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AN EXPLORATORY STUDY ON THE IMPACT OF DEFENSIVE TACTICS TRAINING ON POLICE RECRUITS' SELF-EFFICACY IN HANDLING VIOLENT ENCOUNTERS

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ABSTRACT

Police officers are often required to use physical force to effectively protect themselves as well as the public. To prepare officers for these physical demands, recruits receive training in defensive tactics and physical fitness during their Police Academy instruction. The present study aimed to explore the impact of martial arts training and police defensive tactics curricula on self-efficacy. Additionally, the study aimed to develop a reliable scale for measuring an officer's self-efficacy and use the scale to evaluate the impact of the Academy training on recruits' self-efficacy. Most of the participants credited the academy defensive tactics (98.5%) and fitness training (88.1%) with improving their self-efficacy. These results support the importance of martial arts and defensive tactics training on improving recruit officers' self-efficacy toward handling violent encounters prior to entering the law enforcement workforce.

An Exploratory Study on the Impact of Defensive Tactics Training on Police Recruits' Self-Efficacy in Handling Violent Encounters

Jeremy M. Butler, Neha Gothe & Steven Petruzzello

Police officers are responsible for protecting citizens and resolving complex, rapidly evolving situations. Because of this, they are often required to use physical force in order to safely carry out their duties. According to the U.S. Department of Justice [2020], 549,892 police officers were assaulted in the United States between 2010 and 2019. Of these assaults, 436,630 were carried out using personal weapons (i.e., hands, fists or feet) and 29.1% of those attacks resulted in injuries to the officer. The increased likelihood of being involved in force encounters as a law enforcement professional threatens the safety of both officers and civilians. Therefore, an evaluation of the physical skills taught in police training, in addition to how these skills impact an officer's confidence and performance in handling non-lethal force situations, is needed. Additionally, identifying whether targeting potential recruits with martial arts experience may be of benefit to the field of policing, is worth exploring. Creating change in police training culture by increasing the value placed on martial arts and defensive tactics training may be a potential solution to keeping officers and civilians safe under high-pressure non-lethal force encounters.

Nieuwenhuys, Calijouw, Leijsen, Schmeits, and Oudejans [2009] conducted a study on police officers' performance on five arrest and self-defense skills. Based on a skill performance scale developed by police instructors, officers' performance declined during high-pressure environments. Renden, Landman, Savelsbergh, and Oudejans [2015] revealed similar findings regarding the impact of psychological factors (i.e., anxiety, pressure) on performance. They examined how Dutch police officers perceived their ability to handle violent encounters and their preparation for using arrest and self-defense skills. The results indicated that additional martial arts training and on the job experience was associated with perceptions of better performance, but officers who experienced anxiety often reported more issues. Officers also felt the skills taught and the frequency of training needed improvement. Renden, Savelsbergh, and Oudejans [2017] additionally found that reflex-based self-defense training was associated with better performance for officers in high-pressure arrest situations.

Ellifritz [2013] conducted a study with agencies in Ohio (United States), focusing on unarmed self-defense and control tactics, which examined how much training officers received as well as their perceptions of that training. Despite their reports of a desire for more training, their confidence levels in their defensive tactics skills were 'extraordinarily high'. Additionally, the more training officers received (by the department or off duty), the more confident they were in their abilities with handling situations.

SELF-EFFICACY THEORY

Self-efficacy, a major construct of Bandura's Social Cognitive Theory, is an individual's belief in their ability to produce a desired outcome in a specific situation [Bandura 1997]. Self-efficacy influences what actions people choose to take, the amount of effort they invest, and how hard

they try when faced with obstacles [Bandura 1982; Bandura 1997]. Additionally, it is enhanced with experiences of personal mastery, observing others performing the behavior, social persuasion, and positive physiological/emotional states during performance [Bandura 1977; Bandura 1986]. Use of force self-efficacy refers to 'self-confidence in determining the appropriate amount of force in a use of force situation' [Torres 2020]. A pilot study conducted by Torres [2020] indicated that martial arts training and use of force self-efficacy predicted officer confidence in going hands-on. Officer self-efficacy may play a critical role in the safety of civilians as well as officers in use of force encounters. While previous studies have given insight into various psychological factors that impact police performance in non-lethal force encounters (e.g., anxiety, stress, confidence), minimal research has been conducted on police academy recruit training within this regard.

