

Shooting Decisions by Police Firearms Officers

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ABSTRACT: This study is an investigation into whether briefing information, which was heard prior to seeing a firearms incident in a firearms training simulator, affected British police officers' decisions to shoot, as measured by their shooting behavior. Police authorized firearms officers (AFOs) heard either threat or neutral briefing information and then saw a "shoot" (suspect shot at AFO) or "no-shoot" (suspect surrendered without shooting) scenario. AFOs were tested in one of four conditions: threat briefing with shoot scenario, threat briefing with no-shoot scenario, neutral briefing with shoot scenario, or neutral briefing with no-shoot scenario. A postevent questionnaire and the General Decision Making Style (GDMS) questionnaire were completed by the AFOs. Those who had heard the neutral briefing felt more surprised when they saw the suspects than did those who had heard the threat briefing, regardless of which scenario they had seen. However, the briefing type did not affect the time taken to draw and aim the gun at the screen. No shots were fired in the no-shoot scenario, regardless of which briefing the AFOs had received. Differences in preferred decision style were not related to shooting decisions. The results suggest that the briefing information did not influence the AFOs' decisions to shoot, but they attended to cues in the scenario (not identified) and responded accordingly.

Introduction

CASES INVOLVING POLICE OFFICERS' DECISIONS TO SHOOT SUSPECTS HAVE BEEN RECEIVING a high level of media attention in the United Kingdom, where police officers are not routinely armed. In July 2005, Jean Charles de Menezes was misidentified and killed by armed officers on an underground train during a period of terrorist attacks in London (Crown Prosecution Service, 2006). Harry Stanley was shot by two armed police officers in London in 1999; they had been informed that Stanley was Irish and was carrying a sawed-off shotgun. In fact, Stanley was Scottish and was carrying a table leg (Independent Police Complaints Commission, 2006).

Erroneous shoot decisions do not occur only in Britain. Amadou Bailo Diallo was shot 19 times by four police officers in New York when they challenged him and mistakenly believed the wallet he was reaching for in his jacket was a handgun. The split-second decisions made by those officers were discussed by Gladwell (2005), who concluded that the decisions to shoot resulted from the officers' misinterpretation of Diallo's actions, based on their expectations.

Events such as these highlight the difficulties facing authorized firearms officers

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(AFOs) who are called on to make rapid decisions based on their interpretation of a suspect's behavior and intent. Tobin and Fackler (1997, 2001) recorded the time police officers in the United States took to perceive a threat in a shooting simulator and make the decision to fire their handguns. Their simple scenario showed a lone armed suspect emerging from behind a vehicle, whereas the complex scenario had the armed suspect in a confined space with several bystanders to distract the attention of the officer. Tobin and Fackler's results showed that the average decision time increased with the complexity of the threat – this was 0.21 s in a simple scenario and 0.89 s in a complex scenario. The task complexity is increased if the officers' expectations have been built on minimal, inadequate, or incorrect briefing information.

Despite the increasing number of incidents to which AFOs are called, police forces in the United Kingdom remain predominantly unarmed, and most incidents involving armed officers are resolved peacefully (Home Office, 2006). Officers can volunteer for firearms duty and, if selected, are trained in the use of firearms, which are used only as a last resort (Association of Chief Police Officers [ACPO], 2005).

In this simulator study, we examined whether briefing information given to British AFOs had any impact on their decision to shoot.

Decision Making

The bulk of psychological research on decision making has tended to rely on students making decisions in laboratory studies (Connolly, Arkes, & Hammond, 2000) and therefore has limited ecological validity for policing, which can involve very stressful situations. There are many studies of cognitive performance under stress (e.g., Driskell & Salas, 1996; Hancock & Desmond, 2000) and some specific texts on judgment under stress (e.g., Hammond, 1999). However, the literature on professionals' rapid decision making in immediate life-threatening situations, such as confronting an armed suspect, has been limited. Klein (1998) and others adopting a naturalistic decision-making approach (see Cannon-Bowers & Salas, 1998; Flin, Salas, Strub, & Martin, 1997; Zsombok & Klein, 1997) have shown how personnel in time-pressured, high-risk occupations (e.g., firefighters, military officers) are able to make fast decisions to deal effectively with situations. Research with airline pilots (Bove & Andersen, 2002; Orasanu & Fischer, 1997), surgeons (Abernathy & Hamm, 1993), and emergency commanders (Crichton & Flin, 2002) has indicated that they use a range of decision-making strategies, including intuitive, rule-based, and analytical methods.

