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Effects of threat, trait anxiety and state anxiety on police officers' actions during an arrest

Peter G. Renden^{1*}, Annemarie Landman¹, Nathalie R. Daalder¹,
Hans P. de Cock¹, Geert J. P. Savelsbergh^{1,2} and
Raoul R. D. Oudejans¹

¹MOVE Research Institute Amsterdam, Faculty of Human Movement Sciences, VU University Amsterdam, The Netherlands

²Academy for Physical Education, University of Professional Education, Amsterdam, The Netherlands

Purpose. We investigated the effects of threat and trait anxiety on state anxiety and how that affects police officers' actions during an arrest. Most experiments on police performance under anxiety test the performance of one particular skill. Yet, police work often involves concerted use of a combination of skills.

Methods. We created situations – with two different levels of threat – in which officers had to choose and initiate their actions to control and arrest a non-cooperative suspect. We examined whether threat, trait anxiety and state anxiety influenced decision-making (e.g., choosing the appropriate actions) and performance (e.g., quality of communication and the execution of skills).

Results. Trait anxiety affected the level of state anxiety, but not any of the decision-making and performance variables. As for decision-making, results showed that only threat determined which action officers took to gain control over the suspect. As for performance, higher levels of state anxiety were accompanied by lower scores of overall performance, communication, proportionality of applied force and quality of skill execution.

Conclusion. It is concluded that state anxiety not only impairs performance of single perceptual-motor tasks, but also relevant accompanying skills such as communicating and applying appropriate force. We argue that police training should focus on an integrated set of decision-making and perceptual-motor skills and not just on the performance of isolated motor skills.

In the line of duty, police officers occasionally experience different kinds of pressure (e.g., Anderson, Litzenger, & Plecas, 2002). Think, for example, of an officer fighting off an aggressive suspect or using a firearm. In such high-pressure situations, officers' performance may decrease as a result of pressure-induced state anxiety. State anxiety can be defined as 'an aversive emotional and motivational state in threatening circumstances' (Eysenck, Derakshan, Santos, & Calvo, 2007, p. 336) and is 'related to the subjective evaluation of a situation, and concerns jeopardy to one's self-esteem during

*Correspondence should be addressed to Peter G. Renden, Faculty of Human Movement Sciences, VU University Amsterdam, Van der Boerhorststraat 9, 1081 BT Amsterdam, The Netherlands (email: p.g.renden@vu.nl).

performance or social situations, physical danger, or insecurity and uncertainty' (Schwenkmezger & Steffgen, 1989, p. 78–79). Several studies have shown that officers perform worse in high-anxiety situations than they do in low-anxiety situations, both in a handgun shooting task (e.g., Nieuwenhuys & Oudejans, 2010, 2011; Oudejans, 2008) and when executing arrest and self-defence skills (e.g., Nieuwenhuys, Caljouw, Leijsen, Schmeits, & Oudejans, 2009; Renden *et al.*, 2014).

The recent model by Nieuwenhuys and Oudejans (2012) provides an explanation for the influence of state anxiety on perceptual-motor performance. The model, based on attentional control theory for cognitive tasks (Eysenck *et al.*, 2007), states that when individuals have to perform in high-anxiety situations, their attention is often drawn away from task-relevant stimuli towards threat-related (and task irrelevant) sources of information. As a result, there is less goal-directed attention available for decision-making and/or task execution.

As an example, Nieuwenhuys, Savelsbergh, and Oudejans (2012) investigated whether officers' decision-making differed between low- and high-anxiety conditions. Standing in front of a video screen, officers had to decide whether to shoot at a suspect who suddenly appeared either with a gun and shot at the participant, or who appeared without a gun and surrendered. High anxiety was created using a shoot-back canon that occasionally projected small (painful) plastic bullets. In the high-anxiety condition, officers responded faster and were more likely to shoot at the suspect who surrendered. When this happened, officers' shooting responses were so fast that they most possibly could not have seen whether the suspect appeared with or without a gun. Seemingly the officers did not take sufficient time to obtain the right information, leading them to make incorrect decisions.

