

Misrepresentation of Expert Witness Testimony in Neurology for Neurological Sequelae and Disorders Explained by Situational Action Theory

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Abstract

The aim of this paper is to analyse the moral context of expert witness testimony (in Anglo-American court systems) drawing on situational action theory, a general theory of moral rule-breaking, to develop a testable framework explaining how a weak moral context may promote deviance in expert witness testimony. The core of the paper describes what rules apply to expert witness testimony and how they are (or are not) monitored and enforced. We explore contextual factors that could motivate expert witnesses into considering providing misleading testimony, and how a weak moral context around expert witness testimony could encourage their choosing to do so. We draw on exemplary legal cases involving expert witness testimony to illustrate the role of key contextual factors in the provision of misleading testimony. We conclude with a discussion on how to strengthen the moral context around expert witness testimony through clearer guidelines, closer monitoring, and greater enforcement.

Keywords: *Expert witness; Misrepresentation; Morality; Motivators; Neurological disorders; Neurological sequelae; Neurology; Situational action theory; Testimony*

1. Introduction

Expert witness testimony (EWT) may be crucial evidence in jurors' decisions and is increasingly used in criminal cases in presenting mitigating factors. Yet sometimes this has misdirected jurors when evidence was fabricated, qualifications were exaggerated, or conflicts of interest were not disclosed. Experts rely upon judgement from experience rather than solely on objective testing.

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Evidence from criminology literature and case law is presented and two original hypotheses using Situational Action Theory: (i) experts disengage with their own moral values when they perceive these values do not match their perception of normative values irrespective of justice for the defendant/plaintiff; and (ii) experts choose the motivators of academic/professional recognition/promotion and/or financial gain irrespective of the potential consequences of providing false evidence in court.

There is an extensive amount of legislative material including court cases, hearings and criminology literature focusing on evidence presented in courts. Potentially, anyone can become an expert witness on possession of appropriate qualifications, demonstrable experience relevant to the case and adherence to professional and ethical codes of conduct accountable to a regulatory body. Increasingly, experts are required to testify in criminal cases and opinion has become a part of the expert's testimony with adherence to legal standards [1,2].

Difficulty in accepting/rejecting EWT has fallen increasingly on the jury which can be burdensome when faced with opposing experts in court. Impartiality, reporting limitations and cautiously interpreting data should prevail. Yet experts may deviate from the standard expected by generalising findings, providing opinion beyond expertise or unrelated to evidence presented; and in some circumstances have misrepresented or fabricated evidence [3].

Examining case law reveals deviant experts that have not just behaved in an unprofessional manner but have broken rules with serious consequences to defendants. Some experts self-promote in order to gain further work, wish for a bigger professional profile or accept financial incentives for providing inaccurate evidence. Peers and employers occasionally exert pressure on experts to provide certain evidence; and experts may disengage from morality irrespective of justice for the defendant.

2. What is EWT and How is it Regulated?

Typically, experts have been drawn from the medical profession [4] but can be from any professional background. Experts may be asked to give evidence about facts in civil and criminal cases [5]. Facts are information usually following assessment by an expert of an individual to inform the court about culpability in a criminal court or about the degree of negligence or responsibility in civil courts for awarding financial compensation to an injured party [6]. Information may be the result of psychological/neuropsychological testing, conducting an interview, or reviewing medical records and is interpreted and presented verbally as expert testimony in the courtroom.

It is common amongst offenders to portray a persona that may not actually reflect their usual character to avoid detention. Effort testing has become more common in neuropsychological examinations [7] but has difficulties as there are limited conclusive studies on the tests that are recommended or are valid [8]. Increasingly, experts are asked for their opinion on causation [9] which must be based on the valid science known at the time [10] but it is often a judgement made by the expert that will carry various caveats or degrees of probability since the exact cause can often not be given with finite accuracy.

Neuroscience has become increasingly used in criminal cases to determine cause and although technology has advanced, brain scanning techniques cannot conclusively provide evidence of causation. Yet in one study US courts expected attorneys to make use of neuroscience and even penalised those who neglected this obligation [11]. Worryingly, neuroscience has been used by some defence attorneys to explain why *mens rea* is absent because of a neurological defect when evidence may be a stretch of

knowledge about associated conditions and their effects on knowledge of wrongdoing (*see* Denno, [12] on shaken baby syndrome).

