

Welcome to
RACAP

Revision and Corrective Action Package

WEBSITE DEMO LIMITED VERSION

Signature Trial 2002

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LA TROBE
UNIVERSITY

This RACAP
is part of a program provided by the
Forensic Expertise Profiling Laboratory (FEPL)

An objective of FEPL is to characterise skill and expertise associated with human perceptual and cognitive processes related to forensic opinion formation. Forensic handwriting identification is a discipline that uses these processes almost exclusively when determining the authorship of questioned writings.

The FEPL has evolved through collaborations between the School of Human Biosciences (La Trobe University, Australia), the Special Advisory Group (which, under the direction of the Senior Managers of Australian and New Zealand Forensic Laboratories, represents police and government document examiners in Australia and New Zealand) and the National Institute of Forensic Science.



The FEPL Program for Document Examiners

Brief Background

Forensic handwriting examination can simply be regarded as a skill. The skill is applied to cases which vary according to the amount and complexity of both the questioned and specimen material. No one test will determine the validity of the skill. Over time, given sufficient trials, a picture of the skill for individuals should emerge. This will allow us to determine which aspects of the skill claimed by examiners are valid, which are not and what the likely error (misleading) rate is for different types of examination.

The Current Program

Participants are given the opportunity, annually, to express multiple blind trial opinions on signatures and handwriting. Participants who elect to be profiled are issued with a certificate that profiles the nature of their skill in terms of error, conservatism and correct rates. This certificate will provide courts of law with information regarding forensic handwriting skills that has been previously unavailable.

This package provides an overview and results of the first of the 2002 trials.

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Part 1

Overview of the signature trial

Overview of the Trial

Document examiners were required to compare known (specimen or exemplar) signatures with 200 questioned signature samples where for each of the questioned samples the writer was known to the experimenters but not to the examiners. The questioned samples were a mixture of genuine signatures, disguised signatures and forged signatures. Participants were required to express an opinion as to whether or not each of the questioned samples were written by the specimen writer (or whether they were unable to say). Participants were also invited to express an opinion as to the writing process (whether the signature was written naturally, simulated or whether the examiner was unable to say).

All writings were made using the same make of ball-point pen and using the same make of paper.

The questioned group contained the following signature types :

- 76 genuine signatures written by the specimen writer in their normal signature style.
- 104 simulated samples (written by 27 forgers freehand copying the signature characteristics of the specimen writer).
- 20 disguised signatures written by the specimen writer.

The 200 questioned samples were numbered randomly, scanned and ink-jet printed into a booklet. A CD containing the image files (pdf format) were also provided. These were provided so that examiners' could view images at higher resolution if required.

The specimen writer signatures

The specimen writer was provided with the pen and paper required to form the requested specimen material.

The following signatures were supplied by the specimen writer:

- *15 normal signatures per day over a seven day period.*
- *6 disguised signatures per day over a seven day period.*

Specimen writer signatures

A selection of the normal requested specimens were used to form the specimen signature group. This group contained 9 signatures.

27 sheets of paper each bearing an additional 3 normal signatures were generated by the specimen writer. These signatures were used as models by the 'forger' group.

Generation of forged signature samples not written by the specimen writer

Twenty-seven adult 'forgers' were used. These individuals were volunteers drawn from groups such as secondary school teachers and professional organisations. Each of the forgers were provided with 3 normal samples of the questioned signature written by the specimen writer. Forgers were instructed that they could use any or all of the supplied specimen signatures as models for their forgeries. Forgers were also instructed that their forgeries must be unassisted (not tracings). Each forger was provided with pen and paper and asked to complete the following task.

1. Inspect the genuine signature and, without practice, immediately attempt to forge it 3 times.
2. Practice forging the genuine signature 15 times then forge the signature an additional 3 times.

Generation of forged signature samples not written by the specimen writer

The forgeries, other than the practice attempts, were used as a pool from which the questioned forged signatures were selected.

Who Participated

In all, 41 answer booklets were submitted for analysis. These booklets represented:

- 14 peer reviewed responses (excluding 'experimental response' booklets).
- 6 experimental responses (from individuals, groups and trainees).
- 21 individual responses (excluding 'experimental response' booklets).

The peer review responses are represented by the symbol '/' between the individual codes (eg. 4/5 represents the opinions of examiner 4 peer reviewed by examiner 5). Codes followed by 'P' represent the credited opinions to the peer review examiner. The 10 experimental responses are represented by the 'E' code in the results tables. The opinions expressed by the examiners submitting experimental responses are not included in the overall opinion group totals provided in this package.

Of the 31 individual response result booklets, one of the examiners (51), is a trainee. The balance of the individual and peer review responses are results from individuals deemed 'qualified' in some form.

Instructions to Document Examiners

Document examiners were provided with ink-jet hardcopies of the specimen and questioned samples, a CD containing pdf files of each of the images, and an answer booklet. Examiners were informed that the date range over which the specimen material was taken was around the time that the questioned samples were written. They were asked to compare each questioned sample with the specimen samples and express an opinion using the answer booklet provided.

