Use of Facial Composite Systems in U.S. Law Enforcement Agencies [1]

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Abstract

Facial composite images are often used in the criminal investigation process to facilitate the identification of an offender. Research generally shows that the effectiveness of various composite systems in generating accurate facial representations is low, however these findings do not reflect a number of newly developed computerized systems. This study investigated the prevalence of composite systems currently utilized by police via a survey of city, state, and county law enforcement agencies, nationwide. This paper summarizes survey responses and the implications for improving this aspect of the eyewitness identification process.

Facial composite images are used for eyewitness identification purposes when the identity of an offender is unknown and when witnesses do not make an identification from a lineup or collection of mugshots offered by the police. Under these circumstances, witnesses are often asked to participate in the process of constructing a facial image of the offender. Some law enforcement agencies use sketch artists for this purpose. For others, a number of facial composite construction systems are available, both computerized and non-computerized.

Psychological research has investigated the efficacy of a number of composite systems in generating images that accurately represent a face. This research has focused mainly on evaluation of the Photo-fit (Ellis, Davies, & Shepherd, 1978; Ellis, Shepherd, & Davies, 1975; Davies & Christie, 1982; Jenkins & Davies, 1985) and Identi-Kit (Comish, 1987; Laughery & Fowler, 1980), both non-computerized systems. In general, studies have found serious limitations of these systems in terms of the production of accurate representations of faces. Research examining the accuracy of facial composites created using the Mac-a-Mug Pro, a computerized system, has produced inconsistent results (Cutler, Stocklein, & Penrod, 1988; Koehn & Fisher, 1997; Kovera, Penrod, Pappas, & Thill, 1997).

Current research does not reflect a number of newly developed computerized composite systems. Prior to evaluation of the accuracy of these systems, it is useful to identify which tools are actually used by law enforcement. Therefore, the purpose of this study was to identify the composite systems currently

utilized by law enforcement, as well as a number of issues related to composite construction, including police officers' satisfaction with these systems, methods of training, interviewing procedures, and selection criteria when purchasing a system.

Method

Participants

Surveys were directed to 1637 U.S. law enforcement agencies, sampled from a national database at the National Public Safety Information Bureau (1999). Stratified random sampling was used to obtain samples from municipal, county, and state jurisdictions. Based on this sampling method, 75% (910) were distributed to U.S. municipal law enforcement agencies, 23% (500) were distributed to U.S. county law enforcement agencies, and 2% (227) were distributed to U.S. state law enforcement agencies. A median split was used when sampling from the municipal and county jurisdictions so that half of each were above the median population (large jurisdictions) and half were below the median population (small jurisdictions).

Survey Instrument and Procedure

A 39-item survey was developed which addressed issues related to facial composite construction. Twenty-four of the survey items were multiple-choice type questions, some of which requested only one response while others included a "check all that apply" instruction. The remaining 15 items were open-ended questions, 8 of which required a numeric response. Surveys were addressed to the agency head (i.e., Sheriff, Captain, Chief) provided by the national database service. A cover letter requested that the survey be forwarded to a person responsible for creating facial composites within the agency. Participants were to return the survey in the return postage-paid envelope provided. Approximately two months after the mailing a follow-up postcard was sent to the entire sample in which we offered to mail another survey if needed.

Figure 1. Overall Use of Sketch Artists and Composite Systems

*non-mutually exclusive groups
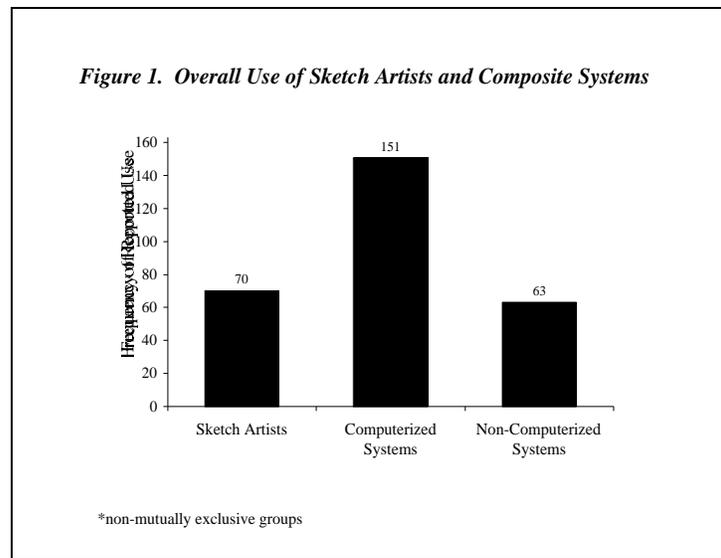
Results

Of the 1637 surveys distributed, a total of 163 (10%) were returned. Of those returned, 61% (100) were from municipal jurisdictions (89 from large cities, 11 from small cities), 19% (31) were from state jurisdictions, 17% (28) were from county jurisdictions (22 from large counties, 5 from small counties), and 3% (4) were from village/town jurisdictions. While our survey examined a number of issues related

to facial composite construction, it is beyond the scope of this paper to present all the data.