There may be individual preferences for these methods of decision making, but few psychometric tools have been developed to assess this. Scott and Bruce (1995) devised a self-report measure of decision-making style (using military officers, business students, engineers, and technicians) called the General Decision-Making Style (GDMS) questionnaire. Five decision-making styles were identified: rational, intuitive, dependent, avoidant, and spontaneous. The instrument has shown reasonable validity in samples of undergraduate students (Loo, 2000; Spicer & Sadler-Smith, 2005) and also hotel employees (Mohammed, Lim, Hamilton, Zhang, & Kim, 2007). Because the GDMS was designed using military personnel, who are in some respects

similar to police, it seemed an appropriate questionnaire to use in the present study. It was expected that officers who reported typically using the faster, intuitive style would respond more quickly.

Klein (1998) found that professionals such as experienced fire commanders did not appear to “weigh up” options as in classical analytical decision making. If they recognized the type of situation, they intuitively knew what action to take (recognition-primed decisions). From their previous experience, they trusted the recalled course of action as being an appropriate match for the situation, so there was no need to consider other options for a comparison. When AFOs are making the decision whether or not to shoot, this is likely to be influenced not only by their experience but also by their expectations from prior information. Before examining the available literature on AFO shooting behavior, we first consider the role of priming on perceptual judgment.

Expectation/Priming

People can perceive more accurately and react more quickly to situations that they expect versus unexpected events (Theeuwes & Hagenzieker, 1993). Because AFOs are normally provided with briefing information before they attend to an incident (unless they suddenly come upon it), it is important to determine how that briefing influences (primes) the officers' expectation of the situation they are about to encounter.

Early work on priming by Palmer (1975) had participants identify line drawings of objects after they had been shown pictures of a scene. If the object was relevant to the scene (e.g., a kitchen scene followed by a picture of a loaf of bread), the participants were more likely to identify the object correctly. Palmer argued that by manipulating the context prior to the perceptual task, he enhanced or reduced the likelihood that participants would accurately identify the objects.

Similarly, Bugelsky and Alampay (1962) demonstrated the influence of expectation on perception using ambiguous figures consisting of a line drawing (e.g., a rat or a man). Participants who were first primed with a picture of a cat and were then shown the ambiguous rat/man drawing were more likely to perceive it as a rat. However, those who had seen a picture of a woman first were more likely to respond that the ambiguous drawing was that of a man.

These classic studies demonstrated that information given to participants prior to their participation in a judgment task can shape what they perceive, albeit in a controlled setting and for static images as opposed to fast-moving, real-life decision-making situations.

Tulving and Schacter (1990) asserted that priming is a nonconscious, implicit type of memory. So it may be that whichever aspects of the briefing information AFOs remember influences their decision whether or not to shoot a suspect. To date, the specific effect of briefing information on shoot decisions rarely has been examined, although this has been a major feature of postevent legal investigations. The most relevant studies have been on the effects of stereotypic priming of a suspect's race on shooting (Greenwald, Oakes, & Hoffman, 2003) or weapon identification (Payne, 2001). Correll, Urland, and Ito (2006) recorded event-related potentials of students

participating in a shoot/don't shoot video game judgment task. Correll, Park, Judd, and Wittenbrink (2002) also used a video game in which participants had to decide whether or not to "shoot" suspects.

Although these studies did not use firearms officers as participants and, with one exception (Plant & Peruche, 2005), have all been desktop computer studies, they are examples of how expectation and unconscious processes may influence decision making.

