

**TELEVISION COURTROOM BROADCASTING RESEARCH:
THE PROBLEM, THE CHALLENGE AND EYE TRACKING**

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I. Introduction

Courtroom broadcasting is always topical, if not emotive. Currently there are legislative efforts to allow television cameras into US federal courts.² The new UK Supreme Court permits television cameras.³ Some might argue that this is a change or an advance for television courtroom broadcasting. Others might say that it merely reflects the *status quo*, as the House of Lords as an appeal chamber was televised up to August 2009, with the new Supreme Court beginning in October 2009, and thus there is no policy change.⁴ The US Supreme Court also had to deal with television courtroom broadcasting issues recently (*Hollingsworth*)⁵.

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² The proposed ‘Sunshine in the Courtroom’ is a bill to provide for television coverage access of Federal court proceedings in the United States. It was introduced for the first time in the 105th Congress (1997-1998), and has been reintroduced in the 109th (2005-2006), 110th (2007-2008) and 111th Congress (2009-2010). See H.R. 1280 (105th Congress), S. 829 (109th Congress), H.R. 2128 and S. 352 (110th Congress), and H.R. 3054 and S. 657 (111th Congress), all available at <<http://www.govtrack.us/congress/bill.xpd?bill=s111-657&tab=related>> accessed 19 June 2010.

³ See, for example, UK Department for Constitutional Affairs in Great Britain consultation ‘Broadcasting Courts, Consultation Paper’ (2004), consultation paper available at <<http://www.dca.gov.uk/consult/courts/broadcasting-cp28-04.pdf>> accessed 19 June 2010. The first main discussion of television courtroom broadcasting in the UK was J. Caplan, M. Kalisher and A. Speaight, *Televising the Courts: Report of a Working Party of the Public Affairs Committee of the General Council of the Bar* [of England and Wales] (London: Bar Council of England and Wales 1989). This is generally known as the Caplan Report, after the first author. While the report favours television courtroom broadcasting, it has been describe as “cautious” in the level of such broadcasting to be permitted. See Daniel Stepniak, *Audio-Visual Coverage of Courts* (Cambridge 2008) 14. The report recommended pilot television courtroom broadcasting (at p. 50). It did not recommend any effects baseline research be carried out before any actual pilot filming and or pilot broadcasting.

⁴ See Department of Constitutional Affairs, *Broadcasting Courts, Consultation Paper*, CP 28/04, November 2004.

⁵ *Hollingsworth v Perry*, 558 US __, 2010, available at <<http://www.supremecourt.gov/opinions/09pdf/09A648.pdf>> accessed 9 June 2010.

However, what are the effects of television courtroom broadcasting? Do we know? The answer is ‘not really’. The extent of the empirical research is too limited. That is the problem referred to in the title.

The US Supreme Court recognises this problem. The author identifies for the first time how the US Supreme Court has set a challenge that proper quality, and quantities of, empirical research be carried out into the effects of television courtroom broadcasting. Despite the challenge over a number of significant cases, the author is the first to have identified the US Supreme Court empirical research challenge. That is the challenge referred to in the title, which challenge remains to this day.

The US Supreme Court notes the lack of (general and) empirical research⁶ in *Estes*⁷ and similarly in *Chandler*⁸ and *Hollingsworth*.⁹ It set a challenge to address the substantial empirical research gaps. The Caplan Report¹⁰ in England and Wales identified only two empirical studies, namely Short¹¹ and Hoyt,¹² and was ‘not aware of any clear empirical evidence which demonstrates the educative value of televising the courts.’¹³ There is no official literature in England and Wales which refers to the empirical research studies and issues.