Therefore, the results presented here summarize our main findings.

Figure 2. Use of Computerized and Non-Computerized Systems
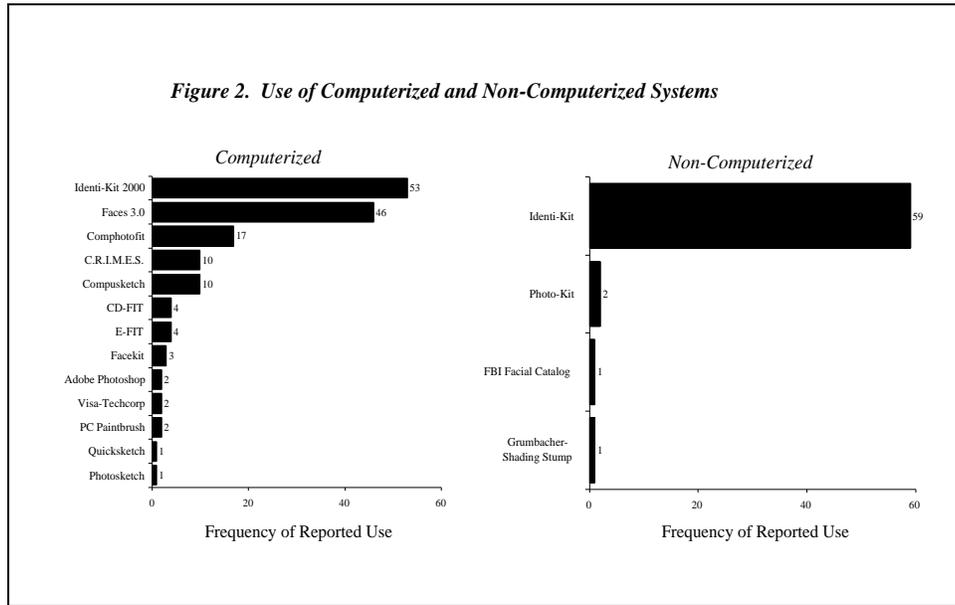
Figures 1 and 2 depict the prevalence of composite systems used by police officers. Nearly all officers reported using some type of computerized composite system (N=151), while nearly half of the officers reported using sketch artists (N=70) and/or non-computerized systems (N=63). The most frequently reported composite systems used were the Identi-Kit 2000, Faces 3.0, Comphotofit, C.R.I.M.E.S., and Compusketch, while Identi-Kit (transparencies) was the non-computerized system used most often.

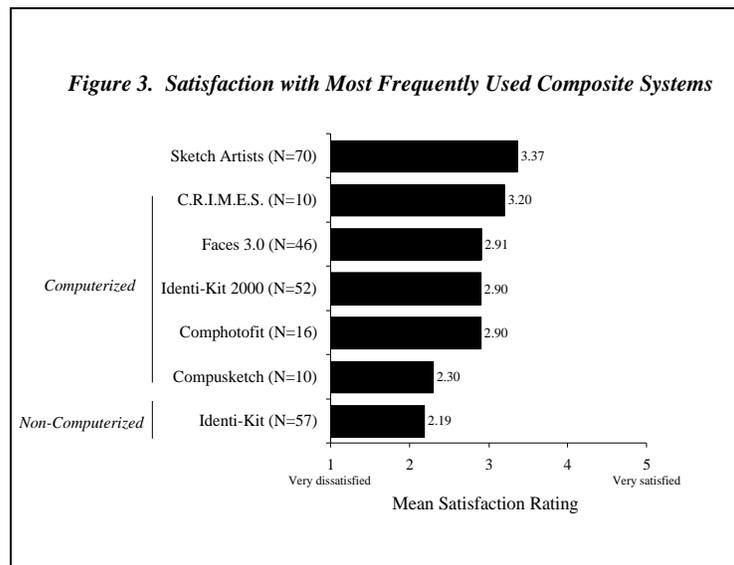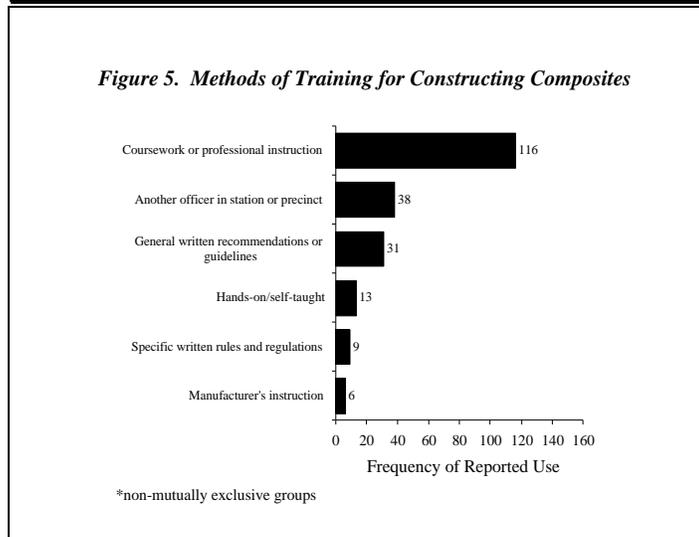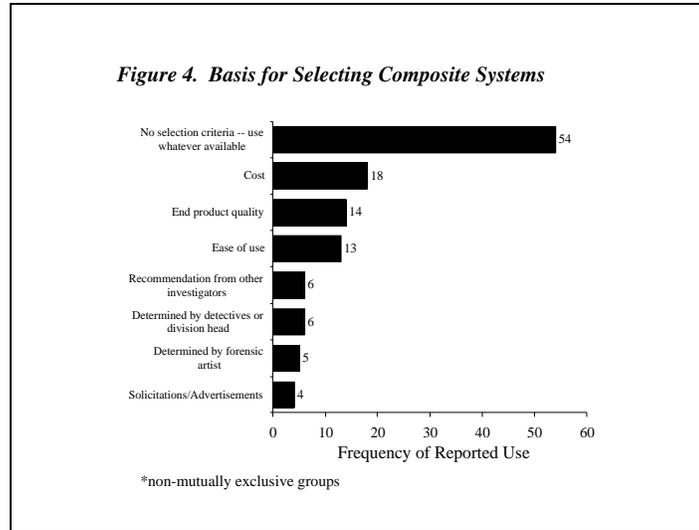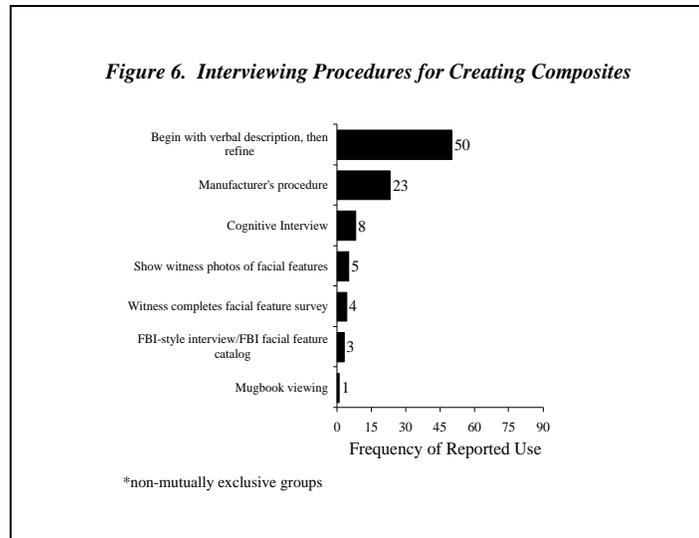*Figure 3. Satisfaction with Most Frequently Used Composite Systems*