Studies Using AFOs

Firearms training simulators have been used to examine AFOs' shooting performance in different circumstances. Studies using actual AFOs have shown that their arousal levels and perception of suspects can be affected by environmental factors such as heat (Vrij, Van Der Steen, & Koppelaar, 1994) or noise (Vrij, Van Der Steen, & Koppelaar, 1995b). Psychophysiological factors relating to level of physical effort (Vrij, Van Der Steen, & Koppelaar, 1995a; Vrij & Dingemans, 1996) or the effect of driving at speed to an incident (Barton, Vrij, & Bull, 2000) also have been examined. Memory of AFOs for simulated incidents (Hulse & Memon, 2006) and the effect of stress on memory for incidents (Beehr, Ivanitskaya, Glaser, Erofeev, & Canali, 2004) have been studied as well.

Saus et al. (2006) showed with first-year police students in Norway that situation awareness training can improve shooting performance in the simulator. Simulated firearms studies in the United States have examined workload and performance (Greenwood-Ericksen, Oron-Gilad, Szalma, Stafford, & Hancock, 2004) and individual differences in night shooting performance (Stafford, Oron-Gilad, Szalma, & Hancock, 2004). Although these studies have provided some insight into factors influencing shooting behavior, none has examined the effect of the briefing information on decisions to shoot or not shoot.

There are only a few published studies of real firearms incidents. In one review (Best & Quigley, 2003), the researchers considered 20 incidents in England and Wales between 1998 and 2001 in which AFOs were spontaneously called to the scene (i.e., not preplanned events) and the suspect was either killed or injured by a shot fired by an AFO. Their findings suggested that shots fired by the police were more strongly linked to the policing methods employed (e.g., previous training, management of the incident) than the cues from the characteristics of the suspects or the officers' perception of risk to the public.

In the previously mentioned review, the authors illustrated that a range of environmental, physiological, and suspect factors can influence AFOs' shooting behavior. AFOs have very little time to make their decisions whether or not to shoot the suspect. If they fail to shoot a malevolent, armed suspect, the probability is that they and/or members of the public will be harmed. In the United Kingdom, if they make an erroneous decision to shoot, they may be subjected to extensive media attention, a full inquiry, and possibly a court case. Police officers are usually provided with briefing information, but as the Stanley and de Menezes cases show, this has not always turned out to be accurate.

In this study, we used two briefing conditions, threat versus neutral, and two scenarios. The suspects were armed in both scenarios but fired at the officers in only one of them, making one a “shoot” and the other a “no-shoot” scenario. As previously discussed, experience is another variable that may be influential. There was no independent measure of experience of actual shooting episodes available, so this was measured by the number of years trained in the role of AFO.

Hypotheses

We made the following hypotheses:

1. The AFOs who were given the neutral briefing would be more surprised by the appearance of the suspects than would those who had been given the threat briefing.
2. The AFOs would feel more threatened in the shoot scenario than in the no-shoot scenario.
3. In both the shoot and no-shoot scenarios, the AFOs who were given the threat briefing information would respond more quickly (i.e., time taken to draw and point their gun at the screen) because of priming and would be more likely to shoot than would AFOs who heard the neutral briefing (i.e., no interaction predicted between scenario and briefing conditions).
4. More experienced AFOs would initially respond (i.e., time to draw their gun) more quickly and shoot more accurately than less experienced AFOs.
5. AFOs would share preferences in decision-making style, and those who responded fastest would have higher scores on the intuitive decision-making style.

Method

Design

A 2×2 between-subjects design was used in this study. The independent variables were briefing type (threat briefing, neutral briefing) and scenario type (shoot, no shoot). The dependent variables were (a) time taken (in seconds) to respond (i.e., the time the laser trace from the gun first appeared on the screen) once drawn from the holster; (b) the decision to shoot or not shoot; and (c) if shots were fired, whether the shot was “on target” (i.e., hit the suspect’s central body mass) or “off target” (i.e., hit another part of the suspect, was on screen but missed the suspect, or was off screen)

The questionnaire data were analyzed by chi-square and *t* tests. The experimental data were analyzed using factorial analyses of variance (ANOVAs) for response times and accuracy and a hierarchical log-linear analysis for response type.