The Answer Booklet

This comprised 200 lines, each line corresponding to one of the questioned samples. On each line were the numbers 11, 12, 13, 21, 22, 23, 31, 32, 33, 41, 42, 43, 51, 52 and 53. Each number was a code representing one of the fifteen possible opinion options.

Definition of Answers

Authorship

The first digit in the answer code for each of the questioned signatures refers to the authorship opinion. This digit was either a 1, 2, 3, 4 or 5. The levels examiners had to choose from were :

- 1. The questioned signature **was written by** the writer of the signature specimens. This is an opinion of ‘moral certainty’ on the part of the examiner. For some examiners this opinion level translates into *‘very strong support for the proposition that the questioned signature was written by the writer of the signature specimens’*.
- 2. There are indications that the questioned signature **was written by** the writer of the signature specimens. For some examiners this opinion translates to statements such as *‘moderate support for the proposition that the questioned signature was written by the writer of the signature specimens’* or *‘it is probable that the questioned signature was written by the writer of the signature specimens’*.
- 3. **No opinion** can be expressed as to whether or not the questioned signature was written by the writer of the signature specimens. *This is an inconclusive opinion.*
- 4. There are indications that the questioned signature **was not written by** the writer of the signature specimens. For some examiners this opinion translates to statements such as *‘moderate support for the proposition that the questioned signature was not written by the writer of the signature specimens’* or *‘it is probable that the questioned signature was not written by the writer of the signature specimens’*.
- 5. The questioned signature **was not written by** the writer of the signature specimens. This is an opinion of ‘moral certainty’ on the part of the examiner. For some examiners this opinion level translates into *‘very strong support for the proposition that the questioned signature was not written by the writer of the signature specimens’*.

Definition of Answers

Process

The second digit in the answer code for each of the questioned signatures refers to the opinion regarding the process by which the questioned signature was produced. This digit was either a 1, 2 or 3. The strength of the process opinion was not required. 'There is evidence that...' translates to an opinion strength of 'indications' or 'probable' or higher. The levels examiners had to choose from were as follows:

1. There is evidence that the questioned signature **was written naturally** (that is, there is no evidence of a disguise and/or a simulation process).
2. There is evidence that the questioned signature **was written** using a disguise and/or a simulation process.
3. **No opinion** can be expressed as to the process by which the questioned signature was produced.

Disguise process: an attempt by a writer to purposefully alter their signature in order to avoid being identified or for them to deny writing the signature.

Simulation process: an attempt by the writer to imitate the signature characteristics of a visual or mental model. This imitation behaviour can either be the specimen writer imitating their own signature characteristics (as a form of disguise or resulting from acute internal or external influences) or someone other than the specimen writer 'forging' the specimen writers signature characteristics.

Definition of Score Categories Regarding Authorship Opinions

Examiners' authorship responses (opinion units) were marked as correct, misleading or inconclusive. These marks were then analysed to produce scores for each of the different questioned signature types (genuine, disguised by specimen writer or simulations not by specimen writer). The scores are presented as numbers of opinions or as percentages which represent opinion rates. The following definitions of the score categories are used in subsequent results tables in this report.

Correct

The number of authorship opinions that were correct.

Misleading

The number of authorship opinions that were misleading.

Inconclusive

The number of authorship opinions that were inconclusive.

Definition of Score Categories

Authorship Opinions (Cont.)

% Correct

The number of correct authorship opinions divided by the total number of authorship opinions (expressed as a percentage).

% Misleading

The number of misleading authorship opinions divided by the total number of authorship opinions (expressed as a percentage).

% Inconclusive

The number of inconclusive authorship opinions divided by the total number of authorship opinions (expressed as a percentage).

Definition of Score Categories Regarding Authorship Opinions (Cont.)

% Correct called (% Cc)

The number of correct authorship opinions divided by the sum of the correct and erroneous authorship opinions (expressed as a percentage).

% Misleading called (% Mc)

The number of misleading authorship opinions divided by the sum of the correct and misleading authorship opinions (expressed as a percentage).

The 'called' scores do not include inconclusive opinions and therefore equate to a number that reflects the opinion rate when an examiner is expressing an opinion that is other than inconclusive.

The authors of this package greatly acknowledge the continued advice and assistance of Dr Ian Evett (Forensic Science Service, United Kingdom) for his input into appropriate scoring descriptors.

