrime, which explains the prevalence of phishing scams and hacking forums where offenders quickly reap benefits with little risk of detection (Leukfeldt et al., 2020). Furthermore, social learning theory (Akers, 1998) implies that cybercrime stems from social interactions and the internalization of deviant norms within digital communities, such as hacking groups or online networks that promote fraud and cyberattacks (Onwuadiamu, 2025). The evolution of cybercrime thus compels criminology not only to adapt existing theories but also to develop new analytical frameworks that account for the unique characteristics of digital offenses.

Research Problem

With the proliferation and evolution of technology across all domains of society, the science of protecting against cybercrime requires expansion, yet numerous gaps in our knowledge remain. Scholars such as Quintana et al. (2024), Nodeland et al. (2018), Payne (2018), and Jacob et al. (2019) have primarily focused on analyzing the scope and level of cybersecurity education at the undergraduate and graduate levels, emphasizing the need to strengthen protection in these domains. However, to effectively counteract technology used for criminal purposes and individuals exploiting the internet for personal gain, a deeper understanding of the fundamentals of cybercrime is critical. As a field, cybercrime provides

comprehensive knowledge to students, yet little is known about what is offered to criminal justice students – those who will one day be tasked with addressing the challenge of cybercrime across society (Nouh et al., 2019).

Despite the fact that it has grown to be a prominent topic in public discourse, criminal justice programs have had difficulty remaining current with emerging risks due to the speed and proliferation of technical change (Quintana et al., 2024). Criminal justice educators should not be complacent in the belief that the next generation of criminal justice professionals will adapt to this new threat since they were raised as digital natives – cybercrime and cyber investigations require specific skills, education, and training (Quintana et al., 2024) beyond the familiarity of everyday users of digital technology. To address these challenges, it is necessary to consider how best to prepare students for careers in criminal justice that involve a cybercrime element, such that their education integrates elements of law, computer science, forensics, ethics, and sociology. This holistic approach will better prepare students to effectively combat cybercrime, analyze digital threats, and protect data in an increasingly digital environment (United Nations & UNODC, 2019). Adopting this strategy is all the more pressing since students who aspire to a criminal justice career may not receive the exposure necessary to address and conceptualize crime prevention, digital investigations, jurisdictional awareness, the law, and its relation to cybercrime. Failing to do so is particularly troubling since the main governmental apparatus to address cybercrime is law enforcement (Nouh et al., 2019).

To explore these gaps, this study sought to determine the extent to which cybercrime was required or offered in criminal justice programs across higher education institutions in New York State and the other states in the U.S. This study aimed to address the following three research questions.

RQ1: To what extent do criminal justice programs in New York State require or offer a cybercrime course?

RQ2: To what extent do criminal justice programs in the United States, excluding New York State, require or offer a cybercrime course?

RQ3: How do criminal justice programs in New York State compare to criminal justice programs in the United States as it relates to cybercrime education?

Method

To address these research questions, a content analysis of 25 randomly selected undergraduate criminal justice programs in New York State, and 25 randomly selected undergraduate criminal justice programs across the United States, excluding New York State, was conducted. The population and sample were selected from the ACJS criminal justice program directory (Sloan III et al., 2023). This online open-source tool serves as a database of over 2,000 criminal justice and criminal justice-related programs in the United States (ACJS, 2024). This interactive dashboard, equipped with various filters for adjacent programs, locations, and other categorical data, served as the sampling frame for this study.

All criminal justice undergraduate programs in New York State (N=79) were identified in the database and exported to Google Sheets. Each institution was disaggregated as public or private, 2-year or 4-year program, and by New York State Region. A random number generator was used to select 25 of the 79 institutions, each with an equal probability of selection. To ensure a geographically diverse and nationally representative sample, a random number generator selected 25 states in three iterations, each with an equal probability of

selection (1/49). As such, there were primary, secondary, and tertiary states selected by the generator 25 times. This was done to prevent a state from being selected in which there was no program in the ACJS database. In this instance, the secondary state, or if necessary, the tertiary state, would be selected.