Participants

Participants were 74 AFOs, 69 men and 5 women, from one Scottish police force. The age bands were 21–25 years to 45–49 years (mode = 35–39 years). The officers’ length of police service was from under 5 years to 25–30 years (mode = 5–9 years). The officers’ length of firearms experience was from less than 6 months to more than

10 years (mode = 2–6 years). They were recruited during one of their regular firearms training sessions.

Materials

Firearms training simulator. The firearms training system (FATS) used in the study was an American shooting simulator with a large video screen at one end of a shooting range upon which prerecorded scenarios were shown involving real people acting out feasible situations that an AFO may face. The computer system was fed by two Glock 17 handguns (one of the weapons used by this police force), which were attached to it with cables. When either (or both) of the guns was aimed at the screen during the scenario, a laser trace was emitted that, although invisible to the participant, was automatically recorded and seen during the replay of the scenario. When the trigger was pulled, the shot was also recorded as a laser trace. The system recorded the two guns separately, which means that the initial response time (when the laser trace from the gun appeared on the screen) and the accuracy and time of any shots fired were recorded separately for each AFO.

Both scenarios began with the same scene: a shopping mall crowded with people going about their business. When two men run through the crowd toward the AFOs, the crowd becomes agitated, begins screaming, and moves out of the way, to the sides of the mall. One of the men is carrying a large iron bar as a weapon, and the other is holding a handgun. In the shoot scenario, when the suspects stop running, although the man with the bar drops it in surrender, the other man raises the arm in which he is holding the handgun, takes aim, and shoots twice at the AFOs. Appropriate action, therefore, is to shoot the suspect with the gun (but not the suspect with the iron bar). In the no-shoot scenario, both men raise their weapons in surrender, so shooting either suspect would be difficult to justify.

Briefing. Two briefings were designed with the help of the firearms instructor to be realistic to the AFOs. Briefing A was designed to give an expectation of high threat, to increase the AFOs' expectation of encountering hostile, armed suspects. Briefing B was more neutral and shorter, with no intimation of any specific threat (see the appendix).

Questionnaires. The GDMS questionnaire (Scott & Bruce, 1995) was used to measure each AFO's self-reported style of decision making. It contains 25 statements, with 5 relating to each "style." Respondents had to indicate the degree to which each statement related to them on a 5-point scale ranging from *strongly agree* (5) to *strongly disagree* (1).

Examples are the following: (a) "When making decisions I rely on my instincts (intuitive)." and (b) "I make decisions in a logical and systematic way (rational)."

A postincident questionnaire was designed for completion by each AFO with 10 questions about the participants' perception of events during the scenario. When the AFOs were asked to estimate their perception of time, answer choices were in 5-s bands from < 5 s to 35–39 s.

The Statistical Package for the Social Sciences (SPSS) was used to analyze the experimental data (Kinnear & Gray, 2004). A participant information sheet contained an outline of the study and recorded informed consent. A debriefing information sheet was used at the conclusion of each testing session.

Procedure

AFOs were read one of two briefings by a police firearms instructor and then involved in one of two scenarios. Each AFO was therefore in one of four conditions:

- a. Threat briefing with shoot scenario
- b. Threat briefing with no-shoot scenario
- c. Neutral briefing with shoot scenario
- d. Neutral briefing with no-shoot scenario

Officers were advised that participation was voluntary and results would be stored anonymously. The age, gender, length of police service, and length of police firearms experience of each AFO were recorded. The AFOs were tested in the simulator in pairs because that is how they would be deployed to a real incident. The instructor read the briefing to the pair of AFOs and gave them the opportunity to ask questions. The officers took up their positions on the range. The lighting was very subdued, and the only noise heard was that of the actors from the scenario.

