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The exploration of body-worn video to accelerate the decision-making skills of police officers within an experiential learning environment

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Richards, P. ORCID: 0000-0003-4242-981X, Roberts, D., Britton, M., and Roberts, N. (2018) The exploration of body-worn video to accelerate the decision-making skills of police officers within an experiential learning environment. Policing: A Journal of Policy and Practice, 12 (1). pp. 43-49. ISSN 1752-4512

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<http://dx.doi.org/10.1093/police/pax017>

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1 **The exploration of Body-Worn Video to accelerate the decision making skills of Police**
2 **Officers within an experiential learning environment.**

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16 Date of 28th October 2016 [resubmitted 11th December 2016; 10th February 2017]

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Abstract

34 Previous research has highlighted benefits of Body-Worn Video (BWV) to support the work
35 of police officers. The daily demands of policing requires officers to make highly
36 pressurised decisions (with associated rapid action) in unpredictable changing environments.
37 It is important that new officers learn techniques of decision making in a safe and controlled
38 way, which minimises the risk and harm to all parties whilst at the same time facilitating
39 effective learning. Whilst the benefits of experiential and immersive learning characterised by
40 active participation have long been used in related professional disciplines, the application to
41 police education has been under explored. BWV can be used to identify decision making
42 cues from the environment and nurture pattern recognition, essential to the development of
43 mental models within the officer's decision making process. The paper will therefore explore
44 the application of BWV in the context of experiential immersive learning to accelerate police
45 officers decision making.

46

47 **Keywords:** Body Worn Video cameras, decision making, immersive learning
48 environments, training, reflective practice;

49

50

51 **Introduction**

52 Since 2012 there has been a surge of interest into the use and application of Body Worn
53 Video (BWV) cameras into the context of modern policing (Lum, Koper, Merola, Scherer &
54 Reioux 2015). The introduction of such sophisticated technological advancements combined
55 with extensive media interest (Ariel, Farrar & Sutherland, 2015) has therefore intensified the
56 deliberations surrounding BWV and the role they can play in influencing the public
57 perception of the police and other emergency services (Culhane, Bouman & Schweitzer 2016;
58 masonadvisory, 2015). According to Custers and Vergow (2015) there is very little robust
59 evidence regarding the effectiveness of using technologies in policing; as very few evaluative
60 studies are being embarked on. However, body worn cameras are associated with
61 “instruments for accountability and an effective way of reducing violence, discrimination or
62 corruption” (Coudert, Butin and Le Métayer 2015: 749). Whilst some authors highlight the
63 potential for body worn cameras to reduce the use of force and limit abuse (Ariel, Farrar and
64 Sutherland 2015), reduce the numbers of stop and search and make subsequent arrests (Ready
65 and Young 2015) and may result in a greater willingness amongst the public to report crime
66 (Ariel 2016); through a range of studies all conducted in the United States of America. Other
67 writers (Grossmith, Owens, Finn, Mann, Davie & Baika 2015) found that compliance with
68 activating body worn cameras by officers was relatively poor, and was associated with
69 increased likelihood (Grossmith, et al, 2015) of officers to arrest; and seemingly no impact in
70 terms of increased incidence of resisting arrest (Katz et al 2015). Furthermore, Rieken (2013)
71 asserts that officers may lose the discretion that comes as part of interpreting a situation
72 resulting in mechanistic performance. Whilst these studies are important, education and
73 training of officer recruits is not the main aim of this body of work indicating the need for
74 further focused research.

75 To date the relevance and impact of BWV has not been fully considered and realised within
76 the police training environment. However, experience from members of the research team

77 recognises that certain aspects of synthetically created environments have been in existence
78 for some time and have been successfully used in other contexts. For examples HYDRA
79 suites for Senior Investigating Officers training and Simunition simulators are used
80 predominantly with firearms training. Although these environments are valuable they are
81 designed around the creation of simulated environments and they do not have the interactive
82 elements of the artificial intelligent platforms. Research on integrating BWV has only been
83 tentatively explored with two RCT's (Owens et al. 2015; Grossmith et al. 2015) based in the
84 UK, highlighting some potential for continuing professional development when officers have
85 access to BWV footage. Within these two trials the pedagogical underpinning of the
86 mechanism by which such development takes place is sketchy. Currently within police
87 training, the emphasis of the use of BWV has focused on the capture and presentation of
88 evidence in court cases.