For the national sample, after the 25 states were selected, the "major" filter function in the ACJS database was applied to include only criminal justice-specific programs (CJ-General; CJ-Law Enforce Admin; CJ/Policing Science; CJ/Safety Studies); the remainder were criminal justice adjacent, but not criminal justice-specific programs (e.g., criminology, forensics, etc.). Next, a random number generator was applied to four colors, attributed to each specific program type in the ACJS database for further randomization in the event a state had multiple categories of criminal justice programs. Lastly, another random number generator was applied to the 25 selections, from 1 to 10, to serve as counts in the event there were duplicative programs within a selected state. Descriptive statistics for both samples are presented in *Table 1.*

In conducting the analysis, the principal researcher reviewed the most recent course catalog and program information contained on the institution's website for both samples. This approach allowed for an accurate assessment of which institutions incorporate cybercrime-related topics into their curricula and whether a cybercrime course was required as part of the program or offered as an elective. Since cybercrime-related courses vary in title, reflecting variations in academic traditions and curricula, descriptions of cybercrime related courses identified by Payne and Hadzhidimova (2018) were applied for cybercrime operationalization. The findings from the principal researcher were coded as "0" "Not Required or Offered" or "1" Required or Offered". This first phase of analysis was followed by the

research assistant, who cross-examined all programs and findings to ensure validity and reliability. After cross-validation, data analysis was performed using SPSS v.29.

Analysis

Table 1. Sample Descriptives: National & New York State

Jurisdiction	**Public**	**Private**	**2-year**	**4-year**
National	13	12	7	18
New York State	17	8	13	12
Subtotals	**30**	**20**	**20**	**30**

Random selection produced geographically diverse, but uneven, distributions for both samples. While the national sample was classified by ACJS Region (Figure 1), the regions of New York State were compressed geographically for acuity and comparative purposes (Figure 2). All regions of both samples were represented in this study.

Among the national sample, 28% of the criminal justice programs required or offered a cybercrime course (Figure 3) compared to 36% for New York State (Figure 4). To determine if there was a significant relationship between jurisdiction and cybercrime in criminal justice, a chi-square test of independence was conducted, in which the results were not statistically

significant, $\chi^2(1, N = 50) = 0.368$, $p = .54$. This same analysis was conducted between national 4-year and New York State 4-year year institutions (33.3% to 75%), with a $\chi^2(1, N = 30) = 5.00$, p=.025, in which the results were statistically significant. Chi-square tests of independence were run on national public and New York State public institutions (15.4% to 23.5%), with a $\chi^2(1, N = 30) = 0.305$, p=.580, and between national private and New York State private (41.7% to 62.5%), with a $\chi^2(1, N = 20) = 0.833$, p=.325, both of which were not statistically significant. Additionally, intra-jurisdictional analyses were conducted for national private and public institutions (41.7% to 15.4%), with a $\chi^2(1, N = 25) = 2.13$, p=.144, and New York State private and public institutions (62.5% to 23.5%), with a $\chi^2(1, N = 25) = 3.58$, p=.058. Although both chi-square tests of independence were not statistically significant at the $p<.05$ level, New York State public and private interdependence was meaningfully significant in consideration of the size of the sample to population, therefore reassessed with a risk of $p<.10$.

Figure 3. National Sample

Figure 4. New York State Sample

Since both samples were randomly selected from a larger population, confidence intervals were calculated at the 95% level for each variable group and are presented in *Table 2* for national and New York State comparisons, and in *Table 3* for intra-jurisdictional comparisons. There is substantial overlap of all confidence intervals in *Table 2*, with the exception of national and New York State 4-year institutions. This finding is aligned with the significant chi-square test for the same variable group. For the intra-jurisdictional analysis, there were large and overlapping confidence intervals due in part to the small sample size; however, New York State public and private institutions (Table 3) show substantial differentiation, consistent with results from the chi-square test.