In addition to changes in decision-making, anxiety-related shifts in attention have also been found in officers when performing a perceptual-motor task (Nieuwenhuys & Oudejans, 2010, 2011). In a shooting exercise, the gaze behaviour of officers placed under high-anxiety showed that they focussed more on threat-related informational sources like an opponent's handgun than they did in a low-anxiety condition. Consequently, the duration of the visual fixations on the target reduced. Furthermore, officers acted faster and were more likely to duck to reduce their chance of getting hit. These findings show that, under the influence of state anxiety, attention (and thereby behaviour) can shift from goal-directed behaviour (i.e., fixating on targets) to stimulus-driven behaviour (i.e., to avoid getting hit), ultimately leading to decreased task performance (less hits) (see Renden *et al.*, 2014 for similar results with arrest and self-defence skills).

Although the negative influence of state anxiety on police officers' decision-making and task execution is well established, it is less clear whether the experimental findings are fully representative for situations on duty. Most studies have investigated specific and pre-determined police tasks in an isolated manner (e.g., shooting, kicking, blocking), while much of what police officers do in the line of duty, for instance, arresting a suspect, involves the concerted use of a combination of skills such as communicating, positioning, choosing the most appropriate action at the most appropriate time, and adequate handcuffing. Therefore, it remains to be determined whether and to what degree state anxiety has a negative influence on decision-making and performance in less-constrained settings.

In addition, it is necessary to explore which factors influence the level of state anxiety and to what degree. Experimental studies have shown that the degree of threat, together with the necessary police task at hand, determine a certain level of state anxiety (e.g., Nieuwenhuys & Oudejans, 2010; Renden *et al.*, 2014). However, officers' trait anxiety

(officers' tendency to respond with anxiety to certain situations) is presumably also an important factor for the degree to which officers experience state anxiety on duty.

The aim of this study was to investigate the effects of threat and trait anxiety on state anxiety and how that affects police officers' actions during an arrest. We aimed to create different levels of threat (on the basis of more or less threatening behaviour of a suspect) in an experimental situation in which officers had to observe and interpret the situation encountered to select and perform the most appropriate actions. Therefore, officers received only the instruction to arrest a suspect. To do so, they could use their regular police (training) tools (pepper spray, handcuffs, handgun and short baton). Letting officers initiate their actions themselves allowed an examination of *when* officers initiated *what* actions. We also assessed the behaviour of officers using several performance variables including additional measures of communication and proportionality, both variables that are very important during police work but so far remain un-investigated.

We expected that both higher threat and higher trait anxiety would individually lead to higher levels of state anxiety. Furthermore, we expected an interaction between threat and trait anxiety. This would mean that officers with higher trait anxiety would be more sensitive to threat in such a way that threatening behaviour of the suspect would have a stronger effect on their state anxiety. Next, more state anxiety was expected to affect decision-making in terms of earlier initiation of actions and more frequent use of pepper spray rather than physical techniques to control the suspect (cf. Nieuwenhuys *et al.*, 2012). We also expected that more state anxiety would lead to decreased performance as would be evidenced by lower scores on communication, distance to the suspect, proportionality of applied force, quality of skill execution, handcuffing and overall performance (cf. Renden *et al.*, 2014).

Method

Participants

A total of 88 police officers (67 men, 21 women) with a mean age of 26.4 years ($SD = 6.0$) participated in the study. On average, officers had 3.5 years ($SD = 2.3$) of working experience. Participants provided written informed consent prior to participation, and the experiment was approved by the ethics committee of the research institute.

Scenario and tasks

Participants were asked to enter a 12 × 12 m practice room to arrest a person who was under suspicion of committing physical abuse. The suspect's initial location was in the corner of the room opposite to where the participant entered. The role of the suspect was played by one of three police instructors (all were men, Caucasian, not extravagantly muscular, and around 1.80 m tall). By working with comparable suspects, we believe that the suspects' physical appearance was not very likely to have had an influence on the pattern of results. When the participant entered the room, the suspect walked a few metres towards the participant. He asked what the participant was doing there and indicated that he did not want to cooperate and that he wanted the participant to leave. The arrest that followed could be roughly divided into three phases: Communication, gaining control and handcuffing.