89 While the emphasis of discussions surrounding BWV has focused on increasing the
90 accountability of officers in response to meeting operational demands, other perceived
91 benefits have received less attention. It has been recognised that BWV can provide the
92 additional operational benefits (Grossmith et al. 2015) and facilitate the gathering of evidence
93 through the automated recording of incidences in which officers attend; resulting in a
94 reduction of police use of force (Ariel et al, 2015). In a guidance document Goodall (2007)
95 suggests that in some cases the footage garnered through body worn cameras can facilitate the
96 support of reluctant witnesses in domestic abuse cases. Although a more recent randomised
97 controlled trial indicated increasing proportions of detecting domestic violence but no impact
98 on arrest rates and subsequent sentencing (Owens et al. 2015). Although the complexity of
99 integrating BWV into the strategic and organisational structure of police forces is
100 multifaceted and still very much in its infancy, limited attention has been directed towards the
101 benefit of using BWV in a training environment with the specific aim of helping to accelerate
102 the decision making capabilities of police officers. White (2014) points out that examples of

103 body worn cameras in providing opportunities for police training remain largely anecdotal
104 and untested. Although, Goodall (2007) provides some advice outlining the training officers
105 require, regarding technical and practical aspects of using the equipment; he does not go on to
106 consider how body worn camera footage could be used to enhance officer performance;
107 suggesting that there may be a subconscious improvement in officer awareness when they
108 view their own practice (Goodall 2007). The capturing of officers decision making in training
109 situations from the first person's perspective, provides a unique opportunity for officers to
110 engage with experiential learning in a safe and controlled environment. This paper explores
111 the integration of BWV cameras into police training environments to accelerate the
112 development of naturalistic decision making skills in officers. The paper therefore begins by
113 presenting an overview of naturalistic decision making and the challenges faced by officers as
114 they undertake their role in an unpredictable, highly pressurised environment which is
115 continually changing. For the purpose of this paper naturalistic decision making is the term
116 used to outline the investigation of experts in dynamic environments which are uncertain, and
117 are continually changing (Klein, 2008). Such environments are complex and are
118 characterised as containing ill structured problems; shifting, or competing goals; multiple
119 event-feedback loops; time constraints; high stakes; multiple players, organisational norms
120 and goals that must be balanced against the decision-maker's personal choice (Richards et al,
121 2009). Such characteristics typify the challenging environment of modern day policing. The
122 paper then explores how BWV can be integrated into the training environment of officers,
123 whereby key models and other mechanisms used to support police decision making (College
124 of Policing National Decision Making Model, 2013 and THRIVE) can be embedded into a
125 naturalistic decision-making framework to accelerate the development of decision making
126 skills in officers and new recruits. The paper will then briefly explore how BWV can be
127 combined with other technological advancements (oculus rift, virtual dome environments etc)
128 to create an active experiential immersive learning environment, enabling officers to develop

129 associations between cognitive decision making skills and rapid physical actions in a safe and
130 harm free setting. It is envisaged the paper will open discussion as to how policing
131 practitioners and researchers can design safe and controlled training environments which
132 maximise the transfer of learning to real life situations.

133

134 **Naturalistic Decision Making Skills and the Police Officer**

135 This commentary paper proposes that the nature of decision making performed by police
136 officers lends itself to the Naturalistic Decision Making paradigm, where decisions are
137 undertaken in highly pressurised, complex and unpredictable circumstances, where time is a
138 key determinant (Klein, 2008). For officers, such environments also include the added
139 complexity of involving multiple individuals. Decision making processes in such a dynamic
140 and continually changing environment requires the integration of perceptual skills and the
141 considerations of situational factors (Richards, Collins & Mascarhenas, 2016). The design
142 and development of training environments therefore needs to include the development of cue
143 driven perceptual skills relating to the real world context in which the officers may find
144 themselves. Developing the perceptual cues of officers in isolation to the situation could
145 result in the incorrect decision being made when training is transferred to real world settings.