Part 2

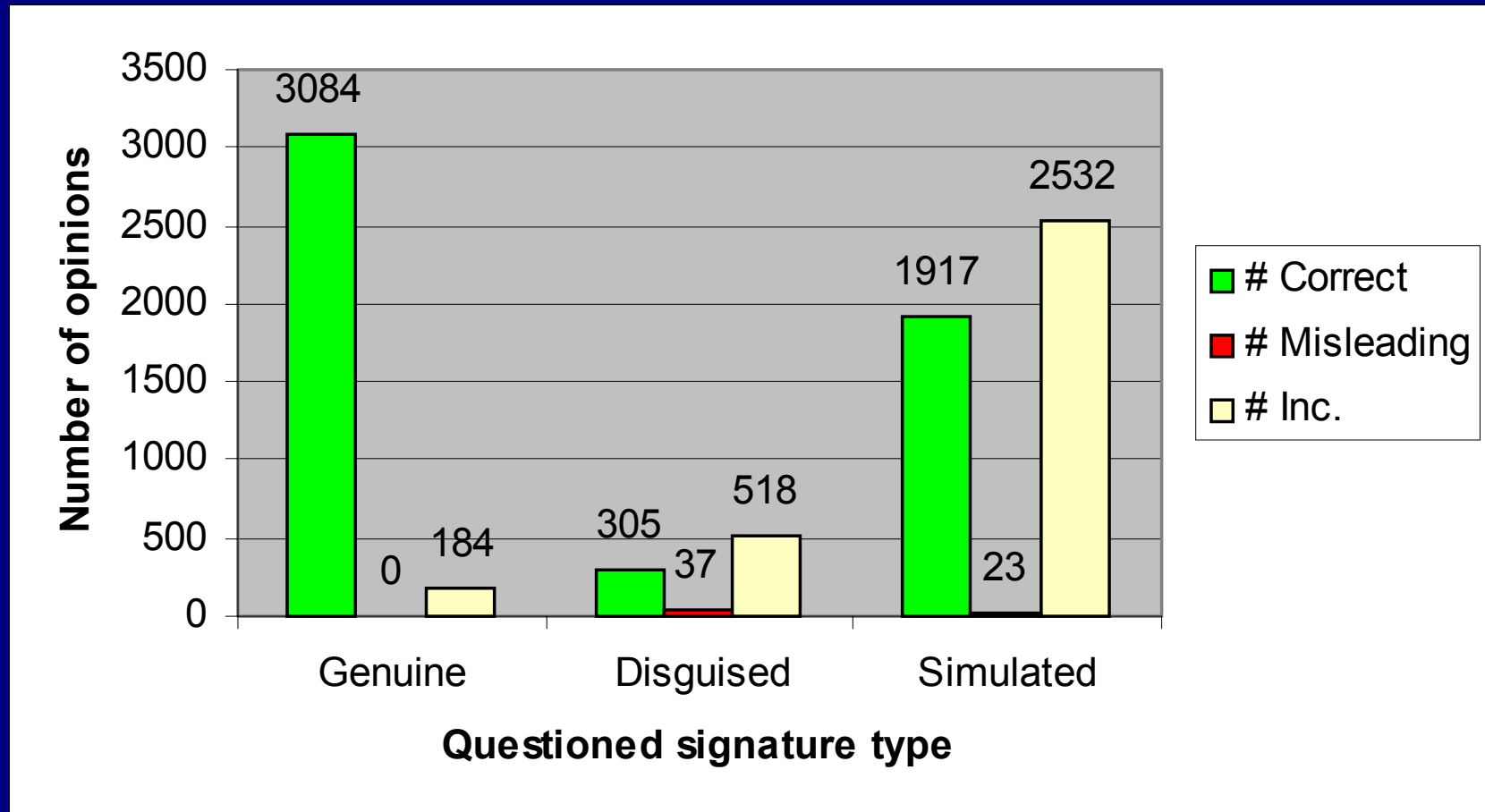
Group results

Overall group results

A total of 8600 opinions were expressed by the group. Of these opinions 5306 (61.7%) were correct, 60 (0.7%) were misleading and 3234 (37.6%) were inconclusive. The following tables provide a breakdown of these results in terms of questioned signature type.

