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Guide for Facial Comparison Training of Examiners to Competency

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34 1. Scope

35 1.1 This guide is intended to provide a minimum set of criteria for training of
36 personnel who will conduct facial comparisons at the examiner level.

37 1.2 Facial Examination is a comparison of image(s)-to-image(s) often used in a
38 forensic application.

39 1.3 The Facial Examiner role performs a comparison of image(s)-to-image(s) using
40 a rigorous morphological analysis, comparison, and evaluation of controlled and
41 uncontrolled images for the purpose of effecting a conclusion, often used in a
42 forensic application.

43 1.4 Facial Examiners in this situation must draw on a larger foundation of
44 knowledge, skill, and ability to accurately reach their conclusions. Examiners
45 should have an in-depth knowledge of the application of available tools and be
46 able to articulate the scientific and legal basis for the expression of conclusions.
47 The role of facial examiner requires an advanced level of training to include an
48 expanded set of knowledge, skills, and abilities above facial assessment and
49 review.

50 1.5 The intended audience of this document includes agencies and individuals
51 involved in facial comparison at the examiner level.

52 1.6 This guide was developed by representative members of the Facial
53 Identification sub-committee of the Digital/Multimedia Committee within the
54 Organization of Scientific Area Committees (OSAC) as advisory information and
55 published as a public service.

56 1.7 OSAC disclaims all liability for the use, application, or adaptation of materials
57 published herein. This standard is subject to revision at any time and should be
58 reviewed every five years and, if not revised, either reaffirmed or withdrawn.

59 **2. Terminology**

60 2.1 See ASTM E2916-13 Standard Terminology for Digital and Multimedia Evidence
61 Examination¹:

62 **3. Summary of Practice**

63 3.1 This guide provides the minimum criteria for training of facial examiners and
64 should be read in conjunction with the FISWG Guidelines and
65 Recommendations for Facial Comparison Training to Competency and the
66 FISWG Recommendations for a Training Program in Facial Comparison.

67 3.2 Agencies should include competency testing as a component of training and
68 quality assurance programs as a reliable means of measuring the quality of

¹ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

69 each trainee's ability to perform work. Competency testing may help identify
70 opportunities for continuing education and training.

71 3.3 Minimum training requirements for facial examiners includes demonstrating
72 competency of the following:

73 3.3.1 Knowledge of and ability to summarize the history of facial comparisons in
74 forensic science to include past and current methods, including the
75 Bertillon method, and their shortcomings.

76 3.3.2 A thorough understanding of and be able to apply common terminology
77 used in the community.

78 3.3.3 The user must understand common terminology and should be able to
79 define human face recognition (familiar/eyewitness) and automated facial
80 recognition as well as explain the differences and their distinction from
81 holistic face processing and unfamiliar face matching.

82 3.3.4 Demonstrate knowledge of the perception of facial recognition and
83 identification in the legal community and be aware of current public
84 perception.

85 3.3.5 Demonstrate a thorough understanding of the components of image
86 science including, but not limited to:

87 3.3.5.1 Vision (e.g., Color, Illumination, Perception)

88 3.3.5.2 Photography (e.g., Distortions, Pose, Expression, Perspective)

89 3.3.5.3 Components of digital images and compression

- 90 3.3.5.4 Detection of alteration within images (e.g., excessive compression,
91 manipulation)
- 92 3.3.5.5 Properties of video (e.g., Limitations, Formats, Extraction of Stills)
- 93 3.3.5.6 Components of digital images and compression
- 94 3.3.5.7 Knowledge of sensors, pixels, and resolution
- 95 3.3.5.8 Impact of digital imaging on facial features
- 96 3.3.6 Demonstrate proper handling of media, write protection of that media, and
97 generation of working copies.
- 98 3.3.7 Demonstrate a comprehensive working knowledge of and be capable of
99 explaining the principles of comparison. These principles include:
- 100 3.3.7.1 Process of Analysis, Comparison, Evaluation, and Verification (ACE-V)
- 101 3.3.7.2 Assessment of facial image quality to determine the value for
102 comparison based on the visibility of facial features.
- 103 3.3.7.3 The differences between class and individual characteristics, as well as
104 those of transient and stable characteristics..
- 105 3.3.7.4 Methods of comparisons
- 106 3.3.7.4.1 Morphological Analysis (recommended technique)
- 107 3.3.7.4.2 Photo anthropometry (a technique which is not
108 recommended for facial review)