After participation, the scenario was replayed, and the experimenter recorded the time, in seconds, taken by each officer to draw his or her gun and aim at the screen in response to the threat in the scenario. If shots were fired, the number and accuracy were noted. In the shoot scenario, 20 AFOs were given the threat briefing and 18 AFOs were given the neutral briefing. In the no-shoot scenario, 18 AFOs heard the neutral and 18 AFOs heard the threat briefing. The study was given ethical approval by the School of Psychology Ethics Committee, which adheres to British Psychological Society ethical guidelines.

Results

Questionnaires

Postincident. Answers from the postincident questionnaire were analyzed using chi-square tests. The AFOs were more surprised when they saw the suspects if they had heard the neutral rather than the threat briefing, $\chi^2 = 9.11$, $df(1)$, $p < .01$. Also, AFOs who heard the threat briefing thought they used the briefing information to make their decisions more than did those who had been given the neutral briefing, $\chi^2 = 31.45$, $df(2)$, $p < .001$. The AFOs felt significantly more threatened when they saw the shoot rather than the no-shoot scenario, $\chi^2 = 8.18$ (2), $p < .05$, but there was no effect of scenario type on their feeling of surprise, $\chi^2 = 2.67$, $df(1)$, $p = .10$. These results indicate that the briefing condition and scenario type were functioning as intended.

Both the shoot and no-shoot scenarios lasted a total of 30 s each. When asked

to indicate how long they perceived the scenario to have lasted (using time bands, e.g., < 5 s, 5–9 s), 73% thought the scenario they saw lasted less than 20 s.

Decision-making style. The data from the GDMS questionnaire (Scott & Bruce, 1995) showed a similar pattern of decision-making styles across the 74 AFOs. The means and standard deviations, along with normative data, are shown in Table 1. The highest mean score in the study sample was for the rational style and the lowest was for the avoidant style.

The mean scores of the normative sample were compared with the AFO sample using an independent samples *t* test. Because the variances of the two samples differed, the Welch-Satterthwaite procedure was performed, and the sample means were still significantly different on each of the decision-making styles (Howell, 1987). The scores for the 66 AFOs in each of the five decision-making styles of the GDMS questionnaire were correlated with their response times, which showed that there was no significant correlation of response time with any of the decision-making styles.

Experimental Data

Behavior. Several different behaviors were observed as the 74 AFOs responded to the scenario (see Table 2).

In the “no reaction using gun” response category, 6 AFOs drew their batons in response to the scenario (4 of these AFOs were in the neutral briefing, with 2 in the shoot and 2 in the no-shoot scenarios, plus 1 AFO in the threat briefing with the no-shoot scenario). The sixth AFO, who was in the neutral briefing with the no-shoot scenario, initially drew his baton but then also drew the gun in response to the scenario, although this participant recorded the same response time as some others and so was included in the analysis. One other AFO in the “no reaction using gun” category in the no-shoot scenario drew the gun but did not raise it high enough for the laser trace to be recorded on the screen and, as such, was 1 of the 8 AFOs excluded

TABLE 1. Mean Scores and Standard Deviations of Decision-Making Styles for Study Data and Normative Data (Scott & Bruce, 1995) Using the GDMS Questionnaire

Decision-Making Style	Study Data		Normative Data	
	Mean	SD	Mean	SD
Rational	3.92	0.44	4.12	0.33
Avoidant	2.18	0.45	3.00	0.72
Intuitive	3.45	0.60	3.28	0.64
Dependent	3.27	0.52	1.85	0.65
Spontaneous	2.85	0.58	2.46	0.90

TABLE 2. AFOs' Response Behaviors – Frequencies ($n = 74$)

Scenario Type	Behavior	Briefing Type	
		Threat	Neutral
Shoot	No reaction using gun	0	3
	Raise gun but not shoot	5	2
	Raise gun and shoot	15	13
	Total number of AFOs	20	18
No shoot	No reaction using gun	1	3
	Raise gun but not shoot	17	15
	Raise gun and shoot	0	0
	Total number of AFOs	18	18

from the analysis. Analysis involving shooting accuracy was performed only on the data from the 28 AFOs who fired. Effect sizes using Cohen (1988) were all found to be small ($r < .2$).