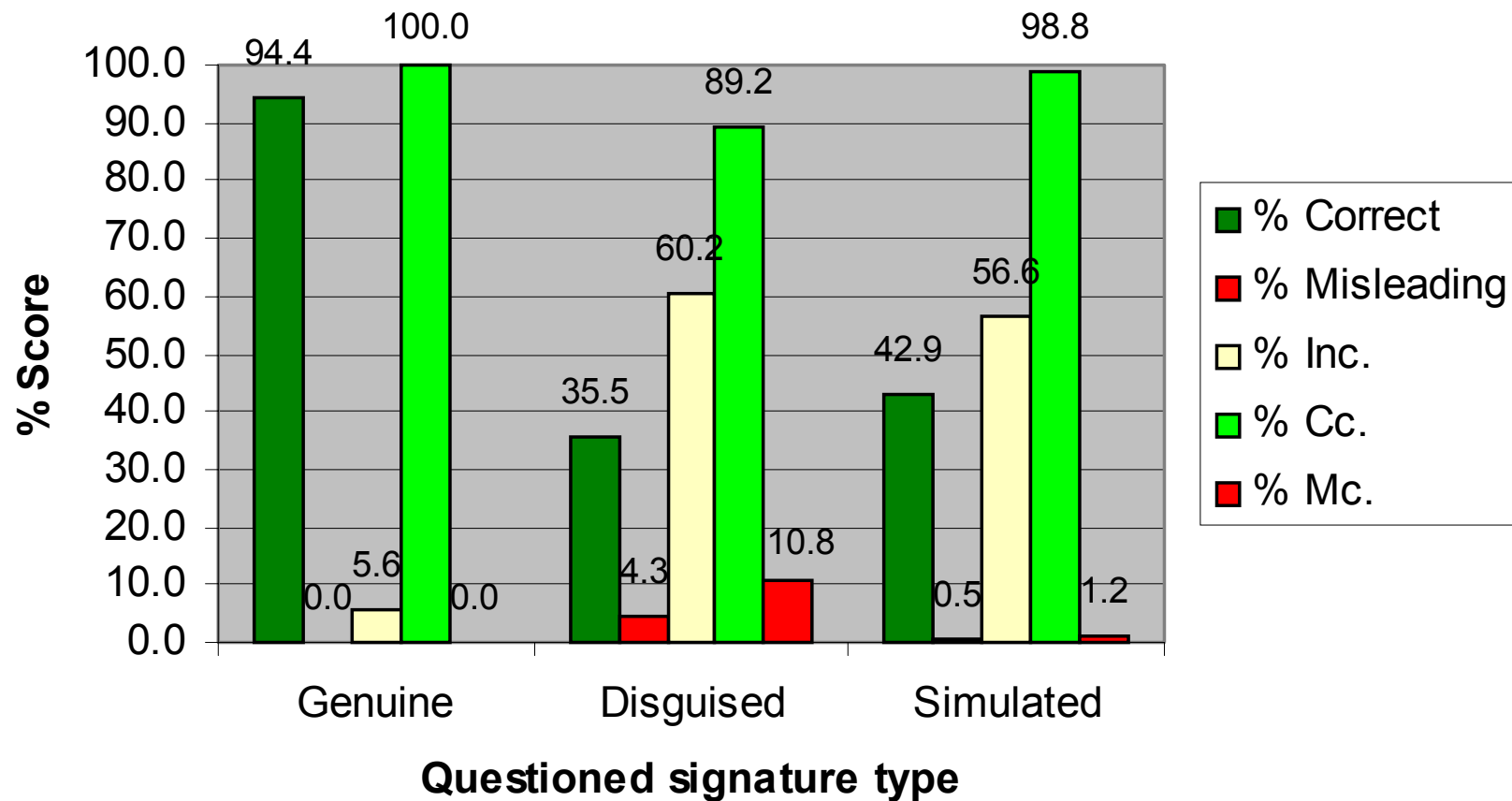
Overall Group Results

Table 1. Examiners' opinions (raw data) regarding the authorship of each of the questioned signature types (Genuine, Disguised and Simulated). This data does not include levels of opinion.



Overall Group Results

Table 2. Scores for examiners' opinions regarding the authorship of each of the questioned handwriting types. This data does not include levels of opinion.



Part 3

Individual results

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Individual Results

Authorship opinions regarding the questioned genuine signatures

Code	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	Totals	# Correct	# Misleading	# Inc.	% Correct	% Misleading	% Inc.	% Cc.	% Mc.
1.4\1.2				69		3			4							76	72	0	4	94.7	0.0	5.3	100.0	0.0
1.2P				69		3			4							76	72	0	4	94.7	0.0	5.3	100.0	0.0
2\1	58			13		3		2								76	74	0	2	97.4	0.0	2.6	100.0	0.0
1P	58			13		3		2								76	74	0	2	97.4	0.0	2.6	100.0	0.0
3	61			7	1	3	1		3							76	72	0	4	94.7	0.0	5.3	100.0	0.0
4\5	71		5													76	76	0	0	100.0	0.0	0.0	100.0	0.0
5P	71		5													76	76	0	0	100.0	0.0	0.0	100.0	0.0
9\7	40			21		1	2		12							76	62	0	14	81.6	0.0	18.4	100.0	0.0
7P	40			21		1	2		12							76	62	0	14	81.6	0.0	18.4	100.0	0.0
10\7				56			19		1							76	56	0	20	73.7	0.0	26.3	100.0	0.0
13\12	69						7									76	69	0	7	90.8	0.0	9.2	100.0	0.0
12\13	69						7									76	69	0	7	90.8	0.0	9.2	100.0	0.0
15	48			18			8		2							76	66	0	10	86.8	0.0	13.2	100.0	0.0
17\16	76															76	76	0	0	100.0	0.0	0.0	100.0	0.0
16P	76															76	76	0	0	100.0	0.0	0.0	100.0	0.0
18	50			16			8		2							76	66	0	10	86.8	0.0	13.2	100.0	0.0
19\12				44				1	31							76	44	0	32	57.9	0.0	42.1	100.0	0.0
22\21	63		12						1							76	75	0	1	98.7	0.0	1.3	100.0	0.0
21P	63		12						1							76	75	0	1	98.7	0.0	1.3	100.0	0.0
24\20	76															76	76	0	0	100.0	0.0	0.0	100.0	0.0
20P	76															76	76	0	0	100.0	0.0	0.0	100.0	0.0
26\23	64		12													76	76	0	0	100.0	0.0	0.0	100.0	0.0
23P	64		12													76	76	0	0	100.0	0.0	0.0	100.0	0.0
29	63			12			1									76	75	0	1	98.7	0.0	1.3	100.0	0.0
37	56	3		7				3	7							76	66	0	10	86.8	0.0	13.2	100.0	0.0
64\1	14			57		3		2								76	74	0	2	97.4	0.0	2.6	100.0	0.0