109 3.3.7.4.3 Superimposition (a technique which is only
110 recommended when used in conjunction with
111 morphological analysis)

112 3.3.8 An in-depth knowledge of automated facial recognition systems if one is
113 utilized. If the agency does not utilize an automated facial recognition
114 system, the trainee should have a general knowledge of these systems.
115 Knowledge of automated facial recognition systems should include, but
116 not limited to:

117 3.3.8.1 Trainee input and operation

118 3.3.8.2 System operation and output

119 3.3.8.3 Facial recognition algorithm limitations including, but not limited to:

120 3.3.8.3.1 Imaging conditions (e.g., image quality, pose)

121 3.3.8.3.2 Accessories (e.g., eyeglasses, jewelry)

122 3.3.8.3.3 Obstructions (e.g., masks, scarves, head coverings)

123 3.3.8.3.4 General awareness of other biometric matching
124 modalities

125 3.3.9 Be competent in applying basic image processing operations (e.g.,
126 brightness and contrast adjustments, rotations, cropping) and
127 demonstrate knowledge of the impact of these operations on facial
128 appearance.

129 3.3.10 A thorough knowledge of the bones that comprise the skull and the
130 overlaying musculature.

131 3.3.11 A thorough knowledge of the ASTM E3149-18 (Standard Guide for Facial
132 Image Comparison Feature List for Morphological Analysis) and
133 competency in using the list during examinations. This knowledge
134 includes, but is not limited to:

135 3.3.11.1 Face/head outline and composition

136 3.3.11.2 Hair (e.g., hairline, baldness)

137 3.3.11.3 Forehead

138 3.3.11.4 Eyes and Eyebrows

139 3.3.11.5 Cheeks

140 3.3.11.6 Nose

141 3.3.11.7 Mouth

142 3.3.11.8 Chin/jawline

143 3.3.11.9 Ears

144 3.3.11.10 Neck

145 3.3.11.11 Facial hair

146 3.3.11.12 Facial lines, marks, and scars

147 3.3.11.13 Features of the skin

148 3.3.12 Knowledge of and ability to explain the variable nature of the human face
149 over time, the level of permanence of individual features, and understand
150 the results of aging.

151 3.3.13 Knowledge of alterations of the face, both temporary and permanent.

152 3.3.13.1 Examples of temporary changes are: cosmetics, weight
153 changes, hair color changes, wounds, and abrasions.

154 3.3.13.2 Examples of permanent changes are: scars, surgical alterations,
155 tattoos, and piercings.

156 3.3.14 Awareness of any available relevant statistical data regarding the relative
157 frequency of occurrence of certain features within a population

158 3.3.15 Thorough knowledge of legal/justice Issues in facial examination and
159 competency in testifying in court. This knowledge includes, but is not
160 limited to, the following: Implications of the relevant judicial decisions that
161 govern admittance of scientific evidence in court. Issues such as proper
162 chain of custody, documentation and notes, reporting of results, and
163 technical review.

164 3.3.16 The history of facial comparison and recognition in court and relevant
165 case law.

166 3.3.17 Be competent in explaining the process of facial examinations to the jury,
167 the limits of the relevant science and technology, and the creation of

168 visual aids. This competency should be demonstrated through the
169 process of moot courts and/or mock trials.

170 3.3.18 Aware of common misconceptions created by popular media to include
171 fictional television shows, novels, and movies, cumulatively known as
172 “The CSI Effect.”

173 **4. Keywords**

174 4.1 Training, Facial Identification, Facial Comparison

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