In the communication phase, participants were assessed on their ability to show an assertive posture and verbal control over the situation. In the control phase, according to

protocol, participants could either use physical control techniques or pepper spray to gain control of the suspect. Physical control was deemed to be more suitable in situations where the level of threat posed by the suspect was relatively low. Physical control techniques that are applicable in this situation are techniques with which the officer controls the suspect's arm or shoulder (or both) and forces him against a wall or onto the floor. Pepper spray was deemed to be more suitable when the level of threat posed by the suspect was relatively high. Pepper spray is used by spraying the contents of the can towards the suspect's eyes from a maximum distance of 4 m. In the handcuffing phase, if the participant had used physical control techniques and placed the suspect against the wall, it was necessary for officers to use sufficient force (e.g., using their hip or upper leg) to remain in control before they physically abducted the suspect's right arm and started handcuffing. If pepper spray had been used, the participant could order the suspect to sit on his knees and optionally push him towards the floor. Then, the participant would abduct the suspect's right arm and started handcuffing.

During the different phases of the arrest, participants were assessed on their ability to keep the correct distance from the suspect (depending on the phase and applied skills), to use proportional force, and to show certainty in their movements. Overall, the suspect could resist slightly in the form of pulling away his hands and turning away, but he would comply if the participant was decisive in applying legal force. As a result, a successful arrest could only be made if the participant had full control over the suspect.

Threat

Half of the participants performed the arrest in a low-threat (LT) scenario and the other half in a high-threat (HT) scenario. Participants were randomly assigned to one of the two threat scenarios. We chose a between-subjects design, rather than a repeated measures design, to prevent participants from learning from their performance in the first scenario and leading to potential differences in the manner in which the scenario was performed the second time (irrespective of threat or anxiety). In the LT scenarios (35 men, 9 women; M age = 26.9, SD = 6.5; M working experience = 3.6, SD = 2.4), the suspect retained a calm voice and attitude, but he also expressed annoyance and unwillingness to co-operate with his arrest. He would try to initiate a dialogue with the participant and try to drag the attempted arrest into a lengthy discussion. In the HT scenarios (32 men, 12 women; M age = 25.8, SD = 5.5; M working experience = 3.5, SD = 2.1), the suspect intimidated the participant verbally and used aggressive gestures. He threatened with violence but he offered no more physical resistance than he did against participants in the LT scenarios.

Materials and measures

Anxiety

To determine participants' trait anxiety scores, we used the Dutch version of the STAI A-Trait Scale (Van der Ploeg, Defares, & Spielberger, 1980). The scale contains 20 questions about how participants generally feel. Participants answered the questions using a 4-point Likert scale.

To determine participants' state anxiety during the arrest, we used a visual analogue anxiety scale (i.e., 'the anxiety thermometer', Houtman & Bakker, 1989) that had been successfully used in earlier experiments (e.g., Nieuwenhuys & Oudejans, 2010, 2011; Nieuwenhuys *et al.*, 2009; Oudejans & Pijpers, 2009, 2010; Renden *et al.*, 2014). The

anxiety thermometer is a 10-cm continuous scale on which participants rated the state anxiety they had experienced during the arrest, ranging from 0 (*not anxious at all*) to 10 (*extremely anxious*). The validity and test–retest reliability are fair, with correlation coefficients ranging between .60 and .78 (Houtman & Bakker, 1989).

Measures of behaviour

During the experiment, two digital video cameras (Creative VADO[®]HD, 30 Hz, 1200 × 780 pixels) that were placed in two diagonally opposite corners of the room recorded the arrests. Two experimenters operated the cameras, so that the participant and suspect were visible during the entire arrest. Recordings were used for the *post-hoc* analysis of decision-making and performance.

Decision-making. Decision-making was operationalized using two different types of measures.

Skill applied to gain control of the suspect – Participants wore a regular police belt with regular police training tools: A dummy handgun, practice pepper spray, handcuffs and a short baton. From the video recordings, an experimenter determined whether participants either used physical control skills or pepper spray to gain control over the suspect.

Phase durations – Decision-making in these scenarios involved not only *what* actions officers performed but also *when* they performed those actions. The durations of the three phases of the arrest were determined (in seconds; also from video recordings) to provide insights into the timing of the officers' actions: The *communication phase* lasted from the moment the officer first step into the room to the moment the officer first used force to gain control over the suspect (applying the first physical action such as an arm or shoulder grasp, or taking the pepper spray from the belt); the *control phase* lasted from the moment the officer first used force to the moment they first took the handcuffs from their belt; and the *handcuffing phase* lasted from the moment the handcuffs were first taken from the belt to the moment the second handcuff was locked to the wrist of the suspect.