POLICE ACADEMY TRAINING

Over the past 60 years, the formal process of basic police training has become commonplace across the United States. Before this time, police training was largely informal, unstructured, and inadequate considering the demands of the job [Alpert & Dunham 1997; Walker 1999]. Today, there are police training academies in every state with varying sizes and standards. The training curricula include, but are not limited to, education on federal and state crime laws, traffic enforcement, physical training (including defensive tactics), firearms training, driving skills, arrest procedures, and officer safety [Chappell 2008]. The physical training is generally aimed at increasing the officers' physical fitness and teaching the use of specific tactics to effectively control and subdue subjects. Defensive and control tactics training includes all forms of less-lethal use of force options such as come-along holds, manual restraints, unarmed self-defense, pepper spray, impact weapons, and electronic control devices, most of which are based in martial arts [National Consensus Policy and Discussion Paper on Use of Force 2017].

Previous research on police recruits has focused on assessing various instructional approaches to the overall training curricula [Chappell 2008; Vander Kooi & Palmer 2014; Werth 2011], defensive tactics training approaches [O'Neill, O'Neill, Weed, Hartman, Spence, & Lewinski 2019], and fitness training [Arvey, Landon, Nutting, & Maxwell 1992; Crawley, Sherman, Crawley, & Cosio-Lima 2016; Korre, Loh, Eshelman, Lessa, Porto, Christophi, & Kales 2019; Marins, David, & Del Vecchio, 2019; Orr, Dawes, Pope, & Terry 2018; Shusko, Benedetti, Korre, Eshleman, Farioli, Christophi, & Kales 2017]. However, as shown above, studies addressing officer perceptions of their defensive tactics training and personal abilities have primarily targeted veteran officers. Understanding the effectiveness of police academy curricula and martial arts through a recruit officer's perceptions of their abilities to execute the training (i.e., self-efficacy), may lend insight toward refining approaches to improving their overall safety and wellness.

AIMS AND HYPOTHESIS

The aims of this study were twofold. First, a self-efficacy scale was developed and tested for reliability, specifically for assessing a police officer's perception of their ability to effectively protect themselves using defensive tactics. Second, the scale was used to explore the impact that police academy defensive tactics training has on self-efficacy with regard to an officer's preparedness for handling a non-lethal, violent encounter. Recruit officers who were enrolled in a Basic Law Enforcement Training program (i.e., the Academy) at the University of Illinois Police Training Institute were assessed before they began their training and upon completion of their training. It was hypothesized that: (1) recruit officers would have a moderate level of baseline self-efficacy before they began training; (2) considering martial arts experience has been associated with perceptions of better performance [Ellifritz, 2013; Renden et al. 2015], recruit officers with previous martial arts or self-defense training would have a baseline level of self-efficacy higher than the untrained group mean; and (3) recruit officers would have an overall increase in self-efficacy after the Academy training. Additional analyses were conducted on the impact of fitness training, subject demographics, and type of martial arts background on self-efficacy.

METHOD

Participants

Study participants were solicited from recruits attending one of three University of Illinois Police Training Institute Basic Law Enforcement (i.e., the Academy) classes. To be included in the primary measures for analysis, the recruit must have successfully completed the Academy training, have provided information on their martial arts or self-defense background, and completed the self-efficacy scale before and after the Academy. Of the recruits enrolled ($N = 185$) across the 3 Academy classes, 46 recruits did not complete both surveys, 2 recruits chose not to participate, and 3 recruits did not finish the Academy. A total of 134 respondents (72% response rate; 108 males, 26 females; $M_{age} = 26.53$; $SD_{age} = 4.42$; age range: 20 – 41 years) completed all measures and were included in the primary analyses.