In England and Wales and the US, an expert witness is defined as someone whose opinion, determined by his/her education, training, certification, experience and skills, is accepted by the judge [13]. This definition appears in Black's Law Dictionary and is widely accepted despite it being tautological. Unsurprisingly, it serves only as a guide and not a statute.

The UK Expert Witness Institute (2018: ¶ 9-10) defines an expert as anyone "...whose specialist knowledge supports considered opinions which may be placed before a court...to provide technical analysis and opinion which will assist the court in reaching its decision. The opinion evidence put forward by the expert witness is based on evidence of fact."

Both definitions are ambiguous and all-encompassing. Whilst they imply that experts need to have acceptable skills, the defining qualities of the expert only become apparent in the courtroom when contested under cross-examination as historical cases have demonstrated. In the US, under Rule 702 of the Federal Register [14], EWT is required to be that of a qualified expert; the testimony addresses issues that the attorney needs an expert to clarify and explain; is reliable; and fits the facts of the case [15].

The text of the rule implies that the expert may be qualified solely by experience. In *United States v. Kathleen Kremser Jones* [16] a handwriting examiner produced compelling testimony, detailing his methodology in examining signatures, and backed by years of experience. Similarly, in *Henry Tassin et al. v. Sears, Roebuck and Co. et al.* [17], a design engineer's testimony was regarded admissible because it was based on facts, that he conducted a reasonable investigation, and traditional technical/mechanical expertise was demonstrated showing a reasonable link between information he provided and his conclusions.

With such variability, and perhaps influenced by a judge's knowledge of the case or subject matter, some cases will inevitably collapse as the judge has not been convinced by the expert when using the ambiguous rules about expert testimony. In some cases, criminal sentences are followed by a civil suit for damages or in out-of-court settlement. The collapsed criminal conviction of a homicide was followed by financial settlement in the civil court in *Sharon Rufo et al. v. Orenthal James Simpson*, [18]. This situation may also occur because of the determinants of *reasonable doubt* in criminal determination as compared to facts based on *a balance of probabilities* in civil cases.

The UK Register of Expert Witnesses [19] holds list of experts across disciplines with their qualifications and experience but there are other lists such as the Expert Witness Institute [20] list and Bond Solon [21]. The UK has no legal requirement for an expert witness to be on a single list or on a statutory list and there is no statutory body to determine who should or should not be on the list. Each registrant will usually be accountable to their discipline-specific regulatory body and their qualifications should be recognisable as signatures of competency within their areas of specialised knowledge.

The jury is often asked to judge whether the expert's evidence is credible but in some cases the judge decides [22]. Guidelines are available from the American Academy of Pediatrics for experts serving in US courtrooms [23]. Sometimes experts may carry expertise from a number of disciplines, e.g., neuropsychiatry, forensic psychology, which leads to debate over which

regulatory body should oversee their practice. Being a member of more than one regulatory body may mean being accountable to several regulatory bodies.

Evidence from experts should be impartial, factual, legal and moral [24]. Empirical data should be collected, analysed, interpreted and presented within accepted parameters held by the scientific community and by the courts while adhering to the Daubert Standard [25]. Scientific evidence can be challenged and even excluded from evidence where there is insufficient consensus of scientific opinion about a particular issue.

In the US, Federal Rules of Evidence are referenced for the legal integrity of EWT [25]. For psychologists appearing in the courtroom, they must demonstrate three factors in their testimony: reliable (in the sense of psychological validity and worthiness), scientific, and comprehensive. Their evidence should be relevant to the case [26], unequivocal and should not have prejudicial impact on the defendant (*see* State of Arizona v. Dolan Chapple, [27], regarding possible malingering and deception of the defendant).

3. Intentional Vs Unintentional Misleading Expert Testimony

If the moral context of EWT is conducive to providing misleading testimony then the key features of a moral context that may make it conducive may be: (i) uncertainty about the rules and expectations for EWT (e.g., is the expert's responsibility to elucidate what happened or to reinforce the case presented by one party?); (ii) sources of temptation and provocation (e.g., allegiance to authorities, personal celebrity); and (iii) a lack of enforcement - monitoring and/or consequences (e.g., to what extent are claims validated and what happens if they are found to be misleading?).

Since Daubert, more stringent and scientific criteria was added to the existing standard [28] so that testimonial evidence was "based on a process that was scientifically respectable i.e., testable, tested, subject to review, published, having a known or potentially known error rate, and having existing standards controlling its functions." Further extension was made following Kumho Tire Co. Ltd. v. Carmichael [29] when a tyre blow-out led to a car overturning and a resultant death.