Figure 3 shows police officers' satisfaction with the systems used most frequently: Officers reported having the most satisfaction with composites produced using sketch artists and the least satisfaction with the Identi-Kit (transparencies) system.

Figure 4. Basis for Selecting Composite Systems

*non-mutually exclusive groups

Figure 5. Methods of Training for Constructing Composites

*non-mutually exclusive groups

Asked about their selection criteria when choosing composite systems (Figure 4), approximately one-third of respondents (N=54) indicated there is none, while others said that cost, end product quality, and ease of use are the most important factors. Methods of training for composite construction are shown in Figure 5. Nearly 75% of officers reported having received some type of professional instruction, while others learned via another officer, rules or guidelines, hands-on experience, or the manufacturer's instruction. Finally, officers were asked whether their agency has standard procedures for interviewing witnesses for the purpose of constructing composites. Those officers endorsing this item (N=88) reported a variety of procedures, outlined in Figure 6.

Figure 6. Interviewing Procedures for Creating Composites

Begin with verbal description, then refine — 50
Manufacturer's procedure — 23
Cognitive Interview — 8
Show witness photos of facial features — 5
Witness completes facial feature survey — 4
FBI-style interview/FBI facial feature catalog — 3
Mugbook viewing — 1

Frequency of Reported Use

*non-mutually exclusive groups

Discussion

It is important to recognize that our results reflect a very small return rate, and also are limited to self-reported responses. There is no way of determining whether our data are related to a sampling bias. Given that survey research is limited in the field of eyewitness identification, it is difficult to determine the best sampling method.

Nonetheless, the data indicate a number of interesting results with respect to police officers' use of facial composite systems. A large proportion of officers reported using computerized composite tools, particularly Identi-Kit 2000 and Faces 3.0. This result is not surprising considering their advantages over traditional tools – they are relatively inexpensive, portable, easy to use with little training, and produce high-quality facial images. Based on this, it is likely that these systems are an attractive alternative to non-computerized tools for those agencies/jurisdictions who do not use forensic/sketch artists to create composites. Also, many agencies reported having no explicit selection criteria for choosing a composite system, no standardized interviewing procedures for creating composites, and that formalized training for creating composites is often not required.

In general, these findings clarify the need for further research that will:

- Evaluate computerized composite system accuracy
- Determine effective interviewing techniques with witnesses
- Create standardized training procedures for law enforcement

Ultimately, research is needed that will develop and evaluate model procedures for facial composite construction which improve their accuracy and usefulness for criminal investigation.

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