Table 2. Confidence Intervals by Variable Group

				95% CI			
Jurisdiction	**n**	**Observations**	**Percent**	**LL**	**UL**	χ^2	*p*
National	25	7	28	10.4	45.6		
New York	25	9	36	17.2	54.8		
Total	50	16	32	18.6	45.3	.368	.544

4-year							
National	18	6	33.3	11.6	55.1		
New York	12	9	75	50.5	99.5		
Total	30	15	50	31	69	5.00**	.025
Public							
National	13	2	15.4	0.0	37.7		
New York	17	4	23.5	1.5	46.4		
Total	30	6	20	4.8	35.2	.305	.580
Private							
National	12	5	41.7	9.2	74.7		
New York	8	5	62.5	19.6	100		
Total	20	10	50	26	74	.833	.325

**$p<.05$

Table 3. Confidence Intervals, Intra Jurisdiction

Intra				**95% CI**			
Jurisdiction	**n**	**Observations**	**Percent**	**LL**	**UL**	χ^2	***p***
National							
Private	12	5	41.7	9.2	74.7		
Public	13	2	15.4	0.0	37.6		
Total	25	7	28	9.0	46.9	2.13	.144
New York State							
Private	8	5	62.5	19.6	99.5		
Public	17	4	23.5	1.5	46.4		
Total	25	9	36	15.7	56.2	3.58*	.058

*$p<.10$

Discussion

Cybercrime courses in criminal justice education are infrequently required or offered across both populations, as indicated by the confidence intervals for national and New York State institutions. This is unsurprising considering that cybercrime is a relatively new social phenomenon, and educational institutions will often experience a lag in researching, proposing, and implementing new courses to an established curriculum. While the presence of a cybercrime course as part of a criminal justice program was undifferentiated between national public and New York State public institutions, as well as between national private and New York State private institutions, New York State 4-year institutions significantly differed from national 4-year institutions, with a much higher percentage of the study population requiring or offering cybercrime. This finding is especially noteworthy for criminal justice programs and students at 4-year institutions in New York State. From these findings, we can infer that New York State is leading the rest of the nation in this critical and emerging topic.

The intra-jurisdictional comparisons also captured meaningful insights. While there was no difference in cybercrime courses between national public and private institutions, the findings from the New York State intra-comparison indicate that private schools within the state are driving the adoption of cybercrime significantly greater than public institutions. A few notes of caution are necessary with this inference; first, we applied a $p<.10$ level of risk here, and while we were well under that probability at $p.=.058$, there still exists an elevated risk of a Type I error. We are confident, however, that due to the sample size relative to the population and meaningfulness of the findings that this risk is justified. Second, the New York State private sample did not include any 2-year institutions, while the New York State public sample included 13. This is to the great detriment of the intra-jurisdictional comparison since none of these

institutions required or offered cybercrime courses as part of their criminal justice curricula. When we removed 2-year institutions in New York State from our analysis to conduct a direct New York State 4-year public to private comparison, we found no significant differences in their requiring or offering cybercrime courses. Noteworthy here is that these results are not reported because of the extremely small sample sizes after 2-year institutions are removed, leading to unreliable inferences.

From these results, we can conclude with a high degree of confidence that institutions of higher education in New York State are at the forefront of integrating cybercrime coursework for criminal justice students. This trend appears to be driven primarily by private 4-year institutions within the state. The evidence also suggests that 4-year public institutions in New York State are contributing to these changes; however, due to the small sample, we cannot confidently assert this at this point. It is also important to note that we found no evidence that this trend is occurring at 2-year institutions within or outside the state. Indeed, among the 20 institutions offering 2-year criminal justice programs for the entire study, only one offered a cybercrime course, and that institution was part of the national sample.

As indicated by these results, the limited integration of cybercrime coursework has substantial implications for criminal justice professionals. As digital evidence becomes central to a growing number of investigations, and students entering criminal justice professions will require a baseline literacy in cybercrime and digital awareness. Without this preparation, criminal justice agencies will face an ever-widening gap in their ability to effectively investigate and mitigate cybercrime. These findings underscore the professional readiness gap facing criminal justice students, who will increasingly encounter digital evidence without the curricular foundation necessary for effective response in today's digital environment.