Attempts to standardise testimony have been made by quantifying information and presenting them using statistical analysis and interpretation. For example, administering a psychological or psychometric test several times and on different occasions may produce a profile of a person's performance which can then be quantified, and a reliability measure created such as a standard error rate [30]. However, this method is also prone to unreliability and interpretation because of the possibility of statistical anomaly dependent upon the discipline-driven data set or faulty judgement and bias according type I or II errors [31].

This method does not assist in the interpretation of observational data which may also be acceptable by the court such as eyewitness testimony which is fundamentally flawed in terms of unreliability and social cues [32]. Psychologists recognise the flaws, yet it remains compelling evidence for jurors if supported by an expert's opinion.

Neuroscience experts are particularly mindful of the possibility of making a false positive error from their findings leading to psycho-legal errors in the courtroom [33] yet there can be considerable responsibility put upon them when their findings may

determine whether or not the defendant is fit to plea, e.g., US guidelines for the ability to instruct an attorney [34]; UK standards [35,36], and defendant culpability [37,38].

Jurors may not have an understanding of the implications of EWT, and it has become the right of prosecutors to exclude jurors who in their consideration might reach a prejudicial verdict [39].

4. Impact of Providing Misleading Expert Testimony

The importance of EWT was highlighted by Dyer [40] when a paediatric neurologist expert was suspended on suspicion of taking cocaine as an addiction; the consequence was to potentially affect the outcomes of 50 cases involving birth damages as his evidence was crucial to the ongoing criminal trials. Faigman, Monahan and Slobogin [41] suggests there is a fundamental divide between the actions of scientific experts and court requirements because scientists frequently enquire at the group level (e.g., class similarities or differences) whereas the court needs to conclude at the individual level (except in class actions).

The postulate that greenhouse gases may be increasing due to human productivity activities [42], a criminal act may have been committed due to negligence or duty of care concerning pollution hazards to individuals or the environment. Opinion, without the collection of empirical data, is also within the realms of an expert's role and can lead to an assumption that data is known, consensus is reached, and harmful effects established when the expert has world-wide reputation or respected academic/professional standing.

Determination of specialised competency only needs to include: experience, training, certificates, professional affiliation, skill, knowledge, fellowship [43], and evidence should be able to stand up to all levels of cross-examination [44], by defendant and plaintiff attorneys and by the judge if necessary. In the US there is statutory requirement for state registration within discipline and the role of an expert is limited according to the Federal Register, [14].

5. Evidence of Deviance in Expert Witnesses

Expert witnesses are not infallible, and some are even susceptible to persuasion. Federal courts are able to appoint their own experts who may be employees of the government, e.g., State Bureau of Investigation [45]. This can present a potential bias because of underlying loyalty towards the prosecution. Reporters have used the expression 'hired gun' to describe, in some instances, an expert who is recruited to take the position held by their client [46].

In the UK, the client is usually the appointing solicitor; in the US, this is usually the attorney. Whilst it is considered unethical to ignore the clinical evidence, there is no prohibition on an expert to present persuasive testimony [47] providing that it reflects accuracy and is derived from objectively administered measurements [48].

In certain cases, the expert may feel that the rewards of giving evidence are lucrative and this may *colour* judgment of the case. Brown [49] suggests that on occasions the worst scientist is right and the best scientist is wrong. Scrutiny of evidence is paramount rather than just the credibility of the expert.

Deception by the expert witness *per se* has taken many forms, for example, presenting police interviews that have resulted from false-evidence ploys to evoke confessions [50]; failing to disclose conflicts of interest, financial or otherwise [51]; exaggerating or lying about qualifications [52]; or withholding crucial evidence [53].

Trusting an expert's evidence is not without danger because experts should rely upon their judgement based on their experience [54] and not always on objective testing [55].

In the case of experts appointed by the court rather than by an individual attorney, there is often a *shopping spree* in which experts are sought from registers, directories or from referrals. Johnston [56] warns of the corruption of one-sided expert testimony. Experts may be sought who are under-qualified or biased towards a particular scientific method or allow their judgement and self-interest to over-ride objective opinion; an expert's qualifications and experience might fall short of expected standards.

Since appointed experts are required to state opinion, it may be any influential aspects of their delivery of facts or opinion rather than the facts *per se* that ultimately decide the jury's verdict. This situation may lead to an expert promoting him/herself further for repeat work and becoming more authoritarian in an attempt to win the credibility and respect of the jury rather than in terms of their actual expertise or scientific reputation. This presents as an opportunity for misrepresentation of facts by the expert in pursuit of their personal agenda.

