Error and its meaning article.docx

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Article: Error and its Meaning in Forensic Science

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Summary:

In this article (Error and its Meaning in Forensic Science) the authors endeavors about the "errors" in the forensic science and however the center has been moved to incorporate the assessment of strategies and methods instead of basically the expert's interpretation of the outcomes [1]. Previous to the Daubert ruling, reliability in scientific methods and validity were not appropriately implemented in the courtroom while giving the testimony [1]. But after following the guidelines it was required to include reliability/validity methods [1]. The challenge was the interpretation of error in the courtroom and explaining to the people belonging to non-scientific background [1]. Furthermore, article discuss about the potential source of any protocol is estimated to be 100% [1]. Later, lack of acknowledging scientific methods and other challenges are reported in NAS report [1]. The essential objective of this report was to characterize four potential sources of error [1]. Practitioner error refers to human error(s) [1]. It can be minimize through quality assurance system checks, peer review, maintaining standard laboratory protocols and proficiency testing [1]. Instrument error can be determined between a given instrument value and true value and the errors can be reduced by proper maintenance and calibrations of instruments [1]. In general terms, statistical errors are defined by standard errors [1]. Method (or technique) error is measured by the overlap of different groups of data set [1]. It not only influences the sensitivity, probative value and lastly validity of the followed procedure [1]. Briefly explained by the example of nuclear DNA having more sensitivity than the mtDNA in determining the recognition [1]. The authors stated the reason behind this is because mtDNA occurs more often in the given population of data set [1]. To minimize the method errors more calibration need to be taken into consideration [1]. Understanding the significance of actualizing measures to limit mistakes and constraints in legal sciences can resolve the issues and perplexity over the importance of results and can prevent the misuse of errors [1]. The second

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piece of the article portrays about the misconception or misunderstanding of error specifically in both legal and scientific communities [1]. The authors have recognized various sources with respect to errors; one of them is declaring a "zero state"[1]. The article gives a case of testimony in respect to fingerprints and claims while doing the analysis that the error rate for their methodology is zero as the fingerprints are unique [1]. Regardless of whether the component is unique it does not imply that the comparison procedure can faultlessly decide if two examples began from a similar source [1]. Another claim was about the American Board of Forensic Odontology that examiners executed false positive bitemark errors [1]. The article likewise makes reference to about the two hair examination (microscopial hair examination) methodology and how the error rates are characterized by various expert forensic examiners showing constrained (forced) numbers or distortion of information [1]. Hence, it was concluded that to limit the distortion of results or misuse of errors in court NAS Report and Daubert rules ought to be pursued for reliability, unwavering quality and legitimacy of our techniques [1]. What's more, instructing the lawful networks about the distinction between scientific methods, technique restrictions and uncertainties [1]. The best can be practiced by affirmation, potential sources of mistakes in the examination or research analysis [1].

REFERNCE LIST: (for summary)

[1] Christensen AM, Crowder CM, Ousley SD, Houck MM. 2014. Error and its meaning in the forensic science. J Forensic Sci [I nternet]. [cited 2019 Jan 29]; 59(1):123-126. Available from:

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https://fleming.desire2learn.com/d2l/le/content/95117/viewContent/1112832/View doi: 10.1111/1556-4029.12275

Review:

According to me, in this article (Error and its Meaning in the Forensic Science) error plays a vital role in determining the validity, which impacts the Daubert criteria. The overall concept is misunderstood as there are many misconceptions in understanding the error and error rates. For example, the NAS Report talks about the scientific and technical challenges faced by the forensic community. The report published is concerned about the disciplines and rules are not followed during any research and demands about "more and better research". Specifically about the Daubert's decision, the authors talk about the "reliability" very often. Reliability is basically used to express the variability in the methods. For instance, there are 10 forensic examiners examining the same sample with the same technique and 9 examiners got the same result. The technique is considered highly reliable. But, in my opinion, that doesn't mean it will give correct conclusions each time. The article talks about the misuse of the "reliability" in the Daubert case but the court planned or wilfully linked to "dependability" which is not true. As scientifically reliability cannot create dependability hence, proper validation studies are necessary. Overall, I disagree with the authors because they gave explanation about the error rates being misunderstood but they failed to give the strong scientific backup (supporting claims). For example, authors talk about the "Zero Error Rate" claim. They referenced in the article about the expert testimony from the People v Gomez (99CF 0391, 2002) and the fingerprint examiner testified and stated, "And the reason we make that bold statement is because we know based on the 100 years of research that everybody's fingerprints are unique, and in nature it's never going to repeat itself again." According to me, the issue with this bold statement

is that in spite of the fingerprints are unique but scientifically uniqueness concept is impossible to prove with that absolute (100%) certainty. Another thing which I don't like is that the examiner didn't include other contributors or it was a selective group test (limited group test). Because a fingerprint test is always observed within the population or the trait. Therefore, I did not support this claim as it's inaccurate. I do not think the article is still relevant because there are limitations to the claims itself. Additionally, authors lack proper testing methods and statistical records that could determine potential errors. Hence, the limitations to these methods can't be established. I found one research document which deals with issues with the forensic science, various structures and operations carried out in the labs by SWGs (Scientific Working Groups) which supports or reference this article and authors thought. This research document is called: Strengthening forensic science in the United States: a path forward [1]. According to my understanding, the main concept of practitioner error is disapproved in this article. Practitioner errors are generally the mistakes and it can be intentional (in fraud or crime cases) or unintentional. These errors can be random or accidental or maybe occurred by neglecting the standard methods or maybe due to incompetency. The key point is this type of error cannot be considered as a valid factor in determining error rate for the technique. For instance, considering the case study of Annie Dookhan [2]. She is a former chemist of Massachusetts crime lab [2]. She was a practitioner and produced false positive samples, forging colleagues' initials, mixing the drug samples and 'dry-labbing' [2]. So the point is errors can be due to improper use of technique, instrument and analysis methods [2]. This all can be reduced through proficiency testing, QA/QC checks, following and updating SOPs. Therefore, to conclude, practitioner error is considered a human error and can't be used in determining the error rates.

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End References: (for review)

[1] Strengthening Forensic Science in the United States: a path forward [Internet] US Department of Justice; National Academics Press: Washington, D.C., 2009. Available from: https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf

[2] Mettler K. Washington DC Post; how a lab chemist went from 'superwoman' to disgraced saboteur of more than 20,000 drug cases [Internet]. [cited 2017 April 21]. Available from: https://www.washingtonpost.com/news/morning-mix/wp/2017/04/21/how-a-lab-chemist-went-from-superwoman-to-disgraced-saboteur-of-more-than-20000-drug-cases/?noredirect=on&utm_term=.be1dc67e51c5

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GENERAL COMMENTS

Instructor

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GRADING FORM: RUBRIC TECH SUMMARY/REVIEW

POOJA BHATT

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OVERALL

<500 words, proper grammar, spelling, verb tense, BTF checklist and rough draft complete

REFERENCING

Intext referencing used consistently in proper format, all references at

the end are in proper format, all references match intext and reference list. Format and references are done following CSE style. All sections that require an intext reference are done correctly.

SUMMARY

Complete summary of key points and main ideas from the article, shows a complete understanding of the article and not missing any components, follows a logical sequence and not repetitive, a very clear distinction between a summary and review. Written so it is clear concise and accurate - not confusing or not using words that do not make sense

REVIEW

Picked a key point or idea from the article to focus the review on, not just repeating what was covered in the summary, uses other literature or references to back up their ideas, follows a logical sequence and flow with main point(s) easily identifiable and not covering too many points.