Improving Expertise in Local Law Enforcement: Utilizing Virtual Environments to Assess Officer Performance and Standardize Training Procedures

Monica Connelly[1], Joel Suss[1], Lia DiBello[2]
[1]Wichita State University, Wichita, Kansas; [2]Workplace Technologies Research Inc., San Diego, California

Training for non-federal law enforcement agencies is subject to little regulation—training academies and education requirements often vary between departments—resulting in new officers with varying abilities and on-job proficiencies. The role of expertise can be evaluated in law enforcement and assessed to determine best practices for ideal on-job performance, especially in incidents requiring officers to make potentially lethal, rapid critical decisions (e.g., a use-of-force scenario). Training in a virtual environment has successfully been utilized to maximize management decision-making performance and accelerate the training process. A supplementation of cognitive skills training to existing law enforcement training procedures is proposed along with a recommendation on utilizing virtual environments to enhance expert training and develop a safer community environment.

CURRENT LAW ENFORCEMENT TRAINING PRACTICES

Federal and Local Standards

To become a law enforcement officer, recruits must typically complete a training academy. Federal law enforcement academies are highly regulated so that all recruits receive the same level and intensity of training no matter where they attend. This leads to consistent on-job performance between federal officers. Local law enforcement (e.g., police officers) varies more from jurisdiction to jurisdiction.

Each state's Commission on Peace Officers Standard and Training—or equivalent agency—is responsible for defining law enforcement training standards. This standard for mandatory in-service law enforcement training could be as general as a list of topics that are required to be addressed—such as that put forth by the state of New Jersey (New Jersey Division of Criminal Justice, 2000). On the other hand, the standard may comprise a more specific set of courses that must be attended, how many hours of instruction they entail, how frequently they must be completed, and to what level of competency the material must be mastered—such as that compiled by the state of Illinois (Law Enforcement Training Advisory Commission, 2017). Depending on how thorough each state is in creating their mandates, training within each state can vary greatly.

Recruit Training

There are three major ways that law enforcement agencies will train their new recruits. [1] Large departments train their recruits at an "in house" academy. These recruits are trained by officers within that department and must attend that academy to work for that department (i.e., even if they have worked in law enforcement in other jurisdictions). [2] Recruits may put themselves through a regional academy. Departments will then go to these academies in search of new officers that they wish to hire. [3] States with many small departments have state-run academies that officers within that state must complete. These recruits must be hired by a department, which then sends the recruits to the state academy.

All police academies require their recruits to pass a background check, physical fitness examination, medical examination, legal training, driving examination, and equipment and firearm training. Additionally, each academy may require each recruit to have completed a certain level of education (e.g., a high school diploma, GED, 2 years of collegiate education, etc.) prior to entering the academy. The intensity and difficulty of each examination and pre-admission educational requirements is up to the academy.

The time spent in each academy depends on the curriculum of the program. For instance, "the Connecticut Police Academy is approximately 22 weeks long," following which the recruits must successfully pass a series of educational and practical field exams (Connecticut State Police Officer Standards and Training Council, 2018). Comparatively, recruits in the state of Kentucky must complete a 16-week academy training class before qualifying for their certification to act as a law enforcement officer (Kentucky Department of Criminal Justice Training, n.d.), a course that is significantly shorter than that offered in most states.

A specific area in which training differs between states and departments is judgment-and-decision-making training. During this portion of training, recruits learn how to rapidly assess a situation and determine course of action. The course of action must typically comply with the agency's use-of-force policy, which takes into account the citizen's level of resistance when determining the appropriate force option (e.g., physical control tactics, oleoresin capsicum spray, Taser, firearm). This training can be delivered using different training modalities, including classroom lectures, live role-player scenarios, and video-based simulator training (Staller, Bertram, & Körner, 2017). The type of training a recruit receives is based on the tools available to the department—typically dictated by budget—and has a direct effect on the recruit's ability to perform as an officer once they leave the academy.

Training tools and transfer of training. Video-based simulators (e.g., https://www.cubic.com/prisim-suite, https://www.faac.com/milo-range, https://www.lasershot.com,

https://meggitttrainingsystems.com, http://www.titraining.com, https://www.virtra.com) enable training officers to expose trainees to a variety of potential scenarios that they may encounter, without the threat of physical harm to training officers or the recruits. In these systems, recruits and officers being trained enter a room in which the walls are video screens that project a dynamic training scene. The trainee utilizes a laser gun to react to the scene projected on the screens. This training modality is safer than live-fire drills and enables recruits and officers to train in varying decision-making scenarios. Despite this, transfer of training remains an issue.