Numbers in **green** columns represent correct responses. Numbers in **yellow** columns represent inconclusive responses. Numbers in **red** columns represent misleading responses and scores.

Individual Results

Authorship opinions regarding the questioned disguised signatures

Code	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	Totals	# Correct	# Misleading	# Inc.	% Correct	% Misleading	% Inc.	% Cc.	% Mc.
1.4\1.2								20								20	0	0	20	0.0	0.0	100.0	na	na
1.2P								20								20	0	0	20	0.0	0.0	100.0	na	na
2\1								20								20	0	0	20	0.0	0.0	100.0	na	na
1P								20								20	0	0	20	0.0	0.0	100.0	na	na
3					4	4		6	5		1					20	8	1	11	40.0	5.0	55.0	88.9	11.1
4\5		15	5													20	20	0	0	100.0	0.0	0.0	100.0	0.0
5P		15	5													20	20	0	0	100.0	0.0	0.0	100.0	0.0
9\7								19	1							20	0	0	20	0.0	0.0	100.0	na	na
7P								19	1							20	0	0	20	0.0	0.0	100.0	na	na
10\7									20							20	0	0	20	0.0	0.0	100.0	na	na
13\12								20								20	0	0	20	0.0	0.0	100.0	na	na
12\13								20								20	0	0	20	0.0	0.0	100.0	na	na
15								18	2							20	0	0	20	0.0	0.0	100.0	na	na
17/16	1							19								20	1	0	19	5.0	0.0	95.0	100.0	0.0
16P	1							19								20	1	0	19	5.0	0.0	95.0	100.0	0.0
18								18	2							20	0	0	20	0.0	0.0	100.0	na	na
19\12								19	1							20	0	0	20	0.0	0.0	100.0	na	na
22\21								20								20	0	0	20	0.0	0.0	100.0	na	na
21P								20								20	0	0	20	0.0	0.0	100.0	na	na
24\20		17	2					1								20	19	0	1	95.0	0.0	5.0	100.0	0.0
20P		17	2					1								20	19	0	1	95.0	0.0	5.0	100.0	0.0
26\23									20							20	0	0	20	0.0	0.0	100.0	na	na
23P									20							20	0	0	20	0.0	0.0	100.0	na	na
29								20								20	0	0	20	0.0	0.0	100.0	na	na
37								13	4		2			1		20	0	3	17	0.0	15.0	85.0	0.0	100.0
64\1								20								20	0	0	20	0.0	0.0	100.0	na	na

Numbers in **green** columns represent correct responses. Numbers in **yellow** columns represent inconclusive responses. Numbers in **red** columns represent misleading responses and scores.

Individual Results

Authorship opinions regarding the questioned simulated (forged) signatures

Code	11	12	13	21	22	23	31	32	33	41	42	43	51	52	53	Totals	# Correct	# Misleading	# Inc.	% Correct	% Misleading	% Inc.	% Cc.	% Mc.
1.4\1.2							104									104	0	0	104	0.0	0.0	100.0	na	na
1.2P							104									104	0	0	104	0.0	0.0	100.0	na	na
2\1							26				78					104	78	0	26	75.0	0.0	25.0	100.0	0.0
1P							26				78					104	78	0	26	75.0	0.0	25.0	100.0	0.0
3					1		1	38	19		9	25	11			104	45	1	58	43.3	1.0	55.8	97.8	2.2
4\5							5				99					104	99	0	5	95.2	0.0	4.8	100.0	0.0
5P							5				99					104	99	0	5	95.2	0.0	4.8	100.0	0.0
9\7							5	96	3							104	0	0	104	0.0	0.0	100.0	na	na
7P							5	96	3							104	0	0	104	0.0	0.0	100.0	na	na
10\7							3	48	53							104	0	0	104	0.0	0.0	100.0	na	na
13\12							103	1								104	0	0	104	0.0	0.0	100.0	na	na
12\13							103	1								104	0	0	104	0.0	0.0	100.0	na	na
15							103	1								104	0	0	104	0.0	0.0	100.0	na	na
17/16							104									104	0	0	104	0.0	0.0	100.0	na	na
16P							104									104	0	0	104	0.0	0.0	100.0	na	na
18							102	2								104	0	0	104	0.0	0.0	100.0	na	na
19\12					1		101	2								104	0	1	103	0.0	1.0	99.0	0.0	100.0
22\21							102	2								104	0	0	104	0.0	0.0	100.0	na	na
21P							102	2								104	0	0	104	0.0	0.0	100.0	na	na
24\20							104									104	0	0	104	0.0	0.0	100.0	na	na
20P							104									104	0	0	104	0.0	0.0	100.0	na	na
26\23							99	5								104	0	0	104	0.0	0.0	100.0	na	na
23P							99	5								104	0	0	104	0.0	0.0	100.0	na	na
29							104									104	0	0	104	0.0	0.0	100.0	na	na
37					1		21	21			37			24		104	61	1	42	58.7	1.0	40.4	98.4	1.6
64\1							25	2			76	1				104	77	0	27	74.0	0.0	26.0	100.0	0.0