Limitations and Future Research

There were analytical constraints due to the size of both samples. In the New York State sample, this issue prevented a deeper analysis of public and private institutions after removing 2-year criminal justice programs. Since the entire population of New York State institutions in the ACJS database comprises just 79 programs, future research should include a more complete sample, allowing for further analysis. The national sample of 25 was very small compared to its population, less New York State, in the ACJS database at 1441. Future research could explore the relationship between criminal justice education and cybercrime using a larger sample size. Increasing the sample size for both the national and New York State samples would also reduce the range of the confidence intervals, allowing for a more precise measure of the proportion of criminal justice programs that have integrated cybercrime into their curricula.

Beyond examining the extent to which cybercrime has been integrated into criminal justice education, future research could examine the quality, relevance, and content of cybercrime education. As well, future research could explore the impact of cybercrime victimization on vulnerable groups such as the elderly.

Regardless of which path researchers take, the findings from this study strongly suggest that the integration of cybercrime education within criminal justice coursework is both an academic imperative and a professional necessity to ensure graduates possess the digital competencies required in the 21st century. The question then is: Are criminal justice educators ready for the challenge?

AI disclosure: All research, writing, data collection, and data analysis were conducted by the principal researcher and research assistant without the use of any AI programs. SPSS output was uploaded to ChatGPT to cross-validate inferences and output interpretation. As well, a draft of this paper was uploaded to ChatGPT for feedback on grammar and edits. However, all content, revisions, analyses, interpretations, inferences, and conclusions are the exclusive product of both researchers.

References

Albanese, J., & Tartaro, C. (2023). Quality standards for criminal justice education: the long and winding road. *Journal of Criminal Justice Education, 35(2)*, 318–334.

Belshaw, S. H., Nodeland, B., Underwood, L., & Colaiuta, A. (2020, January). *Teaching about the dark web in criminal justice or related programs at the community college and university levels.* DigitalCommons@Kennesaw State University. https://digitalcommons.kennesaw.edu/jcerp/vol2019/iss2/5/

Birzer, M. L., & Palmiotto, M. J. (2002). Criminal justice education: Where have we been? And where are we heading? *The Justice Professional, 15(3)*, 203–211. https://doi.org/10.1080/08884310215667

Collier, B., Thomas, D. R., Clayton, R., Hutchings, A., & Chua, Y. T. (2021). Influence, infrastructure, and recentering cybercrime policing: evaluating emerging approaches to online law enforcement through a market for cybercrime services. *Policing & Society, 32(1)*, 103–124. https://doi.org/10.1080/10439463.2021.1883608

Curtis, J., & Oxburgh, G. (2022). Understanding cybercrime in 'real world' policing and law enforcement. *The Police Journal Theory Practice and Principles, 96(4)*, 573–592. https://doi.org/10.1177/0032258x221107584

Dupont, B., & Whelan, C. (2021). Enhancing relationships between criminology and cybersecurity. *Journal of Criminology, 54(1)*, 76 92. https://doi.org/10.1177/00048658211003925

Federal Bureau of Investigation. (2024, September 30). *FBI releases 2024 quarterly crime report and use-of-force data update (Q2).* U.S. Department of Justice. https://www.fbi.gov/news/press-releases/fbi-releases-2024-quarterly-crime-report-and-use-of-force-data-update-q2

Federal Bureau of Investigation, IC3. (2024, December 12). 2023 Internet Crime Report. In *2023*

Internet Crime Report. https://www.ic3.gov/Media/PDF/AnnualReport/2023_IC3Report.pdf

Gordon, S., & Ford, R. (2006). On the definition and classification of cybercrime. Journal in *Computer Virology, 2(1)*, 13–20. https://doi.org/10.1007/s11416-006-0015-z

Hawdon, J. (2021b). Cybercrime: victimization, perpetration, and techniques. *American Journal of Criminal Justice, 46(6)*, 837–842. https://doi.org/10.1007/s12103-021-09652-7