⁶ Ibid, see for example at 541 – 542, Clarke, J., 599, At 645 in (1956)(42) ABA Journal. Also (1958)(83) ABA Rep 790 – 791, Harlan, J., 592, Harlan J. 552. Warren, CJ. 565. Warren, CJ. 569, referring to Keating, ‘Not ‘Bananas,’ Not ‘Peyton Place,’ But the U.S. Senate’ *New York Times Magazine* (New York, 25 April 1965) 67, 72. Keating commented in relation to a stockholders meeting that ‘[s]ome stockholders seemed very much aware that they were on camera.’ Ibid 569. Warren, CJ., 569 – 570. Chief Justice Warren. Footnote omitted. In footnote 24, p. 569, he refers to *Tinkham*, ‘Should Canon 35 be Amended? A Question of Proper Judicial Administration’, (1956)(42) ABA Journal 843, at 845, who refers to examples of how people react when they know they are on television. He also refers to Gould, *New York Times* (New York, 11 March 1956), S2, at X 11, col. 2, who states that even experienced performers can be affected, and that this ‘psychological and emotional burden must not be placed on a layman whose testimony may have a bearing on whether, in a murder trial, another human being is to live or die.’ Referred, to Ibid 569. Warren, CJ., 616. White, J. Minority opinion, 587 - 589. Harlan J., 604. Stewart, J. Minority opinion. The Supreme Court even said there were actual adverse effects, see Clarke, J. in *Estes* (n 6), 536, 548.

⁷ *Estes v. Texas*, 381 U.S. 532 (1965).

⁸ *Chandler v. Florida*, 449 U.S. 560 (1981).

⁹ *Hollingsworth v Perry* (n 5).

¹⁰ (n 3) 34.

¹¹ See (n 39) below.

¹² Ibid.

¹³ Ibid 28 para 4.2.

This author goes further and identifies, also for the first time, how new eye tracking technology can and should be applied to the empirical research challenge. Eye tracking allows us to track and record the actual eye gaze of (real and or test) courtroom actors, and hence empirically research the attention and distraction effects of looking at the television camera and or the camera operator in the courtroom. (However, this author is presently only recommending eye tracking for non-live case research).

II. The Problem

A. Some of the Concerns

The US Supreme Court referred to some of the longstanding concerns with television courtroom broadcasting, such as adverse juror effects¹⁴; witness effects¹⁵ (the Caplan Report also refers to a New York case where a witness refused to testify because of television cameras¹⁶); judge effects;¹⁷ and defendant effects.¹⁸ Defendant effects are some of the least researched areas of television courtroom broadcasting.

The US Supreme Court recognised that there may be subtle and or discrete effects¹⁹ ‘some so subtle as to defy detection by the accused or control by the judge.’²⁰ Many such effects are now no longer so subtle as to defy detection, given modern eye tracking technology. The eye movements of simulated courtroom actors in test settings and in actual (non-live) court settings, can be examined and recorded.

B. General and Empirical Research Problems

There are many general research problems. There are too many research gaps. Also, most studies are non-scientific and non - empirical. The general non-empirical studies predominantly rely on

¹⁴ Ibid 545 - 546.

¹⁵ Ibid 547.

¹⁶ *Caplan Report* (n 3) 33. It does not identify the case.

¹⁷ *Estes* (n 6) 548.

¹⁸ Ibid 549.

¹⁹ Ibid 544.

²⁰ Ibid 545.

self reports, opinion reports and questionnaires only. The first reported television courtroom broadcasting case occurred in 1953.²¹ Yet, since then, there appears to have only been just over twenty scientific, methodical and empirical studies of television courtroom broadcasting effect issues identified in the literature and by the author (see n 39 below). These are welcome, but such a small number of empirical studies is obviously insufficient.

It is not possible to properly research effects if one does not say what effect hypothesis one is attempting to test and research. This applies to social science research generally as it does to television courtroom broadcasting research. Frequently, this basic step is absent in television courtroom broadcasting research.

There is an overall lack of empirical and objective research. The following quotes indicate how the US Supreme Court has recognised the problem with the existing courtroom television broadcasting effects research:

*[O]ur empirical knowledge of its full effect on the ... participants in a trial, including the judge, witnesses and lawyers, is limited.*²²

*... grave potentialities for distorting the integrity of the judicial process ... such distortions may produce no telltale signs, but in a highly publicized trial the danger of their presence is substantial, and their effects may be far more pervasive and deleterious than the physical disruptions.*²³

*televising ... trials ... has an inevitable impact on all trial participants.*²⁴

...increase nervousness and tension ... consciously or subconsciously, all trial participants act differently in the presence of television cameras. And, even if all participants make a conscientious and studied effort to be unaffected by the presence of the television, this effort in itself prevents them

²¹ Referred to by Barber as being the case of Billy Eugene Manley in Oklahoma City which occurred in 1953, see Susanna Barber, *News Cameras in the Courtroom: A Free Press – Fair Debate* (New York 1987) 10–11.