5.1 Case evidence 1: Dr Michael West

Dr West was an expert witness who helped US courts in the US in over 71 trial cases [57]. Trained as a dentist, he offered opinion in a number of cases about indentations that might resemble those made by human teeth. In *Kennedy Brewer v. State of Mississippi* [58], he matched five of the 19 marks found on the body of a child with indentations that could be made by the teeth of the suspect, Kennedy Brewer. He said that he could match these "*to a reasonable medical certainty*" (§ 30, [58]).

For some time, his testimonies were the subject of controversy amongst defence lawyers because he extended his expertise beyond dentistry to include blood stain analysis, analysis of wounds, forensic photography, residue from gunshots, video enhancement techniques and the use of ultraviolet light for the detection of forensic evidence [57]. Dr West resigned from the International Association of Identification and the American Academy of Forensic Sciences following ethics investigations. The suspect, Kennedy Brewer, then charged with murder of his girlfriend's three-year-old daughter, successfully challenged the reliability of methods used by Dr West, particularly those used to determine the bite marks and his postulation that they had been made by Brewer's teeth [59].

This case illustrates how an expert worked beyond his training and expertise and, in giving an opinion in a legal setting, interpreted the facts with embellishment and generalisation rather than within their area of defined expertise. The expert was determined to become renowned in a number of disciplines rather than in his own defined area. It is difficult to safeguard the court against this type of malpractice as it is unknown why an expert extends his knowledge beyond his expertise and whether this is due to ego-centric traits and/or disengagement with moral values.

5.2 Case evidence 2: Michael Iver Petersen

Reliance of experts' evidence in some criminal cases [60] is shown to have misdirected the jury as the evidence was fabricated. Michael Peterson is a well-known American novelist, convicted in 2003 of murdering his second wife, Kathleen, two years' previously. After serving several years of a life imprisonment term, following several appeals he was granted a new trial [61]. This case was followed variously around the world by the media because it catalogued a series of presentations by expert witnesses that were subsequently discredited [53].

Interestingly, the social media, newspaper articles, radio and television assisted in outing one of the experts, Duane Deaver, who had been a State Bureau of Investigation (SBI) agent and was key to demonstrable evidence that potentially incriminated Peterson. Following an independent audit of the SBI agency he was found to have falsely represented evidence and later 34 cases were re-investigated [62].

In Deaver's EWT, he stated that his mentor was the SBI blood stain specialist David Spittle. He declared that he had analysed blood stains from 500 criminal cases and had produced 200 reports; in fact, it was revealed in the retrial hearing by the SBI Assistant Director Eric Hooks that Deaver had only written 47 reports and had not been mentored by David Spittle with court appearance in only three cases previous to Peterson's case [63]. This was a gross exaggeration of his experience and false representation of the extent of his expertise.

The role of the judge is crucial to the jury's decision; however, in his appeal, the judge was likely influenced by the EWT when in fact the legitimate judge's role is to guide the jury and for them to decide whether or not the expert's testimony is helpful and accurate. This brings into play the question over whether or not a judge can also be an expert.

It is the judge's role to hear the evidence in front of the jury and to sum up the evidence in a balanced and unbiased manner such that the jury may decide on its importance and accuracy; the court should decide upon the scope of discovery of the experts involved in the court appearance [45]. The judge cannot be an expert in all disciplines and relies upon the expert's experience.

In appeals, the jury is absent and so the judge makes decisions about the helpfulness and accuracy of the EWT.

Judges have often fallen on one of two sides in terms of sentence determination because of an expert's scientific evidence. A judge may consider neuroanatomical/cognitive deficits as being a *reason* for the defendant committing a criminal act and may award a lower sentence than normal in mitigation [65]. A convincing and detailed expert might tip the balance for the judge who considers the defendant is in fact beyond change or modification in terms of his criminality, and they should receive a harsher sentence, within the legal parameters possible, than that if the defendant is perceived to have malleability in behavioural change [66].

Experts may be conflicted because they are required to report on their assessment of the defendant yet may wish to help the defendant-patient, e.g., by reporting on findings that may influence the judge's decision to recommend detention in hospital rather than a prison sentence. Other influences such as social media are increasingly influential on the outcome of criminal cases with experts coming under the spotlight.