Jacob, J., Peters, M., & Yang, T. A. (2019). *Interdisciplinary Cybersecurity: Rethinking the approach and the process.* In Advances in Intelligent Systems and Computing (pp. 61–74). https://doi.org/10.1007/978-3-030-31239-8_6

Moriarty, L. J., & Parsons-Pollard, N. (2023). Criminology and Criminal Justice Education and the search for quality: then and now. *Journal of Criminal Justice Education, 35(2)*, 296–312. https://doi.org/10.1080/10511253.2023.2272471

Myers, L. J., & Myers, L. B. (2002). Preparing for high technology crime: An educational assessment of criminal justice and criminology academic programs. *Journal of Criminal Justice Education, 13(2)*, 251-271.

Nodeland, B., & Belshaw, S. (2020). Establishing a criminal justice cyber lab to develop and enhance professional and educational opportunities. *Security and Privacy, 3(5)*. https://doi.org/10.1002/spy2.123

Nodeland, B., Belshaw, S., & Saber, M. (2018). Teaching cybersecurity to criminal justice majors. *Journal of Criminal Justice Education, 30(1)*, 71–90. https://doi.org/10.1080/10511253.2018.1439513

Nouh, M., Nurse, J. R., Webb, H., & Goldsmith, M. (2019). Cybercrime investigators are users too! Understanding the socio-technical challenges faced by law enforcement. https://www.ndss-symposium.org/wp-content/uploads/2019/02/usec2019_02-3_Nouh_paper.pdf

Onwuadiamu, G. (2025). Cybercrime in criminology: A systematic review of criminological theories, methods, and concepts. *Journal of Economic Criminology*, (8), 100136 https://doi.org/10.1016/j.jeconc.2025.100136

Payne, B. K., & Hadzhidimova, L. (2018). Cyber security and criminal justice programs in the United States: Exploring the intersections. *International Journal of Criminal Justice Sciences, 13(2)*, 385. https://doi.org/10.5281/zenodo.2657646

Phillips, K., Davidson, J. C., Farr, R. R., Burkhardt, C., Caneppele, S., & Aiken, M. P. (2022). Conceptualizing cybercrime: Definitions, typologies and taxonomies. *Forensic sciences, 2(2)*, 379-398.

Quintana, K., Chubb, C. S., Olson, D., & Kosloski, A. (2024). Cybersecurity Skills, Knowledge and Abilities for Criminal Justice Professionals: An Exploratory Study of Practitioners' Perspectives. *Journal of Cybersecurity Education Research and Practice, 2024(1)*. https://doi.org/10.62915/2472-2707.1175

Leukfeldt, R., Holt, T. J., Kotzé, J., Cooney, M., Dollinger, B., van de Ven, K., Mulrooney, K. J. D., McVeigh, J., Ruggiero, V., Harkin, D., Lavorgna, A. & Di Ronco, A. (2020). The human side of cybercrime. In R. Leukfeldt & T. J. Holt (Eds.), *Studies in Crime and Society*. Routledge.

Tatarinova, L. F., Shakirov, K. N., & Tatarinov, D. V. (2016). Criminological analysis of determinants of cybercrime technologies. *International Electronic Journal of Mathematics Education, 11(5)*, 1127-1134.

United Nations, General Assembly. (2024, December 31). Resolution 79-243: United Nations Convention against Cybercrime. Downloaded from: https://docs.un.org/en/a/res/79/243

United Nations Office on Drugs and Crime. (2020). Digest of cyber organized crime (2nd ed.). https://www.unodc.org/documents/data-and-analysis/tocta/10.Cybercrime.pdf

United Nations & UNODC. (2019). Cybercrime. In Teaching Guide: https://sherloc.unodc.org/cld/uploads/pdf/education/tertiary/Crime%20Type/Cybercrime/Cybercrime_Teaching_Guide.pdf

Sloan III, J. J., Fisher, B. S., & Engle, T. A. (2024). Where Are We Now? The Current State of Justice-Related Education. *Journal of Criminal Justice Education, 35(2),* 253–288. https://doi.org/10.1080/10511253.2024.2306809