²² *Estes* (n 6) 541.

²³ *Ibid* 592.

²⁴ *Ibid* 565.

*from giving their full attention to their proper functions at trial.*²⁵

*the currently available materials assessing the effect of cameras in the courtroom are too sparse and fragmentary ... As was said in another context, 'we know too little of the actual impact ... to reach a conclusion' It may well be, however, that as further experience and informed judgment do become available, the use of cameras in the courtroom, as in this trial, will prove to pose such a serious hazard to a defendant's rights that a violation of the Fourteenth Amendment will be found without a showing on the record of specific demonstrable prejudice to the defendant.*²⁶

The following is one of the more pointed academic comments highlighting the same research problem with television courtroom broadcasting:

*Social scientists measure the intelligence of monkeys more effectively than courts have attempted to ascertain the effects of television in the courtroom.*²⁷ (Perhaps until now ...).

The US Supreme Court in *Chandler*²⁸ again referred to the lack of research and empirical evidence.²⁹ The most recent US Supreme Court case, *Hollingsworth*, was in early 2010.³⁰ The court resolved

²⁵ Ibid 569 – 570. Chief Justice Warren. In *Estes* 569, he refers to Tinkham, 'Should Canon 35 Be Amended? A Question of Proper Judicial Administration', (1956)(42), ABA Journal 843, at 845, who refers to examples of how people react when they know they are on television. He also refers to Gould, *New York Times* (New York, 11 March 1956), S2, at X 11, col. 2 who states that even experienced performers can be affected, and that this "psychological and emotional burden must not be placed on a layman whose testimony may have a bearing on whether, in a murder trial, another human being is to live or die.' Referred to Ibid 569. Warren, CJ.

²⁶ Ibid 616. White, J. Minority opinion.

²⁷ J. Hirschhorn, 'Cameras in the Courtroom? No' (1980) 7: 3 Barrister 6. Ironically, primate research has also used eye tracking.

²⁸ *Chandler* (n 8) 560 – 589.

²⁹ Ibid 561, and at 560 – 589, (n.11) 576, referring to *In re Petition of Post-Week Stations, Florida, Inc* 370 So 2d, 764, 781 (1979), 578, 559 – 560 (n. 12), 560.

³⁰ *Hollingsworth v Perry* (n 5) 1, 4 and 9. The Supreme Court was asked to stay the television broadcast of a federal trial. The Californian District Court had issued an order permitting broadcasting live via streaming video to a number of federal courts. The defendants objected. They sought a stay, which was granted by the Supreme Court. The origin of the case is the same sex marriage law proposal Proposition 8 (or Prop 8) in California. Those supporting it submitted that they had been harassed as a result of their support, including death threats. They anticipated these threats continuing or increasing if the case was televised. The Californian courts had envisaged this

the ‘question without expressing any view on whether such trials should be broadcast. We instead determine that the broadcast in this case should be stayed because it appears the courts below did not follow the appropriate procedures.’³¹ ‘We do not address other aspects of that order, such as ... the broadcast of court proceedings on the Internet, as this may be premature.’³² The court also noted the restrictive position of the Judicial Conference towards cameras.³³ The Supreme Court also referred to witness issues.³⁴

The Supreme Court referred to effects issues again, which reiterates the research challenge. *Hollingsworth* refers to a lack of research and evidence:

Neither the applicants nor anyone else ‘has been able to present empirical data sufficient to establish that the mere presence of the broadcast media inherently has an adverse effect on [the judicial] process,’ *Chandler v. Florida* ... Cf. M. Cohn & D. Dow,³⁵ *Cameras in the Courtroom: Television and the Pursuit of Justice* 62–64 (1998) (canvassing studies, none of which found harm, and one of which found that witnesses ‘who faced an obvious camera, provided answers that were more correct, lengthier and more detailed’).³⁶

Cohen and Dow³⁷, who are relied upon in the opinion, only found four empirical social science studies. These are³⁸ Short (1981) [California]; Federal Judicial Centre (1994); Hoyt (1977); and

case as an experiment of television courtroom broadcasting in California’s federal courts. This necessitated changing a local law which banned such broadcasting. It is also interesting in that the transmission was to other courthouses – and apparently not a push television broadcast to a potentially wide public audience.