The scope of discovery is dictated by Rule 706 of Federal Law [67], although this may be further limited by financial impositions as in *Joint Eastern and Southern District Asbestos Litigation v. Armstrong World Industries, Inc.* [68] when Judge Weinstein allowed informal discovery only to avoid expense and delay as declared by Rule 102 [69].

Ultimately, Peterson walked free from an 86-month prison sentence after having spent 98.5 months in prison and submitting to the Alford Plea [70] of voluntary manslaughter of Kathleen Peterson (*State of North Carolina v. Michal Iver Peterson, 2017*). In the US, the Alford Plea enables the defendant to submit a guilty plea because sufficient evidence exists to convict the defendant of the offense, but the defendant asserts innocence [70].

There were several experts involved in the Peterson case, yet none had highlighted errors in the initial investigation where the alleged murder weapon (a blow poke) was only found on the second forensic visit, and only when comparative photographic evidence of the basement area showed it to have ‘re-appeared’. This is a clear case of evidence placement.

Additionally, each expert supported the other in the proposal that his wife died because of blows to the back of the head yet consistently contradictory evidence was presented showing that the injuries were lacerations and not blows. Whilst it is the role of the court to challenge evidence (including experts’ testimonies), the credibility of Deaver was shown to be problematical in terms of experience and qualifications.

It is possible that he was motivated towards promotion within the state-appointed position and did not wish to contradict opinion of his peers in the case. Alternatively, he may have been coerced [71] to provide evidence in the manner demonstrated. Offering opinion beyond his expert knowledge and experience was unwise as this had involved him lying about his experience which is perjury. Lying can be intentional or unintentional [72] but should not constitute expert testimony. Overstating or generalising findings is considered lying in the courtroom.

Gooday [73] suggests that we should be wary of overstating the contrast between knowledgeable experts and lay people particularly when experts may be operating beyond their competence or knowledge-base. Peer pressure may make experts act in ways that are inconsistent with their usual behaviour and it is possible that their decisions are made habitually if behaviour is part of a repeated pattern whether coerced or otherwise especially when appointed by one side of the adversarial system as compared with appointment by the court or judge [74].

A big feature of this case was the presentation of ‘forensic experiments’ conducted in Deaver’s laboratory to simulate how blows to the back of the head might cause the injuries recorded at the crime scene. McElhone at al. [75] suggests there may be a place for simulated forensic scenarios when only trace evidence is found [76]. Morgan [77] warns that reconstruction should still have its roots in problem-solving science to ensure transparency in the inferences drawn from trace evidence.

In the case of Deaver’s experiments, it was evidenced on film that they were conducted haphazardly and unscientifically with little use to the jury. The expert may have felt that such experiments would secure his evidence in the minds of the jury and add credibility to his testimony and reputation. Whilst it did have this effect for the jury, subsequently it had the reverse effect for his reputation.

5.3 Case evidence 3: Steven Allan Avery

Steven Avery [78] was convicted of sexual assault and attempted murder in 1985 in Manitowoc County, Wisconsin, US. He served 18 years of a 20-year sentence before being exonerated in light of new DNA test results but was then convicted of murder in a completely unrelated case two years later in 2005 [78].

In respect of his first conviction, new evidence was put forward by his defense that showed the DNA of another person (Gregory Allen who had a striking resemblance to Steven Avery) had been associated with the crime scene and that Avery could not have been at the scene [79]. However, police officers from Manitowoc County Sheriff's Office were adamant that he was the perpetrator and felt convinced since he was a resident of the area [80]. Evidence presented by police experts was subsequently shown to be false because a time-stamped store receipt and 16 eyewitnesses supported the fact that he was over 40 miles away from the crime scene [81].

Avery's exoneration led to considerable debate within the US legal system resulting in the 2005 Criminal Justice Reform Bill aimed at preventing wrongful conviction [82]. Republican Mark Gundrum was Chairman of the Wisconsin Assembly Judiciary Committee and recommended improvements to the state's criminal justice system [83] with a new protocol for identifying eyewitnesses [79].

Avery filed a \$36 million lawsuit against Manitowoc County Sheriff's Office in 2003 for his wrongful conviction and subsequent imprisonment [84]. However, whilst his civil suit was pending, he was arrested for the murder of Teresa Halbach who had been a photographer working in Wisconsin and although appeals were made on his behalf the conviction was upheld by the higher court system [85].

It was suspected that Manitowoc County Sheriff Office were determined to stand by their original conviction and insisted that there was substantive evidence to implicate Avery [86]. Instead of resisting the potential overturning of the former conviction, they pursued a new conviction against Avery with evidence presented by newly appointed expert witnesses subsequently shown to be fallible [85].