Police Training Institute

The training intervention for this study was administered via the University of Illinois Police Training Institute (PTI) Basic Law Enforcement Academy. PTI holds multiple 14-week, 560-hour resident academy training courses throughout the year to prepare recruits to excel as police officers in the state of Illinois. Data for the 3 classes assessed in this study were collected between May 2018 and April 2019.

Within the area of physical conditioning and use of force, recruits receive 14, 4-hour blocks of firearms training, 13, 4-hour blocks of arrest and control tactics training (i.e., defensive tactics), daily 1 hour physical fitness training sessions, and 8 hours of verbal de-escalation training. The arrest and control tactics base curriculum includes standing control positions and takedowns, handcuffing tactics from various positions, pressure points, weapon retention, and ground defense tactics. The ground defense techniques, which are primarily derived from the art of Brazilian Jiu-Jitsu, include tactics for safely getting up from the ground, tactics for getting past a subject's legs on the ground, escaping from the bottom while being mounted, and submissions from the bottom if someone is between the officer's legs grabbing their weapon. The daily physical fitness training consists of total body calisthenic exercises including jogging/running, jumping jacks, push-ups, pull-ups, squats, lunges, and stretching [Schlosser 2013].

Procedures

With the exception of the pre- and post-training data for this first class, the survey was administered online via Qualtrics to the PTI classes in person before the first defensive tactics (DT) training session and upon completion of the last DT session. The pre- and post-training surveys for the first class were administered via email using a Word document. Prior to any data collection, the investigator explained the study, provided participants with the informed consent, allowed participants time to read it, and answered any questions they had. The investigator emphasized that participation was completely voluntary, all individual responses would be kept confidential, and that none of the instructors or employees at PTI would have access to participant responses. University of Illinois Institutional Review Board approval was obtained prior to any data collection.

Police defensive tactics self-efficacy scale

Participants completed a baseline questionnaire including items regarding demographic information such as sex, age, BMI, race/ethnicity, level of education, and previous martial arts/self defense training experience (see Table 1). Upon completing the baseline questionnaire, participants completed the self-efficacy scale specifically created for assessing a police officer's perception of their ability to effectively protect themselves using DT in a non-lethal, violent encounter. Considering there are currently no scales, to our knowledge, that specifically assess police DT and non-lethal force self-efficacy, the scale was created to contribute to this line of research. The scale constructed for this study closely followed Bandura's [2006] instructions for creating self-efficacy scales. According to Bandura, "There is no all-purpose measure of perceived self-efficacy" [Bandura 2006: 307]. Since most 'all-purpose' self-efficacy scales may have limited relevance to the domain of functioning, they may also be of limited explanatory and predictive value [Bandura 2006].

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In the nine-item scale created for this study, officers were asked to rate how confident they were that they could perform each task. Examples of survey items included: 'I can effectively control a violent subject that is bigger than me' and 'I can think clearly while engaged in a violent encounter'. The rating scale ranged from '0' signifying 'Cannot do at all', to '100' signifying 'Highly certain can do'. The post-training survey was identical to the pre-training survey. However, for the post-training survey, additional items were added to assess whether the academy arrest and control tactics/DT training, any additional martial arts/self-defense training, and/or the fitness training they received impacted their responses.

Pilot group testing of Cronbach's alpha

Pre-training data from the first academy class ($n = 60$) was used to test the reliability of the self-efficacy scale using Cronbach's alpha. The results yielded a strong reliability coefficient of .930. The pre-training and post-training data from this class were included in the overall data analysis and no changes were made to the scale before administering it to the other participants.

Data analysis

Data analysis was done using SPSS version 24.0. The baseline questionnaire and the self-efficacy scale were first checked for missing data and errors. An Excel data file was created with participant ID numbers and their responses. The participants' body mass indices were calculated in $\text{kg}\cdot\text{m}^2$ using self-reported height and weight data. The self-efficacy scale responses were calculated for each participant by summing the confidence scores across the items and dividing that number by the total number of items. All demographic data and self-efficacy scores were transferred to an SPSS data file for analysis.

