A comment on the study by Sterzer, G., and Elaad, E., Validity of the Control Question Test in Two Levels of the Severity of Crimes. IDENTA, 85.[1]

Assessing Polygraph Accuracy: The Importance of Choosing an Evaluation Technique which is Compatible with the Way the Examinations were Conducted.[2]

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Sterzer and Elaad in their study on Comparison Question Test (IDENTA, 1985) found that with numerical scoring technique, using a zero cutoff point with no inconclusive zone, results in false positive (FP) error rate of 23.33% for a minor crime sample (MC) and 43.14% for a severe crime sample (SC). The difference between these two error rates, which was found to be statistically significant, was attributed to the difference in the amount of threat posed by the relevant questions in the two levels of crime severity.

Another factor, however, might have contributed to the difference in FP error rates. During the year 1979, the Israel National Police Polygraph Laboratory went through a substantial change regarding the way the polygraph examinations were conducted and evaluated. The basic change was moving from a considerable reliance on the behavioral symptoms of the examinee and global evaluation of the polygraph records (as recommended by certain schools of thought), towards a major reliance on the semi-objective numerical scoring technique, which had by then become widespread. It was soon found that the change in the way information from the polygraph examinations is considered and evaluated, brought upon a change in the manner by which the examinations were conducted, including a tendency to

[1] **Anti-Terrorism; Forensic Science; Psychology in Police Investigations**. Boulder, Colo.:Westview Press; Jerusalem: Heiliger and Co., 1986, (proceeding of IDENT 85. The international congress on techniques for criminal identification & counter terrorism. Jerusalem, Israel.

[2] The current comment is a bit more detailed relative to the original comment.

stress, during the pre-test interview and between charts, the control questions more than had been done previously. This tendency resulted in a considerable increase of physiological reactions to control questions.

That was evident in the records of the innocent examinees from the SC sample. Eighteen examinations were conducted during 1977-8, before the change took place, and twenty two after it, during 1980-84. It was found that in the earlier group, 55.6% of the records received negative numerical scores, (i.e., the reactions to the relevant questions in those records were stronger than to the control ones) compared to only 31.8% in the later one.
Using the normal approximation to the binomial distribution, it was found that the probability associated with this difference is equal to or less than 0.065, (Z=1.487, one tailed) which is very close to an acceptable level of statistical significance.

In contrast, the MC sample was taken on the whole (27 of 30 records) from examinations conducted in the 1980s (1980-4), and the percentage of negative scores for these 27 records was 18.5%.

It seems that in order to obtain an estimate of the effect of crime severity on FR error rates in this study, only examinations conducted in the 1980s should be considered. When this is done it was found that the difference between the MC and SC samples regarding the FP error rates – 18.5% and 31.8% respectively (with no inconclusive zone), is associated with the probability of equal to or less than 0.142 (Z=1.07, one tailed), which is far from any acceptable level of significance. It means that, although a tendency towards the predicted direction of difference in FP error rates was observed, there is still a chance of 15% that the observed effect is due to sample error or chance fluctuation. As mentioned above, although not statistically significant, the present analysis might present some indications that the evaluation technique should be compatible with the way the original examinations were conducted.

As for the effect of severity of crime on the FP error rate, one can conclude that if there is such a real effect, its size is probably limited and needs a larger sample size to explore its actual existence.