It would seem that in this case local politics played as much a part in the legal process as the determination of the police to present new (flawed) evidence via their appointed experts. State employees, acting as expert witnesses, felt obliged to protect their peers at all costs even if this meant tampering with crucial evidence [87] including placing a key at the scene with DNA alleged to be Avery's yet matching DNA gained from an old stored vile from his original reversed conviction.

Avery's case has been a remarkable read for criminologists not least because of the dubious interviewing techniques employed by the police to elicit false confessions from his cousin, Brendan Dassey who had learning disability [88]. Jury members felt intimidated to return a guilty verdict [89] and one member of the jury was the husband of a clerk with Manitowoc County indicating possible social pressure to return an expected guilty verdict by this jury member [90]. This case represents gross misconduct by a number of professionals including expert witnesses and their misrepresentation and fabrication of crucial evidence.

Extensive coercion had occurred between investigating officers and experts. Murrie and Boccaccini [91] termed this coercion as *adversarial allegiance*; in Avery's case, evidence was collected in support of an agreed crime story with agreed perpetrators. It is unclear why Avery appeared to be targeted by certain law enforcement officers but it is clear that a number of investigating officers became experts in this trial and provided opinion about bullets found (rather than a ballistic expert) and about blood and DNA evidence.

6. Situational Action Theory

Situational Action Theory (SAT) [92] may be used to explain the criminal acts of deviant experts who:

1. disengage with their own moral values when they perceive these values do not match their perception of normative values irrespective of justice for the defendant/plaintiff.
2. choose the motivators of academic/professional recognition/promotion and/or financial gain irrespective of the potential consequences of providing false evidence in court.

These hypotheses will be explored by presenting the literature from criminology and law and formulating an explanation based on SAT.

SAT proposes that crime is a moral action [92] which is not incompatible with the views of those providing explanations drawn from contemporary human genetics and neurocriminology to explain violent and anti-social conduct [93]. SAT would suggest criminal acts (C) are an outcome of the expert's perception-choice process (\rightarrow) initiated by interaction (x) between an expert's crime propensity (P) and their exposure to criminogenic setting (E):

$P \times E \rightarrow C$ [94].

Yet SAT still holds strong even if moral acts are not clearly observed in criminal behaviour [95] and despite the actor knowing or recognising rightness or wrongness [96]. The motivator directs attention by *temptation* or *provocation*; and the absence of strong moral rules in the setting and deterrence may all set the moral context for a particular criminal act [97]. The moral context refers to rules of the setting and their environment [98].

Morality is internalised with external and internal sources of influence on the actor's perception of an alternative action of choice [99]. SAT suggests actors exhibit self-control when deciding upon alternatives, whether impulsive or rational and whether moral acts are suppressed during habitual behaviour because of the moral context [100]. Individual and developmental theories focus on the reasons for people having varying crime propensities whilst environmental theories focus on why environments might induce some people into committing crimes [101]. SAT considers moral acts of rule breaking and integrates all of these premises into a single theory.

Many researchers refer to 'situations' as the 'immediate environment' [102] with a distinction between actor and situation, e.g., "a setting in which behaviour occurs" [103]. The importance of intersections between people and environments and their relationship to broader social conditions and crime patterns has been captured by Felson and Cohen [104] in their routine activity theory; Hindelang et al. [105] in life-style theory; and Brantingham and Brantingham [106] in crime pattern theory. SAT explains the interaction between different types of people and environments triggers particular types of crime.

Routine activity theory (RAT) attempts to explain societal changes in direct-contact predatory crime rates [101] and opportunities for crime impact on societal crime rates [107]. The interactional model of RAT is a primarily predictive model rather than an explanatory model since it describes more about the ‘where’ and ‘when’ crimes are likely to occur rather than about ‘why’ crime is likely to happen [101]. Individual differences in crime propensity are not well treated in RAT.

In SAT, event decision through rational processes sees ‘if’ and ‘by what means’ a criminal act may be committed [101] and is consistent with Cornish and Clarke’s [108] description of a step-by-step process to criminal activity with rational choices at each decision point. Wikström and Treiber [101] consider “habitual (or automated) choices are based on the application of a person’s moral habits (automated rules of conduct) to a temptation of provocation.” Also, “deliberate (or reasoned) choices involve some assessment of the pros and cons of more than one potent alternative for action (which may include the choice to do nothing) and may also involve elements of problem-solving” (ibid). The authors conclude that causes of crime need to take into account both differential crime propensity and differential criminogeneity of places.