Numbers in **green** columns represent correct responses. Numbers in **yellow** columns represent inconclusive responses. Numbers in **red** columns represent misleading responses and scores.

Part 4

Individual misleading opinions

Assessing your results

Now that you have viewed the group and individual correct, inconclusive and misleading responses for each of the questioned signature types (genuine, disguised and simulated) the relationship between the responses should be addressed, particularly if you have recorded misleading opinions.

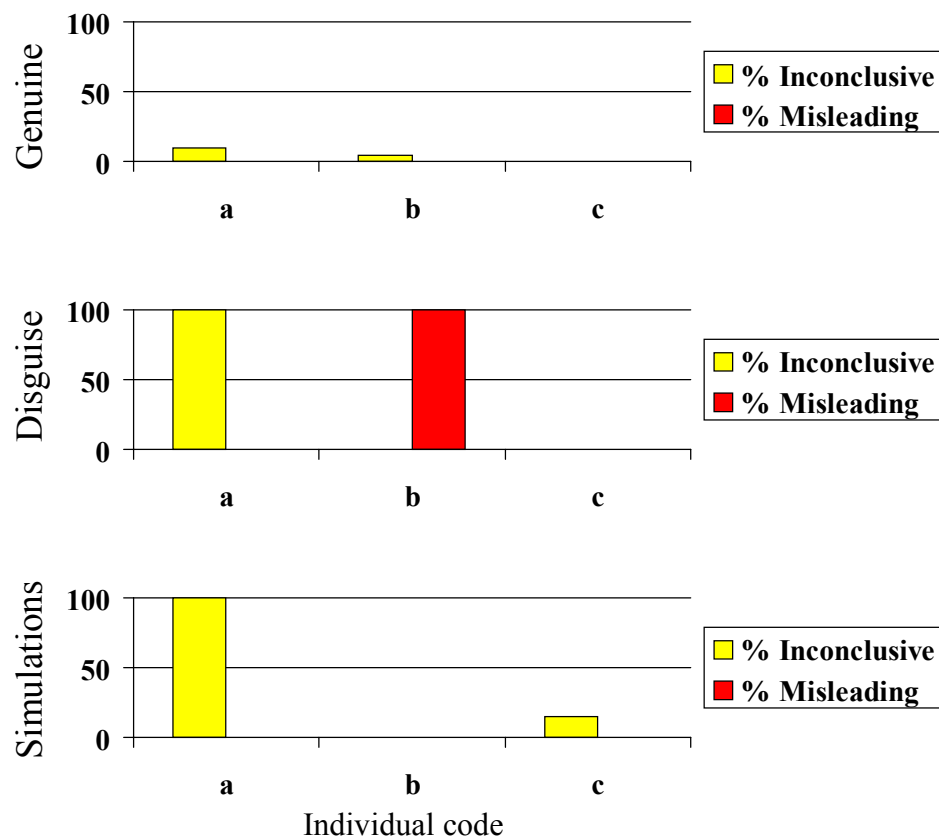
The most effective approach to your self-assessment is to determine, in the first instance, whether you considered any particular questioned signature to be 'consistent' or 'inconsistent' with the specimen group. Genuine signatures should have been deemed to be consistent with the specimen group. As can be observed from the group and individual result tables most examiners did not record misleading opinions on the genuine questioned signatures. Therefore their assessment of this factor was accurate.

The majority of misleading opinions were associated with the disguise and simulated questioned signatures. The vast majority of these misleading opinions were associated with examiners forming the correct opinion that the questioned signatures was the product of a disguise / simulation process and then forming a misleading authorship opinion. In terms of diagnosing the source of the problem it is primarily in the determination of the significance of 'inconsistencies' within questioned signatures. This is where revision packages such as this can be of assistance to you.

Assessing your results (cont.)

To assist you in further assessing your current skill we have provided graphs of individuals' inconclusive and misleading rates for each of the questioned signature types (genuine, disguise and simulated). We have done this in order for you to assess whether apparent skill in determining the authorship of one questioned signature type (as may be evidenced by low misleading and low inconclusive scores) is real or not.

Assessing your results (cont.). Example.