146 Research from several domains, sport being one, has enhanced our understanding of decision
147 making processes in highly pressurised situations (Starkes & Ericson, 2003; Williams, 2009;
148 cf. Bar-Eli, Plessner, & Raab, 2011; Richards, Collins, & Mascarenhas, 2012). Richards et al
149 (2016) proposed two interconnected models within one framework which addresses the
150 development of decision making skills in highly dynamic and pressurised environments.
151 Although originally designed for the development of decision making skills in elite sport the
152 framework is being explored in the context of developing decision making skills in police
153 recruits on the Isle of Man. Model 1 in the empirically tested framework (see Richards et al,

154 2016 for review) outlines how important information relevant to real world contexts can be
155 pedagogically layered. This first model integrates the individual's knowledge, situational
156 factors and the context of the setting in which the individual is making the decision. The
157 second part of the framework illustrates how integrating reflective (slow deliberation) training
158 environments within scenario based settings (Richards et al, 2012) can result in the facilitation
159 of accelerated decision making skills, through the process of layering the information. There
160 has been a considerable body of research illustrating that slow deliberate learning which
161 occurs in an experiential scenario based video environment can accelerate the decision
162 making skills in highly pressurised naturalistic field settings (Richards et al, 2009; 2012;
163 Merola & Richards, 2010; Bates & Richards, 2011 and Richards, Penrose & Turner, 2015).
164 The slow deliberate video based learning environment empowers individuals to construct
165 specific mental models in the context of their own performance. Within the mechanism
166 advocated here, the beginner or less experienced recruit can learn from and have access to the
167 mental model of the more experienced officer as they both watch footage of a situation
168 together.

169 Through the observation of video recorded from BWV officers (individual officers or a
170 specialist team of officers) it is proposed that officers can engage in deliberate, structured
171 discussions. Such engagement empowers the officers (individually or collectively as a team)
172 to identify key features and important aspects of the clip, which results in the formulation of
173 individual or shared mental models (Richards et al, 2012; Richards et al, 2016). Westbrook
174 (2006) highlighted that mental models are only valuable to the individuals who construct
175 them; indicating that everyone is required to construct their own mental model. Focused
176 discussion between individuals can therefore make mental models accessible resulting in
177 more effective engagement when similar situations arise in the future (cf. Mascarenhas,
178 Collins, Mortimer, & Morris, 2005). The connection between the empowered slow deliberate
179 learning environment and the applied real world context (where decision are made in real life

180 situations) is evident in the model through an interacting pair of feed-forward and feedback
181 mechanisms (Richards et al, 2016). Feedback discussion features aspects of what was
182 completed well; whereas feedforward discussions focus on what needs to be incorporated into
183 future actions if a similar situation arises.

184 The authors of this paper therefore proposed that footage captured from BWV could be
185 integrated within the decision framework proposed by Richards et al (2016) enabling training
186 officers to apply specific police decision making models (THRIVE and NDM) to enhance the
187 decision making skills of officers when on patrol.

188

189 **Developing a video based learning environment to facilitate Decision Making Skills in** 190 **Police Officers**

191 Effective teaching should enable students to assimilate new knowledge into existing cognitive
192 structures (Andrews & Roberts, 2003). Simulated or immersive learning environments enable
193 students to do so through active participation. Such simulated immersive learning
194 environments are being used in a range of associated professional disciplines such as medical
195 and nurse education to enable students to observe, rehearse and practise in an approximation
196 of the real world. Through immersion in scenario based learning encounters, students are
197 enabled to draw on all of their senses to facilitate decision-making in real time (Roberts &
198 Roberts, 2014). Typically simulation features active participation by the learner followed by
199 structured de-briefing with an expert or skilled facilitator where meaning and sense making
200 can be achieved.