³¹ Ibid.

³² Ibid 7. Neither does this research, given the time and resources available, the wider issues of courtroom broadcasting and is rather limited to television courtroom broadcasting, in particular the research and effect issues.

³³ Ibid 11.

³⁴ Ibid 12 – 13; Ibid 591 (Harlan, J., concurring).

³⁵ Referring to M. Cohn and D. Dow, *Cameras in the Courtroom: Television and the Pursuit of Justice* (North Carolina 1998, and also New York 2002).

³⁶ *Hollingsworth* (dissent) (n 6) 6 – 7.

³⁷ Ibid, referring to *Cohn and Dow*, (n 35).

³⁸ Ibid 62 *et seq.* See (n 38) below for further details.

Borgida *et al* (1990). Therefore, the authors recently cited by the US Supreme Court only found four empirical studies between 1953 and 1998. This could hardly be definitive or acceptable as a sufficient body of research. However, the reference to social science research is an acceptance and endorsement that social science research is worthwhile and required.

The author's searches identify just over twenty methodical and empirical research studies of television courtroom broadcasting effects issues.³⁹ Of course welcome, this too is hardly a sufficient body of research to be determinative of effects issues which satisfy the US Supreme Court's challenge. The overall body of empirical research is too small. In addition, some of these studies are empirical only in part. Furthermore, these studies do not address all

³⁹ [1] J. Hoyt, 'Courtroom Coverage: The Effects of Being Televised' (1977) *Journal of Broadcasting* 487; [2] Ernest H Short and Associates, 'Evaluation of California's Experiment with Extended Media Coverage of Courts, submitted to Administrative Office for the Courts, the Chief Justice's Special Committee on the Courts and the Media, and the California Judicial Council' (1981); [3] D.L. Shores Jr., *The Effects of Courtroom Cameras on Verbal Behaviour: An Analysis of Simulated Trial Witness Testimony in Courtrooms Using Television Cameras*, (Ph.D, University of Florida 1981); [4] S.R. Pasternack, *The Effects of Perceived Community Pressure on Simulated Juror Guilt Attributions: A Study* (Ph.D, University of Tennessee, Knoxville 1982); [5] S.M. Kassir, 'TV Cameras, Public Self-Consciousness, and Mock Juror Performance', *Journal of Experimental Psychology* (1983/4) 336; [6] A.R. Paddon, *Television Coverage of Criminal Trials with Cameras and Microphones: A Laboratory Experiment of Audience Effects* (Ph.D dissertation, University of Tennessee, Knoxville 1985); [7] E. Borgida, K. Debono and L. Buckman, 'Cameras in the Courtroom: The Effects of Media Coverage on Witness Testimony and Juror Perceptions' (1990) 14 *Law and Human Behavior* 489; [8] A. Panches, *The Cognitive Effects of Camera Presence on the Recall of Testimony in a Simulated Courtroom Setting* (Ph.D Dissertation, Colorado State University, Fort Collins 1991); [9] Federal Judicial Centre, Pilot Program Involving Electronic Coverage in Six US District Courts and Two Appeal Courts [in part only]; [10] New York State Committee to Review Audio-Visual Coverage of Court Proceedings, *An Open Courtroom: Cameras in New York Courts* (New York, Fordham University Press 1997) [in part only]; [11] K.L. Netterburg, *Cameras in the Courtroom: Is a Picture Worth a Thousand Words?* (Ph.D Dissertation, University of Minnesota, 1980); [12] A. Bukoff, *The Effects of Video Camera Techniques on the Pre-Deliberation Judgements and Perceptions of Role-Playing Jurors* (PhD, Kent State University 1984); [13] S.L. Alexander, 'Mischievous Potentialities': *A Case Study of Courtroom Camera Guidelines, Eight Judicial Circuit, Florida* (Ph.D, University of Florida 1989); [14] S.A. Esposito, *OJ TV: A Narrative Analysis of Television's Pretrial Coverage of the OJ Simpson Case*, (Ph.D, Wayne State University 1996); [15] W. Petkanas, *Cameras on Trial: An Assessment of the Educational Affect of News Cameras in Trial Courts* (Ph.D, New York University 1990); [16] P.E. Thaler, *The Impact of the Television Camera on Courtroom Participants: A Case Study of the Joel Steinberg Murder Trial* (Ph.D, New York University 1990); [17] T.D. Keller, *Cameras in Courtrooms: An Analysis of Television Court Coverage in Virginia* (Ph.D, University of Tennessee 1992); [18] R. Enter, *The Image of the Judiciary: A Semiotic Analyse of Broadcast Trials to Ascertain its Definition of the Court System* (PhD, New York University 1993); [19] S. Kohm, *I'm Not a Judge But I Play One On TV: American Reality Based Courtroom Television* (PhD, Simon Fraser University 2004); [20] R.E. Reeves Stewart, *The Changing Relationship Between Camera and the Courts* (MA, Florida Atlantic University 1998); [21] J. Ossinger, *Electronic Access to Courtrooms: Television as an Educational Socializing Agent on the Judiciary* (MA, The University of Maine 2006). Only 1, 2, 3, 4, 5, 7, 8, 12, and 16 clearly relate to in-court effects issues.