A second experimenter performed a reliability check for each of the dependent variables by repeating the same procedure for the video footage of 30 arrests. Percentages of error were determined by dividing the difference in durations (in milliseconds) between the two raters (of all 30 clips) by the average duration of the two raters multiplied by a hundred (Hughes, Cooper, & Nevill, 2004). The percentages of error were all smaller than 1% (communication phase, 0.17%; control phase, 0.29%; handcuffing phase, 0.77%), implying that the phases were determined with high reliability (Hughes *et al.*, 2004). As two participants took their handcuffs before they initiated their actions for gaining control, their phase durations were not comparable with those of the other participants. Therefore, the phase durations of these two participants were removed from the analyses.

Performance. We used a 5-point Likert scale to assess a number of measures of task performance on each trial, employing a technique that has been used successfully in earlier arrest and self-defence experiments by Nieuwenhuys *et al.* (2009) and Renden *et al.* (2014). A higher score on the scale indicates a better performance. Nieuwenhuys *et al.* reported satisfactory inter-rater reliability (.67) and intra-rater reliability (.77) and good external and concurrent validity. A police instructor assessed the performance of

participants on each trial using six variables: *Overall performance*, *communication* (showing assertive posture, getting and maintaining control of the situation), *distance to the suspect* (keeping the correct position in relation to the suspect), *proportionality of applied force* (applied force in proportion to the threat of the suspect), *quality of skill execution* (execution of techniques) and *handcuffing* (correctly putting on the handcuffs while maintaining control over the suspect). Originally, we employed separate scores for verbal and non-verbal communication, but due to a high correlation between the two, we combined them into a single variable.

As a reliability check, two additional police instructors also assessed the performance of participants while viewing the video footage of 30 arrests. All three police instructors were experienced (more than 5 years) in assessing such scenarios in the police training centre using these variables. Furthermore, the instructors all had experience as a police officer before they became an instructor, and all still operate as an officer from time to time. The scenarios were assessed in a random order. Inter-rater reliability was assessed using Kendall's *W*. Results showed satisfactory inter-rater reliabilities (Van Rossum & Gagné, 1994): Overall performance, $W(29) = .63$, $p < .01$; verbal communication, $W(29) = .60$, $p < .01$; non-verbal communication: $W(29) = .65$, $p < .01$; distance, $W(29) = .65$, $p < .01$; proportionality of applied force, $W(29) = .52$, $p < .05$; quality of skill execution, $W(29) = .63$, $p < .01$; handcuffing, $W(29) = .58$, $p < .01$.

Procedure

Before starting the experiment, participants were briefed about the general purpose of the experiment, provided written informed consent, and completed the STAI. Next, they put on their police belt and received the practice pepper spray, handcuffs and the dummy handgun. Participants then received their assignment and stepped into the room to perform the arrest. Immediately after the arrest, participants rated their state anxiety as experienced during the arrest.

Data analysis

To assess the individual effects of threat (dichotomous variable) and trait anxiety (continuous variable) on state anxiety, we performed two different tests. For the effect of threat (LT and HT), we performed an independent sample *t*-test. To assess the effect of trait anxiety, we calculated Pearson's correlation coefficients (decision-making and performance variables were also included to get a first impression of the relations). Correlation coefficients $r < .30$, $r \geq .30$ and $r \geq .50$ were considered to have small, medium and large strength, respectively (Cohen, 1988).

To assess a possible interaction between threat and trait anxiety on their influence on state anxiety, we performed a multiple regression analysis. To assess the influence of threat, trait anxiety and state anxiety on the decision-making variables, we performed a binary logistic regression analysis for the skill that was applied to gain control of the suspect (0 = *physical control technique*; 1 = *pepper spray*), and a multiple regression analysis for phase durations. To assess the influence of threat, trait anxiety, and state anxiety on performance, we also performed a multiple regression analysis. For all linear regression analyses, effect sizes were calculated using Cohen's f^2 with .02 or less, about .15 and .35 or more, representing small, moderate and large effects, respectively (Cohen, 1988).