To investigate the primary hypotheses, various analyses were used. Means and standard deviations for pre- and post-training self-efficacy were calculated and a paired samples t -test was used to evaluate the differences in pre- vs post-training self-efficacy scores. One-way ANOVAs were used to compare the mean self-efficacy scores based on martial arts/self-defense experience. Additionally, an independent samples t -test was used to compare pre-training scores by gender, and frequency distribution tables were used to evaluate the specific variables that impacted improvements in the officers' self-efficacy scores (e.g., Academy arrest and control tactics, fitness training).

RESULTS

An overview of demographic data from the participants is presented below. To evaluate the reliability of the self-efficacy scale, Cronbach's alphas were measured for each time point. This yielded reliability coefficients of .959 for the pre-training time point ($N = 182$) and .964 for the post-training time point ($N = 134$).

Table 1. Demographic Data

| | | Males | Females | Group Mean | N |
|-----------------------------------------------|----------------------------------------|-------|---------|---------------|-----|
| Participants | | 151 | 31 | | 182 |
| Mean Age | | 27 | 25 | 27.0 | 182 |
| Mean BMI | Pre | 27.3 | 24.1 | 26.8 | 180 |
| | Post | 27.2 | 24.1 | 26.6 | 133 |
| Age Groups | 20-29 | 109 | 25 | | 134 |
| | 30-39 | 38 | 6 | | 44 |
| | 40-49 | 4 | 0 | | 4 |
| | Total | 151 | 31 | | 182 |
| Race/Ethnicity | White | 92 | 20 | | 112 |
| | African American | 11 | 2 | | 13 |
| | Hispanic or Latino | 14 | 3 | | 17 |
| | Asian | 1 | 0 | | 1 |
| | American Indian or Alaska Native | 0 | 1 | | 1 |
| | Native Hawaiian or Pacific Islander | 0 | 1 | | 1 |
| | Other | 1 | 0 | | 1 |
| | Total | 119 | 27 | | 146 |
| Education | High School Diploma/GED | 7 | 0 | | 7 |
| | Some college, no degree | 30 | 7 | | 37 |
| | Associate degree | 19 | 6 | | 25 |
| | Bachelor's degree | 59 | 13 | | 72 |
| | Master's degree | 3 | 1 | | 4 |
| | Total | 118 | 27 | | 145 |
| Previous Martial Arts/Self-Defense | Yes | 73 | 12 | | 85 |
| | No | 78 | 19 | | 97 |
| | Total | | | | 182 |
| Level of Experience | No Experience | 78 | 19 | | 97 |
| | Minimal Experience | 19 | 5 | | 24 |
| | Experienced | 51 | 7 | | 58 |
| | Total | 148 | 31 | | 179 |

As hypothesized, recruit officers ($N = 182$) had a moderate level of pre-training self-efficacy, with a mean score of 65.15 ($SD = 19.22$). A paired-samples t -test was conducted to compare the mean pre- and post-training scores for participants who completed the measure at both time points ($N = 134$). The mean pre-training score was 64.56 ($SD = 20.60$), and the mean post-training score was 85.62 ($SD = 10.97$). Recruits in this group had a moderate baseline self-efficacy score and a significant increase was observed at post-training ($t(133) = 12.80, p < .001, d = 1.28$).

An independent samples t -test comparing male ($n = 151$) and female ($n = 31$) recruits who completed the pre-training self-efficacy measure ($N = 182$) also revealed a significant difference between the groups ($t(180) = 5.461, p < .001$). Female recruits had a significantly lower mean pre-training score ($M = 49.20; SD = 20.85$) than male recruits ($M = 68.42; SD = 17.19$), with a Cohen's d effect size of .24. A median split (median age = 26 years) comparison of younger versus older recruits revealed that older recruits ($M = 31.26$ yrs; $SD = 3.67$) had a significantly higher mean pre-training self-efficacy score (68.47 vs. 62.71, $t(180) = 2.012, p = .046$) compared to the younger recruits ($M = 23.58$ yrs; $SD = 1.65$) with a Cohen's d effect size of .30.