We have three graphs, corresponding to the three questioned signature types for three fictional examiners. Examiner 'a' has skill at identifying whether a signature is genuine (no misleading, low % inconclusive). This examiner may also have skill at determining whether a questioned signature is the product of a disguise or simulation process. In this trial this examiner is not displaying skill at determining the authorship of disguise or simulated signatures (high % inconclusive).

Examiner 'b' appears to have skill at identifying the authorship of both genuine and simulated signatures. This, however, has to be taken in context with their misleading on the disguised signature group. Examiner 'b' has a corresponding high % misleading for the disguised signatures. In reality Examiner 'b' is detecting a difference between both the disguised and simulated signatures, in comparison with the specimen group, and is concluding that the difference is associated with a different writer. This result therefore shows that Examiner 'b' does not possess skill at determining the authorship of either the disguise or simulated questioned signatures in spite of displaying no misleading opinions for the simulated signature group.

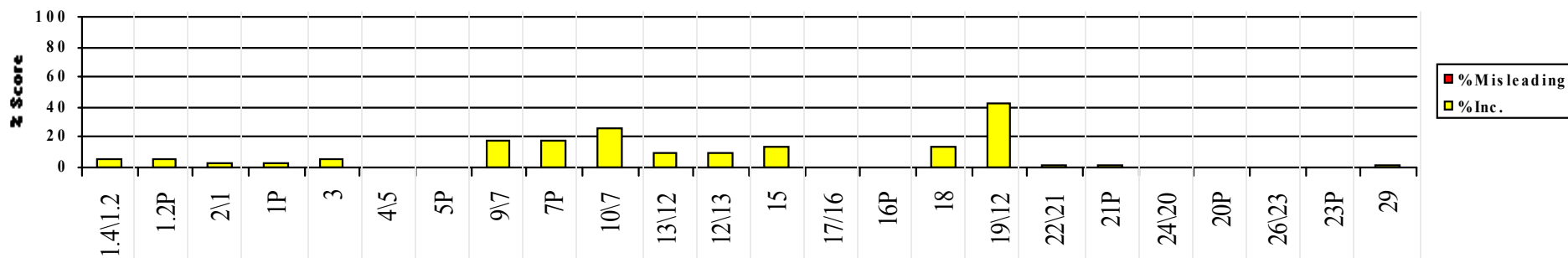
Examiner 'c' is displaying skill at determining the authorship of all 3 types of questioned signatures.

**Inconclusive and misleading opinion
comparison for all participants between
questioned signature types.**

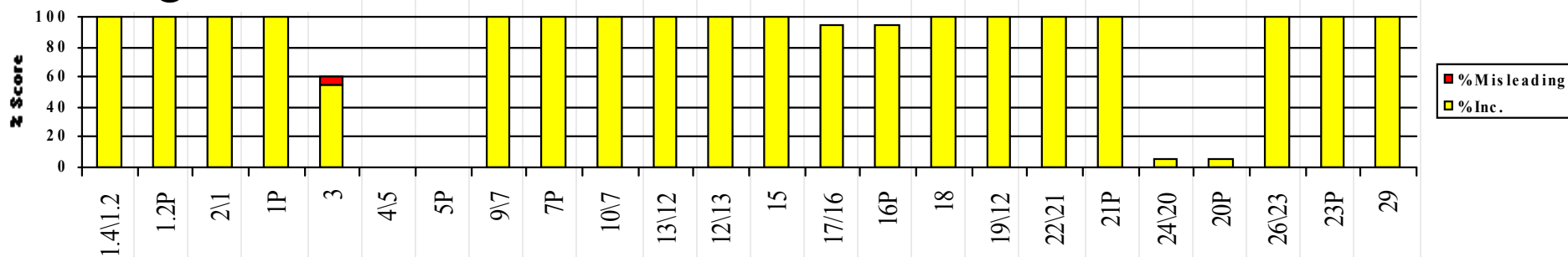
The following graphs show examiner
number versus % inconclusive (**yellow**)
and % misleading opinions (**red**)

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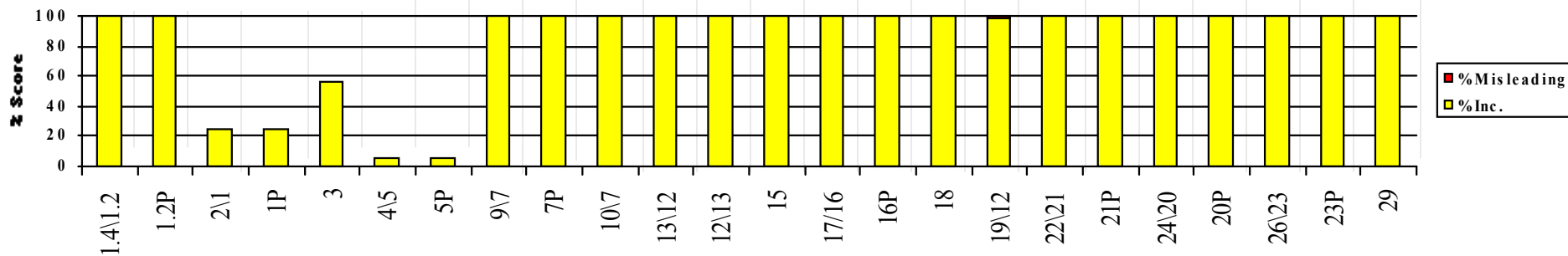
Genuine