A hierarchical log-linear analysis (Kinnear & Gray, 2004) was performed, which showed that there was a significant effect of scenario type on shooting behavior, $\chi^2 = 42.67$, $df(1)$, $p < .01$. This showed that AFOs shot only when presented with the shoot scenario and that no shots were fired in the no-shoot scenario. There was no significant effect of briefing condition on shooting behavior or any interaction effect between scenario type and briefing.

Experience. Although all AFOs had “training” experience using firearms, actual “incident” experience was not recorded because relatively few incidents occur in the region where the study was conducted. The years of firearms experience were banded from less than 6 months to more than 10 years, which were categorized (to reflect force conventions) into three groups: 20 novice (under 2 years), 22 intermediate (2–6 years), and 24 experienced (more than 7 years) AFOs. A factorial ANOVA revealed that there was no significant effect of firearms experience on response time, $F(2, 65) = .65$, $p = .53$.

Shots hitting the suspect’s central body mass were classified as “on target.” Shots that missed the screen, hit the screen but missed the suspect, or hit the arm, leg, or head of the suspect were classified as “off target” because AFOs are trained to aim for the torso. For those AFOs who fired at least one shot ($n = 28$), there was no significant effect of firearms experience on the number of shots that were on or off target, $F(2, 27) = 2.21$, $p = .13$, and $F(2, 27) = 1.13$, $p = .34$, respectively.

Accuracy. The 28 AFOs who shot at the suspects fired a total of 48 shots. The 15 AFOs who heard the threat briefing fired 14 and 11 shots on and off target, respectively. The 13 AFOs in the neutral briefing condition fired 15 and 8 shots on and off target, respectively. There was no significant effect of briefing type on number of shots fired, whether on target, $F(1, 27) = .39$, $p = .54$, or off target, $F(1, 27) = .25$, $p = .62$,

showing that the type of briefing heard (threat or neutral) had no effect on the accuracy of shots fired.

Response time. An AFO's response consists of a series of actions (initial reaction, moving hand to gun, removing gun from holster, taking aim, and pulling trigger). To calculate the response time for each AFO, we deemed the baseline time to be the time at which the suspects (with their weapons visible) first appeared in each scenario. The response time was calculated by subtracting the baseline time from the time that the laser trace appeared on the screen, which was created when the AFO first leveled the gun at it.

Of the 74 AFOs, 7 did not raise their guns high enough to be recorded by the simulator, so there were no response time data available for them. In addition, there was one outlier whose response time was exceptionally slow. In all, 8 AFOs were excluded (all but 2 of those 8 respondents were in the neutral briefing condition; half were responding to the shoot scenario, and all 8 were either intermediate or experienced AFOs; no novice AFOs were excluded), which left the behavioral data from the remaining 66 AFOs. There was no significant difference between response time in the shoot scenario between those who heard the threat (mean = 4.00 s) rather than the neutral briefing (mean = 4.57 s), $F(1, 65) = 2.95, p = .09, r = .21$, or in the no-shoot scenario (threat briefing mean = 3.71 s vs. neutral briefing mean = 4.40 s), $F(1, 65) = .40, p = .53$. There was no interaction effect on response time between briefing type and scenario, $F(1, 66) = .05, p = .82$.

Discussion

The media have emphasized the significance of the briefing information that police officers had been given prior to erroneous shooting incidents in the United Kingdom, such as the Stanley and de Menezes cases referred to in the introduction. The purpose of this study was to examine whether the information heard in a briefing prior to a simulated firearms incident would have an effect on how AFOs responded to it. This was achieved by manipulating the threat level in the briefing that AFOs heard and the level of threat in the scenario that the AFOs faced. The AFOs were tested in one of four conditions: threat briefing with shoot scenario, threat briefing with no-shoot scenario, neutral briefing with shoot scenario, or neutral briefing with no-shoot scenario.