201 The process of sense making facilitates the officer moving beyond the identification and
202 comprehension of environmental cues which are being discussed and the trainee officer is
203 encouraged to *frame* or comprehend the cue in relation to the situation. Sense making
204 therefore would facilitate the trainee officer establishing connections and associations

205 between environmental cues. Such an empowered, slow deliberate process of sense making
206 results in the development of the individual's own mental model or internalised plan
207 (Richards et al, 2012; 2012), which in turn can be used to inform and shape actions in future
208 situations (Bates & Richards, 2011).

209 Whilst active participation in a learning environment is important; there is a growing
210 recognition that individuals can also learn vicariously through the experiences of others; being
211 able to listen to experts as they discuss a new topic, enables students to learn through such
212 active discussion (Roberts, 2010). (Although it is recognised that this is often dependent on
213 the skills of the teacher in facilitating learning.) Utilising BWV footage captured either
214 through everyday work or through judiciously selected and recreated simulated scenarios
215 ensures that the stimulus for learning is rooted in the real world of policing, where the
216 knowledge on which professionals draw is broad, deep and multi-faceted; moreover, the
217 problems which professionals face are not straightforward, rather they are complex and messy
218 (Schon, 1987). We postulate that as the experienced officer and the beginner watch the BWV
219 footage together they can focus their discussion on the environmental and embodied cues
220 (data points) that the expert experienced officer has identified to frame (or contextualise) the
221 situation. As the discussion unfolds, the beginner is given access to the mental model of the
222 experienced officer as their craft knowledge is shared. This craft knowledge can then be used
223 to inform future action of the novice officer, when they are confronted with a similar real
224 world situation.

225 It is proposed that the integration of BWV footage into learning environments combined with
226 engagement in structured conversations (empowered slow deliberate learning) between expert
227 or experienced officer and less experienced, or those at the beginning of their police careers
228 could accelerate decision making skills. We believe there is a potential that real world police
229 decision making can be accelerated and enhanced through such approaches. Furthermore, the
230 initial work being undertaken in this field of inquiry warrants closer attention.

231 **Conclusion and moving to the next step**

232 In conclusion, BWV footage could be integrated into simulated training environments which
233 are specifically designed to accelerate the decision making skills of police officers. The
234 integration of structured discussions between expert or experienced officers and those at the
235 beginning of their careers facilitates a slow deliberate empowered learning environment that
236 creates the opportunity for officers to explore highly pressurised situations but in a controlled
237 and risk free setting. The structuring of the video based learning environment would
238 empower the officers to develop effective mental models of decision making which relate to a
239 specific policing context (e.g. drunk and disorderly). Integrating BWV into a simulated and/or
240 immersive learning environment facilitates officers being able to identify and prioritise
241 environmental cues and contextualise (frame) this visual information in context of the real life
242 situations which they may find themselves.

243 The challenge for policing practitioners and researchers is therefore to integrate emerging
244 technology into specifically designed and constructed training environments which are free
245 from harm, maximise and accelerate decision making skills in officers but which are
246 economically viable. There is potential to use a range of emerging technology in conjunction
247 with BWV footage to create such a learning context. Eye tracking technology would generate
248 an understanding of the search patterns or ability to ‘read the scene’ of expert officers when
249 they are attending an incident (scenarios created in a training context). Such information could
250 be useful in providing a framework for understanding how expert officers think. The use of
251 BWV could also be integrated with single user digital technology platforms such as Oculus
252 Rift (a head mounted display, that exposes its wearer to a bespoke interactive 360-degree
253 immersive environment, deployed using virtual reality) providing the benefits of learning in a
254 harm free environment; and which enable the learner to repeatedly encounter training
255 situations in order to refine their response. Finally, the construction of immersive learning
256 environments, such as 3D virtual domes (an enclosed 360 degree interactive environment

257 where a range of environments can be projected using conventional game development
258 techniques to produce 3D digital content) (Roberts & Roberts, 2014) could be used to
259 facilitate the development and collaboration of team decision making skills between officers,
260 as multiple individuals can engage in scenario based training collectively in risk free training
261 context.

262 It is hoped that this paper may open discussion as to how BWV can be integrated with video
263 based /immersive learning environments; whereby empowering officers to engage in slow
264 deliberate learning processes can accelerate the development and acceleration of decision
265 making skills which are transferable to real life situations.

266

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