For expert witnesses, this may mean whether a criminal choice alternative is the only perceived alternative action or whether it is to some degree automatic in terms of behaviour. A specific chosen criminal act may be the one that is perceived to be the correct choice at that time and place because of the moral feelings of the expert at that particular time.

7. Discussion

7.1 Implications for regulating EWT

Large corporations have to compete in the worldwide marketplace and sometimes employees feel the need to break the legal rules to gain a greater market position or to increase profit and salary. There may be a rational deliberation by the deviant expert [109] or a habitual enactment [110] of a criminal act depending on whether there is perception of an alternative act of choice *immediately* before the act or *some time beforehand* as in habitual behaviour [94]. The process of perception determines whether or not the process of choice will be

- habitual (perceiving only one alternative for action);
- deliberate (perceives more than one alternative for action) [111].

For the deviant expert this may be repeat behaviour of falsifying evidence or misrepresenting evidence because any acknowledgment of morality is suppressed by habituation. It may be the recognised ‘culture’ of the experts that surround the expert to behave in such a manner, or the behaviour is so well-learned by the expert almost unconditionally to the extent that the adopted culture of the expert ‘prevents’ alternative action (i.e., not behaving in a rule breaking manner). Repeat behaviour may be continually rewarded or reinforced such as the element of perceived risk is minimalised or even extinguished in thought (even if the reality of punishment is still a real possibility).

A deviant expert:

- may be motivated by *temptation* (e.g., financial incentive or profile building) or by *provocation* (e.g., ‘hired gun’).
- may lack strong moral rules or modifies them (and the deterrent is not effective for him/her).

Treiber [111] suggests, moral reasoning is a higher cognitive function and that a moral filter between the motivator and the criminal act is bypassed. This is plausible in the case of habitual acts where the deviant expert does not routinely question rule breaking behaviour and does not reference his/her own moral values or the normative values because of habit.

Gottfredson and Hirschi [112] suggest that crimes are committed in the pursuit of self-interest; although there may be occasions where self-interest is the indirect motivation of the 'corporate good' and self-interest fails to explain 'causation' [100]. Pressures exerted upon the expert come in various forms, e.g., from the initial contact between the attorney and the expert (over the telephone or in a letter of instruction) and perhaps emphasising the salient points the attorney wishes the expert to consider [113]. This might be construed as indirect self-interest because the deviant expert wishes to please the attorney, produce a satisfactory report and gain repeat work. This is distinct from self-control as suggested by SAT where the expert is in control of his/her rule-breaking behaviour.

The 'hired gun' [114] may feel the pressures of the employer to present particular evidence in support of a conviction particularly if they are newly qualified, coerced or have low self-esteem, symptoms of which often begin early in life and through development (*see* Due et al.'s, [115] study of bullying; Hoffmann et al., [71] on coercive authorities).

Duane Deaver in the Michael Peterson case was a hired gun and the testifying expert in the Steven Avery case was pressured by his peers to protect and allegedly lie about evidence that some considered was unlawfully gathered because of breached territorial working restrictions of investigating officers. Young [116] warns against using partisan experts; Young and Griffith [117] compared US criminal court procedures to those conducted in Europe (and tribunals of the Roman Catholic Church) which give more prominence to the judge rather than to experts.

Expert witnesses also time pressures, restricted fees, or selected data due to partial disclosure of evidence - this has been compared to the importance of informed consent of individuals [118]. Sometimes attorneys try to portray an *upper hand* scenario where they hold the opinion of an expert that will support their case (and will damage the opponent's case) when in fact they do not have such an expert, or the appointed expert has not (or not yet) expressed such an opinion. This has been referred to as "*phantom expert*" [13] and is deviance on the part of the attorney, which if the expert agrees to alter their opinion, also becomes deviance by the expert.

Naïve experts [113], those who perceive the need for recognition [114], and experts who are on their own *mission* with a *hidden* personal agenda [119] are all potentially susceptible to misrepresenting evidence. SAT explains this behaviour in terms of motivators that present choices to experts. Some new experts may not fully understand the possible consequences of misplacing evidence or believe the worst consequence of their actions might be suspension or removal from a regulatory body listing rather than a hefty fine or imprisonment depending upon the type and severity of the offense.

Older experts who have considerable experience may not have kept current with events or literature and may continue to interpret findings in a manner that may be obsolete. The question here is whether producing and interpreting such evidence is unintentional or deviant behaviour.