The postevent questionnaire indicated that the AFOs were more surprised when they saw the suspects if they had heard the neutral rather than the threat briefing. Those who heard the threat briefing thought they used the briefing information to make their decisions more than did those who had been given the neutral briefing. The AFOs felt significantly more threatened when they saw the shoot rather than the no-shoot scenario. These results suggest that both the briefing and the scenario manipulations were producing the intended effects.

It was predicted that AFOs who expected (i.e., were primed) to see threatening suspects by receiving the threat briefing information before viewing either scenario

would respond more quickly (i.e., draw their guns) than would AFOs who heard the neutral briefing. Although there was a trend in this direction, this result was not significant. Eight AFOs were removed from this analysis because seven of them did not raise the gun high enough to record a laser trace and one was an outlier. All but one of those eight were in the neutral briefing condition, so this may have affected this result. This is also interesting because it may be that their lack of response was attributable to the fact that they had heard the neutral briefing information; the effect was such that they were not primed to expect a violent situation, so they did not react.

No clear pattern emerged in the analysis of the excluded AFOs' data. Sometimes the AFO was opposite the suspect in possession of the iron bar and did not (correctly) deem the threats serious enough to aim his or her weapon at him. Unfortunately, having focused their attention on that suspect, these AFOs failed to notice that the other suspect was in possession of a handgun. On at least one occasion, an officer got the gun stuck while trying to draw it from the holster.

It was also anticipated that AFOs who heard the threat briefing and saw the no-shoot scenario might shoot if they initially reacted to what they expected to see rather than what they actually saw. This effect was not found and shows that despite being briefed to expect a threatening situation, no AFO shot either of the suspects in the no-shoot scenario, even though one suspect had a handgun. This suggests that the AFOs did not base their shooting decisions entirely on the briefing information but also observed all the cues in the scenario and responded accordingly. Best and Quigley (2003) concluded that shooting by police officers in the British incidents that they reviewed was more strongly linked to the employed policing methods than to cues from the characteristics of the suspects. Our results show that, at least in the simulated situations that were used in the experiment, the officers appeared to base their judgments primarily on the scenario cues, especially the behaviors of the suspects.

We hypothesized that more experienced AFOs would respond more quickly than less experienced AFOs and that shots fired by more experienced AFOs would be more accurate than those fired by less experienced AFOs. An ANOVA showed that there was no main effect of experience on response time. However, the 8 AFOs whose data were excluded from this analysis all belonged to the intermediate or experienced group of AFOs. No novice AFOs were excluded, so it is possible that the removal of those intermediate/experienced AFOs had a bearing on this finding.

There was no main effect of experience on the number of shots on target. There was an interaction between experience and accuracy, as the most experienced AFOs were more accurate in the threat briefing condition than they were in the neutral briefing condition. The reverse pattern was seen for the AFOs with intermediate experience. However, because of the relatively infrequent occurrence of "live" firearms-related incidents in the area where the study was conducted, it is difficult to determine when an AFO becomes experienced as opposed to having intermediate experience. Levels of experience bandings may have to be altered in future studies.

A variety of behavior patterns were observed in response to the scenarios. AFOs drew their guns and shot, drew their guns but did not shoot, or drew their batons. Only one participant drew both his baton and his gun. There was a significant effect

of scenario type on shooting behavior because no participant fired in the no-shoot scenario, regardless of the briefing. This is interesting in that AFOs who heard the threat briefing thought they used the briefing information more than did those who had heard the neutral briefing. However, none of those AFOs who heard the threat briefing and then saw the no-shoot scenario fired, so even though they thought they used the briefing information to make their decisions, the fact that no shots were fired in the no-shoot scenario suggests that the AFOs reacted very much to what they actually saw in the scenario. This has important real-world significance because so much emphasis is placed on the importance of adequately briefing AFOs prior to deployment in preplanned operations.

These results indicate that in a simulated situation, despite priming AFOs with information that led them to expect to see armed suspects, even when faced with two armed suspects (one with a handgun, one with a large bar), the AFOs accurately assessed that the suspects were not threatening, and all made the correct decision not to shoot at them. All AFOs assessed the situation and decided in those few seconds that it was unnecessary to shoot either of the suspects to resolve the situation peacefully.