issues of concern in relation to effects. Generally also, none of the studies seek to validate or replicate any of the previous studies. Even the empirical studies are generally stand alone and piecemeal.

C. *Hollingsworth*: evidence of harm/effects

Interestingly, the Supreme Court in *Hollingsworth* said that the applicants had established effects and harm, if broadcast was permitted.⁴⁰

Perhaps more noteworthy is the comment that “[w]hile applicants have demonstrated the threat of harm they face if the trial is broadcast, *respondents have not alleged any harm if the trial is not broadcast.*”⁴¹ (Emphasis added). This is an interesting development, as this may well be the first occasion that a court has referred to an onus being placed on those proposing camera access to identify, refer to and or research the harmful effects of not broadcasting.

The court added that ‘[t]he issue, moreover, must be resolved at this stage, for the injury likely cannot be undone once the broadcast takes place.’⁴² This is also interesting and may indicate a hardening of opinion with regard to television courtroom broadcasting. Indeed, generally, issue of remedy/correction is not extensively addressed in the television courtroom broadcasting literature.

III. US Supreme Court Challenge

It is actually surprising that the US Supreme Court has only dealt with television courtroom broadcasting in *Estes*⁴³ (1965), *Chandler*⁴⁴ (1981) and most recently *Hollingsworth*⁴⁵ (2010). However, these cases make it clear that the US Supreme Court is aware of the research problem and the substantial research gaps. The author suggests that by continuing to refer to the research problems, and the empirical research problems in particular, the US Supreme Court is issuing a research challenge. The court is saying that social science

⁴⁰ *Hollingsworth v Perry* (n 5) 13.

⁴¹ *Ibid.*

⁴² *Ibid.*

⁴³ *Estes* (n 6) 532.

⁴⁴ *Chandler* (n 8) 560.

⁴⁵ *Hollingsworth v Perry* (n 5).

and empirical research needs to be undertaken to address the research problems and gaps. The empirical research challenge issued by the US Supreme Court, and identified by the author, has not been properly taken up by social science researchers, the media or the courts themselves (which courts can themselves instigate or require research).

The author identifies eye tracking as a means of addressing some of the empirical research challenges. One of the initial stages in designing eye tracking experiments is formulating an effect hypothesis to research.⁴⁶ In formulating a hypothesis for television courtroom broadcasting eye tracking research, we can follow the concerns of the US Supreme Court, e.g. attention and distraction of courtroom actors. Another area, not explicit in the US Supreme Court decisions, is the actual camera location within the courtroom and how it affects or interfaces with attention, distraction, etc.

Ironically, some of the US Supreme Court's comments focused on how television technology may change in future. The minority opinion in *Estes* stated that '[w]e deal here with matters subject to continuous and unforeseeable change - the techniques of public communication ... the variables may be modified tomorrow by future technology.'⁴⁷ Yet, neither the Supreme Court nor commentators recognised that research and research tools may also change. Indeed, the research tools have improved vastly since 1953 (the first reported television courtroom broadcasting case⁴⁸). In the case of eye focus and eye tracking, the research and technology has advanced significantly.