The ‘competent/incompetent’ expert may be ‘conscious/unconscious’ of his/her acts. Curtiss and Warren’s [120] life skills and coaching suggests different levels of training in competency. It can be argued that to become an expert in a particular field means developing competency and being cautiously conscious about the skills attained. To some extent experts might be inward-looking in gaining specialised knowledge within their discipline and this is the moral context presented by SAT. Surgeons choose specialisms early on so that they can perfect specialised skills [121]; rehearsal [122] and simulation [123] may improve competence but can possibly produce an expert with narrow-breadth expertise and an inflexible presentation of evidence in the courtroom. Whilst their everyday expertise may not be diminished, they be less familiar with legislative standards unless they regularly present to the court.

This situation poses more potential problems because of the increasing expectation of courts to offer opinion and not just expert evidence. In the domain of *opinion* there is the possibility of not considering alternative choices due to narrow specialist knowledge; and although juries are charged with deciding upon an expert’s credibility, the expert’s opinion can be very influential in a criminal case. This may be captured by SAT in the sense that habitual choice by the expert may be made with unintentional harm despite an offense being committed.

The moral filter [111] may be bypassed simply because the action of choice is habitual. SAT explains inconsistencies between an expert’s moral values and norms in terms of post hoc justification rather than true modification of values at the time of habitual or deliberate choice since these are determined by the expert’s perception and choice during rule breaking.

Habitual behaviour may make it less likely that the expert is focused on truth, and more likely to carry the belief that a narrow line of thought is unbiased and correct. Gutheil et al. [124] warns of tension between truth and admissibility because of the rules of submitting evidence. Truth-finding is not the focus of the adversarial system but is an action goal according to SAT.

It is proposed that morality is a continuum with a set of moral values at one end of the continuum being most aligned to the perceived normative values shared by others in the same class, culture, age group, etc. and at the other end those moral values held to be most different to the identifying group of the individual. It is the importance and relevance of morality that SAT emphasises [125]; the degree of engagement in those moral values and the expert’s insight may affect his/her decisions to be deviant. Actions are context-dependent and therefore an expert might respond differently in a new context.

7.2 Regulation and training

There are a number of reasons for experts entering the legal profession including personality traits, opportunity and the need for demonstrating expertise. These are in addition to other possible reasons including financial incentives, peer-coercion or employer obligations. Similar to others with criminal propensities based on the interaction of moral contexts and provocations/temptations and criminogenic exposure, the expert’s actions may be guided by his/her personal moral values and the ability to exercise self-control [126].

Changes in the expert’s involvement in criminal acts is determined by change in his/her crime propensity and exposure; and policy therefore should be aimed towards the drivers of criminal propensity and exposure [127].

There is an urgent need of regulation through professional regulatory bodies and continuing professional development. The triggers that promote criminal acts in experts needs to be thoroughly explored and evaluated by collecting data from legislative bodies, judges, attorneys and experts concerned in the legal process. This would be a large project but may be a step further towards reducing some of the bias and temptations or provocations that result in misrepresenting evidence in the courtroom.

Some measures can be addressed in educating experts and renewing their standards through compulsory continuing professional development programmes intended to keep experts up to date with current issues. Regulation of experts may ensure to some extent the reliability and validity of qualification and experience though it may be difficult to set levels when expertise is in niche areas where few experts exist.

8. Conclusions

Experts are not infallible, but it is important to determine when an expert has employed intentional and unintentional motives in preparing and presenting material for criminal court (the moral context).

Welner et al. [128] suggest there is a need for safeguards to be implemented in the present court process. There are several limitations to the present system and suggestions for safeguarding need to be made urgently to: (i) protect the court from false evidence; (ii) protect the defendant from information that may determine their outcome in court when it is incorrect data being submitted; (iii) protect jurors from making decisions that are biased by false evidence from expert testimony; (iv) protect the public at large when the defendant is released because evidence is not presented for the jury to make proper consideration over the verdict or when juries make decisions because expert evidence is misrepresented.

9. Monitoring and Enforcement

Modern society is a far cry from the old judicial practices from which many aspects of law arise concerning expert witness testimony. Revising Daubert and improving interrogation techniques and procedures for challenging jurors is some progress but current standards need to be thoroughly reviewed especially because of current times that involve peer pressure from social media. It seems difficult to remove this influence from current culture unless embargos can be imposed on publishing or discussing court cases in social media before the cases have concluded.

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