A one-way ANOVA was computed comparing the baseline mean scores of participants with no martial arts experience, minimally experienced participants (less than 1 year), and experienced participants (1 year

or more). A significant difference was found among the participants ($F(2,176) = 14.04, p < .001$). Tukey's HSD was used to determine the nature of the differences between the participants. This analysis revealed that participants who had no martial arts experience scored lower ($M = 59.09, SD = 19.38$) than participants with more than 1 year of experience ($M = 74.97, SD = 15.84$) with a large effect size ($\eta_p^2 = .138$). Participants with more than 1 year of experience and those with less than a year of experience were not significantly different from each other.

A one-way ANOVA was also computed to compare the mean pre-training scores of participants by category of martial arts/self defense training. The categories included: military training, defensive tactics, traditional arts, combat sports, and those with experience in multiple categories (i.e., blended group) (see Table 2). The blended group had the most participants represented ($n = 25$) and the highest mean pre-training self-efficacy score ($M = 77.45, SD = 12.03$). A significant difference was found among the training categories for the pre-training scores ($F(4,80) = 2.60, p < .05, d = 1.33$). Tukey's HSD was used to determine the nature of the differences between the groups. This analysis revealed that participants in the blended group scored significantly higher than participants in the traditional arts group ($M = 57.35, SD = 24.04$) with a large effect size.

Table 2. Mean SE Scores by Category of Training Experience

| Training Categories | N | Mean SE Score | SD |
|---------------------|----|---------------|-------|
| Military Training | 11 | 68.04 | 17.65 |
| Defensive Tactics | 20 | 72.05 | 16.62 |
| Traditional Arts | 8 | 57.35 | 24.04 |
| Combat Sports | 21 | 73.37 | 15.24 |
| Blend (Multiple) | 25 | 77.45 | 12.03 |
| Total | 85 | 72.06 | 16.62 |

A frequency distribution analysis was run to examine whether the Academy arrest and control tactics training and fitness training improved participant self-efficacy. Nearly all participants (98.5%) reported the arrest and control tactics training improved their self-efficacy and 88.1% reported the fitness training improved their self-efficacy. Only 11.9% of the participants reported participating in additional martial arts or self-defense training during the time they were in the police academy and all of these participants reported it improved their self-efficacy. Half of the participants (50%) reported that they participated in additional fitness training during the police academy and 95.5% of these individuals reported it improved their self-efficacy. Regardless of the source of change in self-efficacy, 91% of the participants showed an increase in self-efficacy post-training, while 7.5% had a decrease in self-efficacy, and 1.5% displayed no change.

DISCUSSION

The primary aims of this study were to 1) create and test the reliability of a scale designed to assess an officer's self-efficacy toward protecting themselves using defensive tactics (DT); and 2) use this measure to explore the impact of Academy DT training on an officer's perceived preparedness for handling non-lethal, violent encounters. Previous studies have addressed an officer's level of confidence in their physical abilities [Butler & Petruzzello 2019; Ellifritz 2013; Renden et al. 2015], but this was the first study to assess recruit officers using a scale specifically designed to assess self-efficacy. We hypothesized that recruit officers would begin the Academy with a moderate level of self-efficacy, those with previous martial arts/self-defense experience would have a higher baseline self-efficacy than untrained recruits, and there would be an overall increase in self-efficacy for the participants at the conclusion of the Academy training.

Regarding the first hypothesis, officers did show a moderate level of self-efficacy before any training and female recruits had a significantly lower mean self-efficacy than males. Even though over half of these participants (53%) had no previous martial arts or self-defense training, the overall mean pre-training score was 65.15 with the inexperienced group scoring 59.09. These moderate levels of self-efficacy could be associated with unreported life or work experiences with violence. For example, participants who may have had increased exposure to violence growing up in high crime communities, or those who spent years in other careers such as security, may have had more confidence in dealing with physical encounters. Another possibility is that untrained recruits may possess personality traits that encompass more assertiveness, openness and confidence despite a lack of comparable behavioral capability. Certain personality traits may even be ideal predictors of performance in law enforcement [Afsheen, Rafique, Qaisar & Musarat 2017].