Bennell, Jones, and Corey (2007) examined use-of-force simulation training in Canadian police agencies. The concern is that simulation training does not adequately train recruits because these systems minimize extraneous cognitive load on the recruits by excluding situational factors—such as extreme temperatures, noise levels, number of individuals present, and brightness—while they train. Therefore, recruits may be trained to respond to potentially threatening scenarios under these isolated conditions but be unable to readily utilize what they have learned while on the job (Bennell, Jones, & Corey, 2007).

Video-based simulators and role-play scenarios supplement recruit training with increased realism and are essential to testing recruits. However, they may not be enough to adequately train recruits how to react in dynamic—and potentially life threatening—situations.

Training Deficit Implications and Community Impacts

So what do these cross-departmental training deficits mean? Depending on the state, city, and even training officer, local law enforcement officers may respond to the same situation in an alarming variety of ways.

Thoughts from a training officer. Training officers at the Wichita Police Department in Kansas were interviewed regarding their experience with and opinion of local law enforcement training (Wichita Police Department Training Officers, Personal Communication, October, 2018). They shared the following:

- Officers who have been with the department for ten years or more have noticed a performance difference between newly graduated officers based on who instructed their course; recruits who were trained by more "quiet" and "passive" training officers were more likely to attempt to solve a confrontation vocally/non-aggressively and recruits who were trained by more "assertive" and "aggressive" training officers were more likely to attempt to solve a confrontation forcefully.
- The number of officer-conduct complaints from the community regarding newly graduated officers varies based on the tactics of the training officer. Recruits trained by more "assertive" and "aggressive" training officers are more likely to receive a conduct complaint than officers trained by more "quiet" and "diplomatic" training officer.
- Potential use-of-force situations are more likely to escalate when officers respond to the suspect more aggressively.

EXPERTISE

Expertise is inexorably linked to learning and memory. Due to learning and training, it is assumed that experts are able to "remember things about their domain that novices do not" (Wickens, Hollands, Banbury, & Parasuraman, 2016, p. 208). In general, expertise is acquired through domain specific practice or training, provides a measurable performance advantage, and involves specific rather than generic knowledge (Cellier & Eyrolle, 1992).

Perceptual–Cognitive Expertise

Perceptual–cognitive skill is defined as "the ability to identify and acquire environmental information for integration with existing such that appropriate responses can be selected and executed" (Mann et al., 2007, p. 457). Therefore, those who are considered "experts" in their field are better able to attend to task-relevant perceptual cues while ignoring irrelevant cues than "novices." To effectively study expert performance, scientists must first "identify the essence of perceptual–cognitive expertise" (Williams & Ericsson, 2005, p. 286) specific to the domain in question.

Expertise in Law Enforcement

According to Force Science News, police officers identify other "expert" officers as "those who are known or perceived to be better than most officers" (Force Science News, 2006). These expert officers, or "5 percenters," are officers with unique abilities such as the ability to detect subtle and important cues to quickly assess and respond to a situation with the appropriate level of force (Force Science News, 2006). Because law enforcement evaluations are almost exclusively post-hoc, expertise must be conceptualized in a way that could be measured similarly. A working definition for expertise in law enforcement is "the ability to adaptively apply one's skills, knowledge, and attributes to novel and complex situations and environments" (Suss & Boulton, in press, p. 6). When present, this expertise may be clearly seen in use-of-force situations.

Use-of-force. In law enforcement, force is defined as the 'objectively reasonable' amount of bodily impact, restraint, confinement, or threat thereof used to stop violence (Tennessee v. Garner, 1985; Graham v. Connor, 1989). Force may be used by officers when a suspect has the ability (i.e., possesses a weapon, including fists, feet, striking instruments, and firearms, with the apparent ability to use it to inflict harm on the officer or others) and opportunity (i.e., is close enough to the officer or threatened person to capitalize on the capability to harm) to place the officer or another person in immediate jeopardy.