The regression analyses were performed using a forward stepwise method (for more information, see Twisk, 2003, 2007; and Pluijms, Cañal-Bruland, Hoozemans, &

Savelsbergh, 2015). All possible predictors were first examined regarding their relationship with the outcome variable using single regression analyses. Then, the predictor that best predicted the outcome variable, based on the lowest p -value (provided that $\alpha < .10$) was included in an initial model with only the constant and the predictor. The next step was to include a second predictor, which was retained in the model if it significantly increased the proportion of the variance in the outcome variable explained by the model. This procedure continued until all variables were examined and included or rejected. After all predictor variables were tested, the predictor variables that were included in the model were tested on whether they interacted with other variables in predicting the outcome variable. Again, if an interaction between two variables significantly increased the proportion of the variance explained, it was retained in the model and excluded if it did not.

Results

General findings

There was no significant difference in the state anxiety of participants between the LT ($M = 3.81$, $SD = 1.87$) and HT scenarios ($M = 4.40$, $SD = 2.21$), $t(86) = 1.35$, $p = .18$, implying that in general, more threat did not make the officers more anxious. State anxiety levels were already reasonably high in the LT scenarios (cf. Oudejans & Pijpers, 2009, 2010; Renden *et al.*, 2014) such that the HT scenarios apparently did not lead to even higher levels of state anxiety. Still, trait anxiety was positively correlated with state anxiety ($r = .394$; see Table 1) implying that, to a certain degree, officers' trait anxiety was associated with the level of state anxiety during the arrest. Trait anxiety did not correlate with any of the decision-making or performance variables. However, state anxiety did negatively correlate with overall performance, communication, proportionality of applied force and quality of skill execution.

As for overall performance, officers scored on average between 3 and 4, implying that they performed sufficiently, but did not excel during the arrest. Overall performance correlated negatively with the durations of the control phase and the handcuffing phase ($r = -.721$ and $-.242$, respectively; see Table 1), implying that a longer duration from the initiation of the first action until handcuffing was complete, was generally associated with worse performance. Handcuffing correlated negatively with the duration of the control phase ($r = -.49$). The need for more time during the control phase may indicate less resolution in gaining control (and probably not having control) leading to less quality in handcuffing. In addition, all performance variables correlated with each other showing that better performance on one variable was generally associated with better performance on the others.

Regression analyses

Anxiety

The multiple regression analysis showed that trait anxiety was the single significant predictor for state anxiety, explaining 16% of the variance of the state anxiety scores, $F(1, 85) = 15.58$, $p < .001$, $f^2 = .19$ (see Table 2). Although we expected that an interaction between threat and trait anxiety would predict a significant proportion of state anxiety, this was not the case, $p = .96$. Taken together with the lack of difference in the state anxiety scores between the LT and HT scenarios, it appears that the difference in threat

Table 1. Mean scores of trait anxiety, state anxiety, phase durations and performance scores (SDs between parentheses) and correlations between the variables. Variables 1–10 across the top equal 1–10 reported in the first column

	1	2	3	4	5	6	7	8	9	10
	Mean (SD)									
Anxiety										
1. Trait anxiety (20–80)	31.05 (4.74)									
2. State anxiety (1–10)	4.11 (2.05)	.394***								
Decision-making (phase durations, in seconds)										
3. Communication phase	18.33 (12.82)	.128								
4. Control phase	25.47 (18.53)	.095	-.189							
5. Handcuffing phase	14.37 (6.28)	.132	-.012	.113						
Performance (1–5)										
6. Overall performance	3.66 (1.05)	-.329**	-.143	-.732***	-.242*					
7. Communication	3.87 (0.91)	-.166	-.122	-.173	-.185	.809***				
8. Distance to the suspect	3.83 (1.00)	-.057	-.128	-.160	-.112	.636***	.654***			
9. Proportionality of applied force	4.27 (0.71)	-.094	-.307**	-.041	-.188	.623***	.656***	.556***		
10. Quality of skill execution	3.65 (1.04)	-.159	-.342**	-.067	-.166	.805***	.797***	.629***	.695***	
11. Handcuffing	3.61 (1.07)	.057	-.060	-.003	-.490***	.662***	.452***	.543***	.340**	.467***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2. Outcomes of regression analyses with forward selection procedure

	B	SE	p-value
Anxiety			
State anxiety			
Trait anxiety	0.17	0.04	<.001
Decision-making			
Frequency skills			
Threat	2.12 Exp(B) = 8.33 ^a	0.49	<.001
Communication phase			
Threat	-10.66	2.48	<.001
State anxiety	1.41	0.61	<.05
Threat × State anxiety	-3.01	1.22	<.05
Control phase			
Threat	15.23	3.66	<.001
Performance			
Overall performance			
State anxiety	-0.17	0.05	<.01
Communication			
State anxiety	-0.16	0.05	<.01
Proportionality of applied force			
State anxiety	-0.11	0.04	<.01
Quality of skill execution			
State anxiety	-0.17	0.05	<.01

Note. ^aIn the high-threat scenarios, there was a 8.33 higher chance that officers would use pepper spray instead of physical control skills.

between the two scenarios was simply not strong enough to create any differences in state anxiety.