It is accepted that this was a simulator study, and the levels of stress affecting decision making would be far greater in a real incident because the decision to shoot would have much greater consequences. However, the session was treated very professionally by the AFOs, whose competence was being tested, and they had to justify their decisions to the trainers at the conclusion of the session.

Limitations of the Study

The FATS system was able to record the first response times only in whole seconds. Because the critical episode in the scenarios was so brief, there was not enough variation in the recorded times to differentiate between the AFOs' reactions. It would therefore be beneficial in future studies to record response times in hundredths of a second. The studies by Tobin and Fackler (1997, 2001) recorded more accurate mean reaction times; however, the officers began with their finger on the trigger and their weapons in the "aim" position (i.e., unholstered and pointing at the target) during those studies.

The two scenarios used in the study were similar but not identical in the lead-up to the crucial moment when the suspect fired two shots or surrendered. They had been videotaped separately as opposed to one version being cut so as to change the endings. Being able to change the endings would have created the ideal scenario to use in this experiment; however, these video scenarios were the ones available to the police force in the study, and there were no facilities to record or edit scenarios. As no AFO fired in the no-shoot scenario, it is possible that cues were present in that scenario that led the AFOs to believe that the suspect was not going to shoot in that scenario, despite the briefing information they had received, although it is difficult to determine what those cues might have been.

Conclusion

The AFOs who were primed with the threat briefing information before either the shoot or no-shoot scenario did not respond significantly faster than those who heard the neutral briefing, although there was a trend in this direction. No shots were fired in the no-shoot scenario, regardless of which briefing was heard, even though one of the suspects in the no-shoot scenario was armed with a handgun. This result suggests that the AFOs did not base their decisions to shoot entirely on the briefing information; they also observed the cues in the scenario and responded accordingly. Further investigation would be required to identify what those cues might have been.

Although briefing type had no overall effect on the accuracy of shots fired, this study concludes that because briefing information is not always accurate or a current representation of the incident, great care must be taken when emphasizing aspects of a briefing to officers. This is an important topic for further study, because in all countries, the safety of the public can depend on the decisions made by armed police officers.

Appendix

Briefing A: Threat

You are part of a team of AFOs who have been designated to an operation that is working within the city for the last 2 weeks in response to two armed robberies that were committed 3 weeks ago at a local bank and a cash-in-transit vehicle. The patrol consists of an ARV (armed response vehicle) crewed by three officers patrolling the outskirts of the city. You are one of two pairs of AFOs on foot patrol in the city center. You are on patrol in full uniform wearing high-visibility yellow jackets and are armed only with Glocks (handgun). The carbines (Heckler and Koch MP5) are within the ARV should you need them. The patrols have been widely publicized in that they have been on all aspects of the media. The patrols have been very well received by the public and media alike. The MO (modus operandi) to the crimes that happened 3 weeks ago are as follows:

Bank – Two men, both wearing crash helmets, entered the bank. One was in possession of a sawed-off shotgun, and the other had a baseball bat. Extreme violence was used by the man with the baseball bat, who assaulted members of staff and customers. The man with the shotgun threatened the female teller, who, when interviewed, was convinced she was going to die.

Cash-in-transit van – The vehicle was parked at the rear of the main shopping center in the city center. As the security guard exited the vehicle and walked toward the building, he was assaulted from behind. Extreme violence was used toward him, and he believed he was struck several times by a heavy implement. Once on the ground, when he looked up, he was looking into the barrel of a shotgun. He gave up the money and saw two men, both wearing crash helmets, run off. Passersby were also threatened by the men.

Briefing B: Neutral

You are part of a team of AFOs who are patrolling the city center. There is no specific intelligence; these patrols are to conform with a nationwide campaign to introduce members of the public to seeing armed police officers in full uniform patrolling city centers. The campaign has been well publicized and has been running now for 2 weeks where it has been well received by both the public and press. To date, there have been no incidents requiring a firearms response.

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