The Force Continuum is one model commonly utilized by law enforcement officers to determine the level of force necessary in each situation (Terrill & Paoline, 2012). The amount of force used by an officer is dependent on the level of resistance and threat, to either the officer or other individuals involved, presented by the suspect. Verbal non-compliance by the suspect should elicit either strong verbal commands from the officer or empty-handed (i.e., without a weapon) control, while active aggression and deadly force threated by the suspect

would permit the officer to respond with the use of intermediate weapons (i.e., baton or taser) or lethal force. As the continuum progresses from less forceful to more forceful actions, the frequency with which each level of force is utilized decreases (Terrill & Paoline, 2012); there are many situations in which police must use strong verbal commands to control a situation, fewer instances in which a Taser is used, and very few in which lethal force is utilized (i.e., shooting).

Mistake-of-fact shootings. Mistake-of-fact shootings are classified as officer-involved shootings in which there is "misidentification of threat level…, precipitating suspect behavior, and context-based expectation relative to the nature of the assignment or call" (Aveni, 2003, p. 11). Improper identification by a law enforcement officer of the object held by a suspect is a commonly mistaken fact. Degraded visual conditions (e.g., low light) and the rapidity of suspect movement are two major contributing factors in many mistake-of-fact shootings, often due to confusion regarding whether a suspect possesses a weapon (e.g., a gun or a knife) and is intent on harming the officer or others present, or a non-weapon (e.g., a cell phone or a wallet) and is attempting to comply with the officer's orders.

Importance of Expertise

Expertise is vital to the successful operation of law enforcement agencies. Highly proficient officers who display adaptive skill yield more efficient enforcement of the law and a safer community for both the citizens and the officers. To have a force of highly effective experts, an efficient way to train novices to become experts must be developed.

TRAINING OF EXPERTS

In an article about cognitive skills training, Klein (2017, para. 2) stated that "instruction [must] push beyond procedures – it has to include cognitive skills to enable better decisions, more accurate sensemaking, more rapid problem detection, ability to handle uncertainty and ambiguity, and to manage risks." This cognitive skills training seeks to enable the trainee to "develop richer mental models" and, as a result, "think more like the experts" (Klein, Borders, Newsome, Militello, & Klein, 2017, p. 682). This way, task-specific expertise may be trained and developed rather than merely a specific set of skills. To achieve this effect, a specific training environment must be created.

Virtual and online environments are highly accessible training tools. Workplace Technologies Research Inc. (WTRI) uses virtual environments to train employees from different fields (e.g., miners, business executives, and project managers) to rapidly achieve proficiency in domain-specific decision making; their specific platform is called FutureView™. In these virtual worlds, employees learn to identify certain situations, anticipate an outcome based on their actions, and adapt their behavior accordingly. WTRI reports significant revenue increases for the companies who utilize their training techniques (Workplace Technologies Research Inc., 2018). These virtual environments are successful because they enable companies to "'rehearse' the probable future facing their companies" (Workplace Technologies Research Inc., n.d.). These time compressed rehearsals with instant feedback have previously shown to result in "five to ten years' worth of expertise in a few short days" (Workplace Technologies Research Inc., n.d.).

A similar approach to facilitating learning and deliberate practice (Ericsson, Krampe, & Tesch-Römer, 1993) has already been implemented for law enforcement. Modeled after the ShadowBox method (Hintze, 2008; Klein and Borders, 2016), Polis Patrol Expert™ (https://polispatrolexpert.com/) is an online learning platform that presents videos of police–citizen interactions (e.g., from police body-worn cameras). Videos are typically segmented to create multiple decision points. After each decision point, trainees engage in cognitive skills training by responding to a series of prompts (e.g., ranking response options, describing cues they are attending to, prioritizing goals). After completing a scenario, participants receive feedback based on experts' responses. Both the FutureView™ and Polis Patrol Expert™ training tools provide ways to accelerate learning.

Accelerated Learning

Accelerated learning refers to the improvement of information transfer- and retention-capacity (Hoffman et al., 2014). Accelerated learning is utilized to develop "expert apprentices" who have proficient domain knowledge and are trained to rapidly achieve the understanding level of an advanced apprentice (Hoffman et al., 2010).

