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What is This?
The accuracy of guestimates

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SUMMARY

At times a clinician must describe the size of a lesion when measurement presents difficulties. A ‘guestimate’ may then be recorded. We tested the accuracy of forensic clinicians (10 physicians and 1 nurse) in guestimating the sizes of ten test objects, comparing their performance with 13 individuals from other professions. The participants were permitted to handle the objects but not to use a measuring device.

For three of the objects (a balloon, a scratch and a coin) the entire sample of participants significantly overestimated size, by 13–22%. Both participant groups overestimated the size of a scratch, the clinicians being more accurate but not significantly so.

Guestimates should be avoided unless the use of a ruler or tape measure will be against the interests of the client.

INTRODUCTION

Forensic clinicians, rather than use a scale or rule, sometimes make an educated guess of the size of a lesion based on experience and knowledge of their own finger size or hand span. The level of accuracy in such ‘guestimates’ is unknown but may have a bearing on the subsequent records as evidence for court. At a research meeting of the St Mary’s Sexual Assault Referral Centre it emerged that guestimates of the diameter of a 1p coin could be grossly erroneous. There are issues of visual perception here. ‘Size constancy’ is the visual processing phenomenon by which an object appears to be of a constant size irrespective of distance from the viewer.1 Errors in the neural procedures (assessing angle and distance) will affect the accuracy and precision (reliability) of size judgments. These operations are not entirely fixed, and practice in estimating size can assist accuracy and precision, since recognition of particular sizes of objects will mitigate the effect of errors in the sensory encoding processes.2 Repeated forensic examination of injuries, including recording of their dimensions, would provide such practice. We investigated whether such skills are to be trusted, looking primarily at guestimates of length.

METHODS

24 people volunteered to take part—11 forensic clinicians and 13 others (nurses, counsellors, crisis workers, administrators, lawyers). Ages ranged from 25 to 72 years, and all but 2 participants (both in the comparison group) were female.

Ten test items were used ranging from 9 mm to 185 mm in length. Each was placed on a background made from irregular shaped white paper. A specially prepared form was used to record the guestimates. Anonymity was guaranteed for participants, and confidential feedback on performances was offered. The test items were spaced at least two feet apart, and arranged in a random sequence. Participants were allowed to handle them but not to use any calibrated device. They were not to confer or see each others’ results. Guestimates for all 10 were to be recorded within 5 minutes.

Some non-clinical participants were not able to guestimate in mm or cm as requested but used inches and fractions of inches. These were converted to the metric system and rounded up to the nearest mm. All data were coded in millimetres and entered into SPSS and Excel for statistical analyses. Within-subject differences in the responses of the participants (together and as separate groups) from the true item lengths were investigated by one-sample t-tests, which are tolerant to departures from normal distributions. Between-subject differences between the responses of the two groups were investigated by the Mann–Whitney U-test, a non-parametric test accommodating unequal sample sizes and data distribution.

RESULTS

240 observations were made, with no missing data. Table 1 shows the results for all participants. The size of three of the ten objects (balloon, scratch and 10 cent coin) was
significantly overestimated. Both participant groups over-
estimated the size of the scratch. The degree of error was not related to item size.

The forensic clinicians did not outperform the other participants. They tended to be more accurate for small objects and less accurate for large objects (Figure 1).

DISCUSSION

The inaccuracy of the forensic clinicians reached statistical significance for only one item, the 135 mm scratch. However, the same was true of the group of other professionals, so forensic clinicians do not seem especially blessed with skills of guestimation. The trends in the data do suggest they are more accurate with smaller items, which may reflect the type of injuries observed and recorded by the participant clinicians, who examine survivors of sexual assault.

Although this was an artificial exercise and the test conditions were not the same as a forensic examination, the inaccuracy of guestimates probably reflects reality. It may be that some forensic clinicians have an inherent skill for guestimation and others improve with practice. For both, the taking of true measurements is advisable when the record of injury may ultimately be used in a prosecution. Where use of a measuring device is deemed against the best interests of the client and examination, it is as well to be aware of one’s limitations.

REFERENCES