OSAC 2022-S-0001 Standard Guide for Image Comparison Conclusions/Opinions

Facial Identification Subcommittee
Digital/Multimedia Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science

Draft OSAC Proposed Standard

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Prepared by
Facial Identification Subcommittee
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Disclaimer:

This OSAC Proposed Standard was written by the Facial Identification Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science following a process that includes an open comment period. This Proposed Standard will be submitted to a standards developing organization and is subject to change.

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To be placed on the OSAC Registry, certain types of standards first must be reviewed by a Scientific and Technical Review Panel (STRP). The STRP process is vital to OSAC's mission of generating and recognizing scientifically sound standards for producing and interpreting forensic science results. The STRP shall provide critical and knowledgeable reviews of draft standards or of proposed revisions of standards previously published by standards developing organizations (SDOs) to ensure that the published methods that practitioners employ are scientifically valid, and the resulting claims are trustworthy.

The STRP panel will consist of an independent and diverse panel, including subject matter experts, human factors scientists, quality assurance personnel, and legal experts, which will be tasked with evaluating the proposed standard based on a comprehensive list of science-based criteria.

For more information about this important process, please visit our website at: https://www.nist.gov/topics/organization-scientific-area-committees-forensic-science/scientific-technical-review-panels.

Standard Guide for Image Comparison Conclusions/Opinions[1]

1. Scope

1.1 This standard defines conclusions (hereafter "opinions") categories that shall be reached by a practitioner performing comparisons of people, objects, or scenes captured in images (e.g., face, vehicle, clothing, skin detail, etc.), regardless of the process by which opinions are reached (i.e., the examination methodology).

1.1.1 This standard does not address opinions stated in terms of quantitative probability models, to include numerical assessments of the strength or weight of evidence, or the documentation or reporting of opinion (FISWG Minimum Guidelines for Facial Image Comparison Documentation, SWGDE Technical Overview for Forensic Image Comparison).

1.1.2 This standard does not supersede published opinion scale standards for other disciplines.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This standard is intended to be used by individuals with discipline specific knowledge, skills, and abilities acquired through education, training, and experience.*

2. Referenced Documents

[1] There is a movement in the forensic community to eliminate the word "conclusion" from the formal set of words that describe forensic processes. For example, ISO does not use the word "conclusion". This is reflected by the Organization of Scientific Area Committees for Forensic Science (OSAC) preference to use the term "opinion" (defined as View, judgment, belief – takes into consideration other information in addition to observations, data, calculations, and interpretations).

2.1 *ASTM Standards*:

2.1.1 Standard Guide for Facial Image Comparison Feature List for Morphological Analysis (E3149)

2.2 *FISWG Standards:*

2.2.1 FISWG Minimum Guidelines for Facial Image Comparison Documentation

2.3 *SWGDE Standards:*

2.3.1 SWGDE Best Practices for Photographic Comparison for All Disciplines

2.3.2 SWGDE Technical Overview for Forensic Image Comparison

3. Terminology

3.1 *Definitions specific to this standard:*

3.1.1 *source*, *n*—the person, object, or scene captured in the images being compared

4. Significance and Use

4.1 This standard should be used by organizations performing source determination of people, objects, or scenes depicted in images and lack a quantitative assessment mechanism.

4.2 Any mention of probability within this document refers to a subjective probability based on the knowledge, skills, and experience of the practitioner. It should be stated when no empirical studies currently exist for a given type of evidence and interpretation.

4.3 To ensure interorganizational consistency, this framework categorizes opinions based on the level of support the data shows for the propositions under consideration. When defining opinion scales, organizations shall consider alternative propositions (both the propositions of same source and of not same source).

4.4 Individual organizations may label their opinions scales differently, but they should explicitly correspond to the opinion categories as defined in this standard.

4.5 The opinion categories "Support for Exclusion" and "Support for Common Source" may be expanded to include multiple opinions of more specific levels of confidence based on organization specific needs.

5. Opinion Categories

5.1 ***Exclusion:*** an opinion that the observed characteristics do not depict the same source where a minimum of one irreconcilable discrepancy is observed.

5.2 ***Support for Exclusion***: an opinion that the observed dissimilar characteristics outweigh the similar characteristics but are insufficient to reach an exclusion. The observed characteristics are more probable given the proposition that the images depict different sources, rather than the proposition that they depict the same source.

5.3 ***Inconclusive***: The basis of this opinion is that the observed characteristics are equally probable given the proposition that the images depict different sources and the proposition that the images depict the same source.