Decision-making

As mentioned, decision-making was operationalized using two different types of measures, the skill applied to gain control of the subject and phase durations.

Skill applied to gain control of the suspect. The binary logistic regression analysis showed that threat was the single predictor of the skill that officers used to gain control of the suspect: In the HT scenarios, there was an eight times higher chance that officers used pepper spray (35 times) instead of physical control techniques (9 times), $B = 2.12$, $\text{Exp}(B) = 8.33$ (see Table 2). In contrast, most officers used physical control techniques in the LT scenarios (30 times) instead of pepper spray (14 times).

Phase durations. A multiple regression analysis showed that threat, state anxiety and the threat × state anxiety interaction were significant predictors of the duration of the communication phase, explaining 24% of the variance, $F(3, 82) = 8.61$, $p < .001$, $f^2 = .32$ (see Table 2). The significant interaction reflects the finding that in the LT scenarios, more state anxiety resulted in later initiations of actions, $R^2 = .15$, whereas in

the HT scenarios state, anxiety was not a significant predictor of the duration, $R^2 < .001$. For the control phase, threat was the single significant predictor of the duration of the control phase, explaining 17% of the variance, $F(1, 84) = 17.30, p < .001, f^2 = .20$. In the HT scenarios, officers took more time for the control phase (i.e., from the initiation of their first action until they started handcuffing) than they did in the LT scenarios. There were no significant predictors for the duration of the handcuffing phase.

Performance

The multiple regression analysis found that state anxiety was a significant predictor explaining 14% of the variance in the score of overall performance, $F(2, 84) = 6.89, p < .01, f^2 = .16$ (see Table 2). Increased state anxiety was related with worse performance, which was also true for the separate performance variables *communication*, $F(1, 86) = 12.02, p < .01, f^2 = .14$, *proportionality of applied force*, $F(1, 86) = 8.93, p < .01, f^2 = .10$, and *quality of skill execution*, $F(1, 86) = 11.38, p < .01, f^2 = .14$, explaining 12%, 9%, and 12% of the variance of the scores, respectively. There were no significant predictors for distance to the suspect and for handcuffing.

Discussion

We investigated the effects of threat and trait anxiety on state anxiety and how that affects police officers' actions during an arrest. Officers performed an arrest when a suspect behaved in a way that was designed to be either less or more threatening. Yet, the different levels of threat did not lead to different levels of state anxiety. Trait anxiety, on the other hand, was positively related with state anxiety, implying that officers with higher trait anxiety experienced more state anxiety during the arrest irrespective of the level of threat.

We used different types of variables to assess the decision-making performance of participants, namely the skill applied to gain control of the suspect and the duration of the key phases in the participant's response. For the skill applied to gain control of the suspect, most officers seemed to base their decision on the level of threat the suspect exerted, leaving threat as the only variable that predicted which skill the officers employed. That the level of state anxiety did not influence which skill the officers used was in contrast to our expectations, which were based on the findings by Nieuwenhuys *et al.* (2012). In that study, a relatively 'simple' decision was required of participants, namely whether to shoot the suspect or not based on whether he appeared with a handgun or surrendered (thus the possible actions were already pre-determined). Apparently, situational characteristics seem to influence whether and how anxiety affects officers' actions and decisions (cf., Dicks, Button, & Davids, 2010; Dicks, Davids, & Button, 2009). Still, we did find that state anxiety had an effect on the duration of the key phases in the participants' responses. The length of time needed to approach the suspect in the LT scenarios differed according to state anxiety: Officers who experienced more state anxiety initiated their actions to gain control later than officers who experienced less state anxiety. This indicates that the task (approach and arrest the suspect) was incongruent with the emotion that more anxious officers experienced and they may therefore have hesitated longer before approaching the suspect and using physical control techniques (cf. Stins *et al.*, 2011).