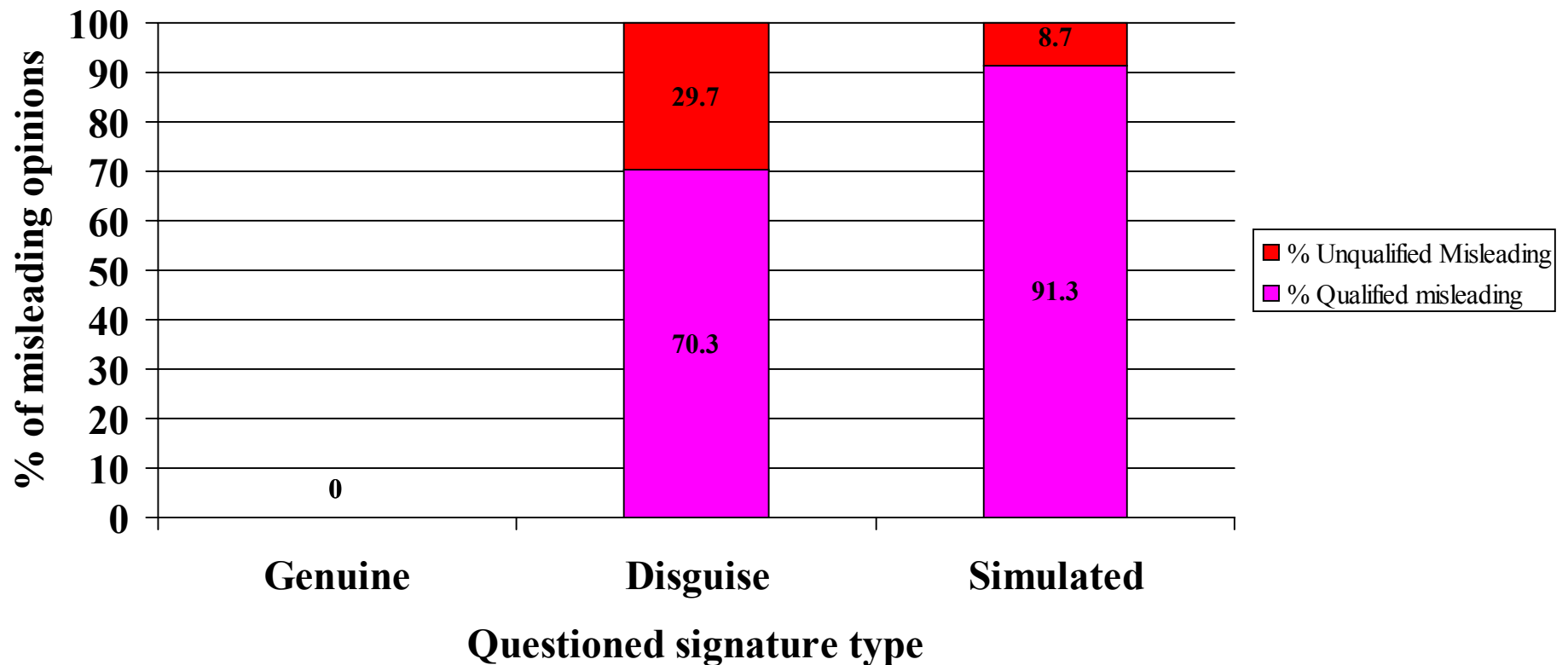
Disguise



Simulation



Opinion strengths associated with misleading opinions



As can be observed there were more qualified misleading opinions than unqualified misleading opinions when the group is treated as a whole, for the disguised and simulated questioned signature types. No misleading opinions were expressed by the participants on the questioned genuine signatures (excluding the experimental results).

The file labelled 'Questioned image analysis' contain the group result summary graphs for each of the questioned signatures. These can either be referred to 'on-screen' or printed out (colour).

Should you wish to determine what your opinion was for any particular image this can be done simply by referring back to your original (or photocopy) answer booklet and looking up your response according to the individual and signature codes.

Alternatively refer to the file 'All raw answers' (not supplied in website version).

We hope you have benefited from the trial.

Please note that all information contained in this package is the property of La Trobe University and should be treated as confidential. The results can be discussed however can not be copied, circulated outside the experimental group (or participating organisation), formally presented (either in oral or written form) nor subjected to further analysis, for the purpose of formal presentation, without the prior written approval of Bryan Found and Doug Rogers.

Please direct any questions regarding this package to Bryan Found on email:

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