5.4 ***Support for Common Source***: an opinion that the observed similar characteristics outweigh the observed dissimilar characteristics but are insufficient to reach strong support for common source. The observed characteristics are more probable given the proposition that the images depict the same source, rather than the proposition that they depict the different sources.

5.5 ***Strong Support for Common Source***: an opinion that the observed similar characteristics far outweigh the observed dissimilar characteristics. The observed characteristics are much more

probable given the proposition that the images depict the same source, rather than the proposition that they depict the different sources.

5.5.1 A practitioner shall not assert the opinion that two items (e.g., faces, vehicles, clothing, skin detail, etc.) originated from the same source to the exclusion of all others. A practitioner shall not use terms in the stated opinion such as “individualize,” “individualization,” or express an absolute certainty or any numerical value of certainty. Such an assertion would be scientifically unsupportable and may wrongly imply a common source is based upon a statistically-derived or verified measurement, or comparison of all features of the object in the world's population, rather than a practitioner’s opinion.

APPENDIX[2]

X1. OBJECT COMPARISON EXAMPLES

[2] Examples contributed from OSAC VITAL and Facial Identification Subcommittees

X1.1 Exclusion

X1.1.1 An image of a 2-door coupe is compared to an image of a 4-door sedan.

X1.1.2 Reasoning: The vehicles have irreconcilable observed discrepancies, 2-doors as opposed to 4-doors.

X1.2 Support for Exclusion

X1.2.1 Images of two similar colored, make/model and generation (year range of manufacturing) vehicles (class characteristics) are compared. One of the depicted vehicles has visible damage with rust on the passenger door.

X1.2.2 Reasoning: The damage could have occurred after the one image was captured making the damage an explainable dissimilarity.

X1.3 Inconclusive

X1.3.1 Images of two similar colored, but indeterminate make/model and generation vehicles are compared.

X1.3.2 Reasoning: These are only class characteristics and millions of these vehicles were manufactured. No observable features that would support exclusion or common source opinions.

X1.4 Support for Common Source

X1.4.1 Images of two similar colored, make/model and generation vehicles with damage in the same location and of comparable shape and size are compared.

X1.4.2 Reasoning: Observed feature (similar damage) would support that the vehicles could be the same.

X1.5 Strong Support for Common Source

X1.5.1 Images of two similar colored, make/model and generation vehicles with multiple points of damage in the same locations and of comparable shapes and sizes, are compared.

X1.5.2 Reasoning: Observed features, including the shapes, sizes and positional relationship to each other, supports that the vehicles are same more than any other opinion.

X2. FACE COMPARISON EXAMPLES

For all examples in this section, the following assumptions must be considered: reason for the comparison--individuals look similar, identical capture conditions and image quality

X1.6 Exclusion

X1.6.1 An image depicting an elderly individual with a long face and narrow-set eyes compared to an image depicting a young individual with a round face and wide-set eyes (the images are captured contemporaneously).

X1.6.2 Reasoning: The subjects show irreconcilable differences in that the face shape and eye-set are skeletally determined and are not easily changed.

X1.7 Support for Exclusion

X1.7.1 An image depicting a young individual with a round face and wide set eyes compared to an image depicting a young individual with a round face, wide-set eyes, and an apparent scar on the right cheek (timing of images is unknown).

X1.7.2 Reasoning: The scar on the right cheek could be an explainable or unexplainable dissimilarity, depending on the timing of the images.

X1.8 Inconclusive

X1.8.1 An image depicting a young individual with a round face and wide-set eyes with a scar on the right cheek compared with an image depicting a young individual with a round face and wide-set eyes wearing a surgical mask that precludes observations of the presence or absence

of a scar and other potentially comparable characteristics of the lower face (the images are captured contemporaneously).

X1.8.2 Reasoning: Insufficient observable features that would support exclusion or common source opinions.

X1.9 Support for Common Source

X1.9.1 An image depicting a young individual with a round face and wide set eyes compared to an image depicting a young individual with a round face, wide-set eyes, and an apparent scar on the right cheek (the latter image was captured years after the former).

X1.9.2 Reasoning: Facial components, characteristics, and characteristic descriptors suggest that the subjects could be the same and observed differences are explainable.

X1.10 Strong Support for Common Source

X1.10.1 An image depicting a young individual with a round face, wide-set eyes, and a scar on the right cheek compared to an image depicting a young individual with a round face, wide-set eyes, and a scar of the same dimensions, orientation, and color on the right cheek (the images are captured contemporaneously).

X1.10.2 Reasoning: Facial components, characteristics, and characteristic descriptors suggest that the subjects could be the same and observed differences are explainable. This category would be differentiated from Support for Common Source based on the discriminating power of the observed facial components, characteristics, and characteristic descriptors.