As for performance, it appeared that trait anxiety was not related to any of the assessed performance variables. State anxiety on the other hand negatively affected overall

performance along with the more specific measures of communication, proportionality of applied force and quality of skill execution, regardless of how the suspect behaved (less or more threatening). Worse communication implies reduced control over the conversation and a less assertive posture. Worse proportionality implies insufficient warnings and applying less appropriate force. Poorer skill execution implies less decisive and effective actions in gaining control of the suspect.

Our results add to the existing literature by showing that state anxiety not only impairs the performance of a single perceptual-motor task such as performing a block or a handgun shot, but it can also concurrently impair other relevant skills such as the ability to effectively communicate and to apply appropriate force. On the basis of previous research, we can speculate that with higher anxiety, attention was presumably shifted towards threat-related sources of information (cf. Nieuwenhuys & Oudejans, 2012). As a consequence, officers seemed to hesitate when initiating their actions and performed worse on communication, proportionality and skill execution during the arrest. Overall, the negative influence of state anxiety may have serious consequences on the ability of police officers to perform their daily duty. In the light of these results, we argue that police training should focus on an integrated set of decision-making and perceptual-motor skills and not just on the motor performance of isolated skills. In doing so, it is important that officers encounter sufficient variation in situations under threatening circumstances to experience how high pressure may affect their actions and to learn in what ways they can maintain performance (cf. Nieuwenhuys & Oudejans, 2011).

An important question that remains is why one officer may have a greater tendency to respond with state anxiety than another. Here, the different levels of threat did not lead to different levels of state anxiety. Trait anxiety did influence state anxiety, but it had no effect on the outcome variables. Therefore, it seems that trait anxiety cannot fully account for the variability among officers' state anxiety and their actions. Another explanation for the variability in state anxiety among officers is provided by the biophysical model of challenge and threat (Blascovich, 2008). In short, the model describes that individuals evaluate whether they have the necessary resources to successfully perform a task. If they believe they do, a challenge state occurs, if not, a threat state occurs. It is possible that the officers in our experiment who experienced more anxiety experienced a threat state. Previous studies have shown that a threat state is associated with higher levels of state anxiety (e.g., Qusted *et al.*, 2011; Williams, Cumming, & Balanos, 2010), less effective attention (e.g., Blascovich, Seery, Mugridge, Norris, & Weisbuch, 2004; Moore, Vine, Cooke, Ring, & Wilson, 2012) and worse performance (e.g., Gildea, Schneider, & Shebilske, 2007). Future research is needed to investigate whether challenge and threat states explain variability in state anxiety among officers and how their states relate to performance.

Note that a number of limitations should be taken into account. First, we cannot rule out that officers' performance influenced their assessment of their state anxiety as we only assessed these scores after the arrest. However, Houtman and Bakker (1989) and Bakker, Vanden Auweele, and Van Mele (2003) have both shown that there are relatively high correlations (most above .70) between anxiety scores taken before and after a task. Moreover, Houtman and Bakker showed that the experienced task difficulty and expected mark (participants performed an exam) did not significantly correlate with anxiety scores (obtained from the anxiety thermometer, the A-Trait Scale and A-state scale of the STAD). Therefore, we assume that worse performance was a result of more anxiety and not the other way around. Second, general information given to participants before they entered the room may have primed them to expect a certain amount of threat. Although previous

research has suggested that briefings before experiments do not significantly affect officers' behaviour (e.g., Mitchell & Flin, 2007), expectations may have played a role in the reasonably high levels of state anxiety in the LT scenarios.

To conclude, we found no effect of state anxiety on officers' choice of actions to gain control over a suspect during a police arrest. These actions were mainly determined by the level of threat posed to them, which is in alignment with the standard protocol of police officers. Yet, in the LT scenarios, we found that officers who were more anxious were slower at initiating their actions than officers who were less anxious. Furthermore, we found that officers who were more anxious were less assertive in their communications, gave insufficient warnings, used less proportional force, and were less effective and decisive when using their skills. It is concluded that state anxiety, more than trait anxiety and level of threat, negatively influenced performance. Just as for discrete aiming tasks such as handgun shooting (cf. Nieuwenhuys & Oudejans, 2011; Oudejans, 2008), training under pressure may offer a possible method to become more accustomed to performing under pressure thereby preventing the negative effects of state anxiety on the complex tasks performed by officers on duty.

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