OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need: Evaluation into the validity of facial comparison training methods

Keyword(s): facial comparison, training, competency, learning

Submitting subcommittee(s): Facial Identification **Date Approved:** 20180321

(If SAC review identifies additional subcommittees, add them to the box above.)

Background Information:

1. Description of research need:

Facial comparison (the comparison of two or more unfamiliar facial images to determine whether they depict the same individual) is distinct within forensic disciplines, as all individuals have some level of innate ability in the task. Academic research has demonstrated that even with high quality imagery innate ability varies significantly between individuals [1] and that the error rates associated with facial comparison by lay persons are much higher than those associated with familiar facial recognition (identification of someone known to the observer) [2]. As image quality decreases [3] or other challenges are introduced, such as non-matching expression or pose [4] , the error rate for facial comparison increases.

To date a small number of studies have demonstrated that trained facial examiners outperform laypersons in facial comparison tasks [5],[6],[7],[8] but there has been limited research into what benefit training has contributed to the greater ability of these individuals. Current research has shown some training benefit from providing feedback on facial comparison trials [9], working in pairs to facilitate learning [10] and instructing trainees to use a facial feature checklist [11]. Conversely other training strategies, such as classifying the shape of features [12], providing basic training in anatomy and photography [13] and instruction using short online courses [13] have been shown to have no notable benefit for facial comparison ability. These studies have been conducted on non-professional populations (e.g. undergraduate students) and do not accurately represent how facial comparison training courses are conducted by many agencies or the types of trainees who undertake them.

There is a pressing need to conduct empirical validation of current facial comparison training courses for operational personnel to determine what aspects of training are required to improve facial comparison ability. This will ensure the quality of training material and provide OSAC with the necessary data to write standards in training in facial comparison.

The UK Metropolitan Police Service, in collaboration with the Open University have funded a PhD program within their Forensic Facial Comparison Unit to research this issue (commencing this year), which in collaboration with OSAC and NIST can address this pressing research need.

2. Key bibliographic references relating to this research need:

[1] A. M. Burton, D. White, and A. McNeill, "The Glasgow Face Matching Test.," *Behav. Res. Methods*, vol. 42, no. 1, pp. 286–291, 2010.

[2] S. W. A. Mike Burton Michelle Cowan and Vicki Bruce, "Face Recognition in Poor-Quality Video: Evidence from Security Surveillance," *Psychol. Sci.*, vol. 10, no. 3, pp. 243–248, 1999.

[3] H. U. Keval and M. A. Sasse, "Can we ID from CCTV: Image quality in digital CCTV and face identification performance," *Proc. SPIE*, vol. 6982, p. 69820K, 2008.

[4] R. Jenkins, D. White, X. Van Montfort, and A. Mike Burton, "Variability in photos of the same face," *Cognition*, vol. 121, no. 3, pp. 313–323, 2011.

[5] D. White, P. J. Phillips, C. A. Hahn, M. Hill, A. J. O. Toole, and D. White, "Perceptual expertise in forensic facial image comparison," 2015.

[6] K. Norell, K. B. Läthén, P. Bergström, A. Rice, V. Natu, and A. O'Toole, "The Effect of Image Quality and Forensic Expertise in Facial Image Comparisons," *J. Forensic Sci.*, vol. 60, no. 2, pp. 331–340, 2015.

[7] D. White, J. D. Dunn, A. C. Schmid, and R. I. Kemp, "Error rates in users of automatic face recognition software," *PLoS One*, vol. 10, no. 10, 2015.

[8] C. Wilkinson and R. Evans, "Are facial image analysis experts any better than the general public at identifying individuals from CCTV images?," *Sci. Justice*, vol. 49, no. 3, pp. 191–196, 2009.

[9] D. White, R. I. Kemp, R. Jenkins, and A. M. Burton, "Feedback training for facial image comparison," *Psychon. Bull. {&} Rev.*, vol. 21, no. 1, pp. 100–106, 2014.

[10] A. J. Dowsett and A. M. Burton, "Unfamiliar face matching: Pairs out-perform individuals and provide a route to training," *Br. J. Psychol.*, vol. 106, no. 3, pp. 433–445, 2015.

[11] A. Towler, D. White, R. I. Kemp, A. Towler, D. White, and R. I. Kemp, "Evaluating the Feature Comparison Strategy for Forensic Face Identification," *J. Exp. Psychol. Appl.*, 2017.

[12] A. Towler, D. White, and R. I. Kemp, "Evaluating training methods for facial image comparison: The face shape strategy does not work," *Perception*, vol. 43, no. 2–3, pp. 214–218, 2014.

[13] A. Towler, "Match me if you can : Evaluating professional training for facial image comparison," no. January, 2016.

3a. In what ways would the research results improve current laboratory capabilities?

This research will provide empirical research to inform laboratories on how to effectively train their staff in facial comparison, improving the quality and reliability of facial comparison tasks and ensuring that training is delivered cost-effectively to address this need.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

Many laboratories are providing training in facial comparison but there has been very limited research into how effective such training programs are. This research will validate the effectiveness of facial comparison training and allow laboratories to update their training programs as appropriate.

3c. In what ways would the research results improve services to the criminal justice system?

This research will ensure that personnel undertaking facial comparisons have received effective training and testing to make sure they are competent at the task and produce reliable and accurate results. This training is relevant to the entire spectrum of personnel conducting facial comparisons, from forensic facial

examiners to facial reviewers adjudicating the results of automated systems to facial assessors working as border guards.

4. Status assessment (I, II, III, or IV): II

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.

Approvals:

Subcommittee

Approval date: 20180223

(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)

SAC

1. Does the SAC agree with the research need? Yes [X] No [ ]
2. Does the SAC agree with the status assessment? Yes [X] No [ ]

If no, what is the status assessment of the SAC: [ ]

Approval date: 20180321

(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)