Accelerated learning is an effective training tool once the universal principles of expert performance are identified in a certain domain. These universal principles are situational cues that experts use to assess a situation and determine the appropriate course of action (L. DiBello, Personal Communication, February 22, 2019). Once these universal principles are identified and domain bounded knowledge has been assessed, a virtual environment may be created to train previously inexperienced, or novice, individuals to become "expert apprentices" within months of beginning training. This method of training has been successfully utilized to train employees of companies such as Proterra, Siemens, Project Management Institute, IBM, and numerous others (Workplace Technologies Research Inc., 2019).

Law Enforcement Applications

Theoretically, there is no reason why the same procedures utilized by WRTI could not be used to train law enforcement officers to be more skilled performers. Given the domain, if situational cues utilized by experts can be identified, a virtual world may be created to train on these instances (L. DiBello, Personal Communication, February 22, 2019).

For law enforcement officers, this method of training would be most effective in judgement-and-decision-making training because it instructs on how to assess a situation and determine the best course of action rather than instruct on information to be memorized or physical procedures to be followed. An example of a dynamic decision-making circumstance is a use-of-force situation. Virtual environments

could be used to effectively train officers to be able to recognize potentially dangerous situations, how to de-escalate a situation before it becomes potentially lethal, how to proceed through an investigation or an interview, etc.

Benefits. Law enforcement training utilizing virtual environments could effectively and consistently train recruits to become situationally proficient officers. The virtual environment would enable all recruits to be trained in decision making skills at the same caliber—in regards to intensity, duration, and final achievement—across the nation, creating a consistent training standard for all law enforcement officers. This would hopefully eliminate the case that suspects may be approached differently based on which city they are in as well as reduce the fluctuation in community complaints based on the attitude and aggression of the training officers. Additionally, the departments and training centers would save time and money by adopting this form of training. Multiple recruits can enter the virtual environment at the same time compared to video simulators, which only one or two trainees can enter at a time. More effective training in the recruit stage means less re-training may be necessary for the officers. The programing of the virtual environment allows the training officers to dictate which features are present or not within a certain training scenario, enabling them to control the conditions and cognitive load put upon the recruits. The adaptive nature of the program would enable it to be modified more easily over time than a video-based simulator, and at a cheaper cost than the installation of a new simulator.

Limitations. Not every skill is amenable to being taught using virtual environments. For instance, the virtual environment is not able to instruct on procedural or physical knowledge (e.g., how to draw one's weapon quickly, hand-to-hand combat, driving, etc.). Additionally, it could be a large up-front cost to the departments and training academies to get the equipment for the recruits to be able to enter the virtual environment.

Implementation and Research Agenda

Through virtual environments, deliberate practice to aid the acceleration of expertise is possible. Achieving this goal would be a valuable supplement to video-simulators and live role-play scenarios.

Program implementation would require the identification of the universal principles of expertise in law enforcement decision making. These principles could include a variety of concepts such as adjusting one's response to a suspect based on their level of agitation, utilizing non-verbal cues to determine whether a suspect is in possession of a possible weapon, and even the ability to assess a suspect's psychological state (i.e., assess whether the suspect is a danger to themselves or may be acting in a way to entice the officer to utilize more lethal force). Research regarding the decision-making cues necessary for expert performance in law enforcement would need to be conducted and could range from a review of body camera footage of previous calls to interviews of the "5 percenters" and "expert" officers.

After the identification of these principles, they would need to be incorporated into a virtual environment. A virtual environment is able to be created to mimic either a real or a fictional city; WRTI has utilized FutureView to create both. Each department implementing this training program would be able to determine the environment in which they would prefer each case scenario to be conducted. Again, further research—likely in the form of an expert interview—would need to be conducted to develop the most realistic environment possible. Once the environment is created, recruits may access the virtual environment via an online server to receive consistent decision-making training.

CONCLUSION

Local law enforcement training is not adequately standardized between states or even counties. This results in varying performance of officers and differing threat responses based on how and by whom each recruit was trained. It is the goal that all officers be trained to expert level. WTRI has successfully been able to use virtual worlds to rapidly train novices to become "expert apprentices," therefore saving companies time and increasing their profit margins. This training technique may be transferred to a law enforcement setting regarding decision-making situations. A supplementation of the training techniques utilized by WTRI and Polis Systems would provide a way to standardize local law enforcement training across the country and more efficiently train new recruits to become effective decision-making experts. The incorporation of virtual environment training would greatly regulate how officers approach dynamic and potentially dangerous situations, therefore resulting in a safer environment for the community and the officers serving it.

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