Our second hypothesis was also confirmed in that participants with previous martial arts/self-defense experience had a mean baseline

self-efficacy that was significantly higher than those with no experience. This finding is consistent with previous literature on how martial arts training is associated with higher levels of confidence in police officers [Ellifritz 2013; Renden et al. 2015; Torres 2020]. According to Bandura [1997], self-efficacy influences the amount of effort an individual exerts when faced with difficult situations. This supports the notion that adequate martial arts/DT training may reduce the likelihood of officers unnecessarily escalating to excessive force (e.g., firearms) due to fear caused by lack of confidence when faced with situations that could otherwise be handled with effective DT [O'Neill, O'Neill, Weed, Hartman, Spence, & Lewinski 2019]. Additionally, the applicability and depth of the training may be a factor in determining levels of self-efficacy considering those who trained in multiple categories had greater levels of efficacy than those in the traditional martial arts category.

Regarding the impact of the Academy training, the results of the third hypothesis revealed that recruit officers' self-efficacy significantly increased from pre- to post-training. All but two participants attributed their increase in self-efficacy at least in part to the arrest and control tactics they received at the Academy. The fact that over 90% of the recruits showed increases in self-efficacy post-training provides support for the effectiveness of the Police Training Institute control tactics curriculum. Additional influences on the increased self-efficacy among some recruits included participation in additional martial arts training, and to a larger degree, both Academy fitness training and additional fitness training outside the Academy. This highlights the significance of fitness to an officer's perceptions of their self-defense abilities, although many studies have indicated that actual fitness training is often not maintained after the Academy [Anderson, Plecas & Segger 2001; Anderson, Cychosz & Franke 2003; Bissett, Bissett & Snell 2012; Dillern, Jenssen, Lagestad, Nygård & Ingebrigtsen 2014; Lagestad, Jenssen & Dillern 2014; Orr et al. 2018]. Nevertheless, the results of this study indicate that Academy training provides a solid foundation for officers to start their careers with a healthy level of confidence in their abilities to handle violent, non-lethal encounters when necessary.

STRENGTHS AND LIMITATIONS

To our knowledge, this is the first study to develop and validate a self-efficacy measure that examines a police officer's perception of their ability to effectively protect themselves using DT in a non-lethal, violent encounter. This research is timely and has implications for translation and policy in law enforcement. We were able to partner with the local police training academy to successfully conduct this research and the recruits were willing to participate in the data collection process. Due to the relatively small sample size and the variability in training curricula across police academies, one limitation of this study is the lack of generalizability of the results. While the results certainly offer support for the recruits' perceptions of their training at the Police Training Institute, we cannot presume the same applicability to other police

training academies. Future studies may consider replicating the present study at other academies in an effort to assess the effects of the physical training program (i.e., defensive tactics and fitness) on self-efficacy.

IMPLICATIONS

The police academy is the foundation of a recruit officer's journey in a career in law enforcement. This study aimed to demonstrate the benefits of martial arts and defensive tactics training for law enforcement beyond the physical domain. The inherently dangerous nature of the job along with the responsibility to protect citizens requires officers to be adequately prepared both physically and mentally. Considering officers are more likely to use non-lethal force during physical encounters, evaluating and improving the confidence levels of recruits in these areas may positively impact their performance in the field. The results of this study lend insight into ways in which we can assess and improve the self-efficacy of recruit officers using martial arts, DT and fitness training within a standard police academy training course. It also lends consideration for targeting individuals with martial arts experience for recruitment due to its baseline physical and psychological advantages prior to entering the field. Future studies should also evaluate incumbent officers using the scale to assess the impact of police experience, departmental training, and knowledge retention from police academy training on self-efficacy.

COMPETING INTERESTS

It should be noted that Jeremy M. Butler is a former police officer in the state of Illinois, a graduate of the Police Training Institute, and was hired as a part-time instructor. All other authors have no competing interests to declare.

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