Today's technology and *eye trackers* (see below) have advanced to the extent that we can begin to empirically address some of the specific research issues and challenges set by the US Supreme Court, particularly in court *attention* and *distraction* caused by the television cameras.

IV. Eye Tracking

A. The eye tracking solution

Television courtroom broadcasting research is undermined by being almost solely reliant on limited self reports and opinion reports of

⁴⁶ Overview, <<http://www.fixation2010.se/overview>> accessed 30 April 2010.

⁴⁷ *Estes* Stewart, J. Minority opinion (n 6) 603 – 604.

⁴⁸ See (n 20) above.

courtroom participants. This is very different from multiple methodology studies, in particular scientific empirical research. This is recognised by the US Supreme Court.

Eye tracking (the study of eye movement, direction and gaze) was not directly considered by the US Supreme Court. Neither is it considered in the general literature regarding television courtroom broadcasting. The author suggests, for the first time, that eye tracking technology can address some of the research challenges set by the US Supreme Court and certain commentators. Eye tracking technology provides recordable avenues for examining the actual in-court effects referred to by the US Supreme Court.

Television ... reaches into a variety of areas in which it may cause prejudice to an accused. Still one cannot put his finger on its specific mischief and prove with particularity wherein he was prejudiced.⁴⁹

Eye tracking now allows us to track and record such attention and distraction effects. (For the avoidance of doubt, the author is not suggesting eye tracking in a live trial case, but rather in mock court test scenarios and also in mock cases in actual courtrooms.)

B. Eye tracking research

The device used in an eye tracking study is known as an eye tracker.⁵⁰ The aim of eye tracking research is to study the eye position and eye

⁴⁹ *Estes* (n 6) 544.

⁵⁰ There are various eye tracker manufacturers, e.g. Tobii, EyeTracking Inc, SMI, Arrington Research, Asley and Polhemus, see <<http://www.tobii.com>> accessed 30 April 2010; <<http://www.eyetracking.com>> last accessed on 30 April, 2010; <<http://www.smivision.com/en/gaze-and-eye-tracking-systems/home.html>> accessed 5 June 2010; <<http://www.arringtonresearch.com/>> accessed 5 June 2010; <<http://www.asleyetracking.com/Site/>> accessed 5 June 2010; <<http://www.smi.com>> accessed 5 June 2010; <<http://www.polhemus.com>> accessed 5 June 2010. There are also increasing numbers of international conferences relating to eye tracking, e.g. Fixational Eye Movements and Visual Stabilisation conference, and also Eye Tracking Research and Applications (ETRA). See Fixation 2010, Stockholm, Sweden, 21 – 22 June, 2010; and <<http://etra.cs.uta.fi/>> accessed 12 June, 2010 respectively. See <<http://www.fixation2010.se/>> accessed 30 April 2010. Note also the Communication by Gaze Interaction (COGAIN) eye tracking project, which aims, *inter alia*, to advance technologies and attempt to reduce the substantial cost of eye trackers. See ‘An Affordable Future for Eye Tracking in Sight’ (Physorg, 3 April 2006) <<http://www.physorg.com/news63294534.html>> accessed 30 April 2010. Lund University Humanities Lab offer courses in eye tracking technology. See ‘Lund Eye Tracking Academy (LETA)’ <<http://www.humlab.lu.se/en/edciation/leta>> accessed 5 June 2010. Various other universities and university departments use eye tracking as a valuable research tool e.g. the Image Synthesis Group, Computer Science Department, Trinity College, Dublin, and the Department of Psychology, University College Dublin.. The ISG was also involved in organising workshops in relation to eye tracking, see Carol O’Sullivan, Marc Janott, Mark Watson, John Dingliana, ‘Abstract: Level of

movements of the subject. The main eye tracking measures and metrics include fixation; fixation (gaze) duration; fixation rate; number of fixations; area of interest (AOI); gaze percentage; counting of visits and re-visits; and task completion duration.⁵¹

Eye tracking research and techniques⁵² have already been used successfully in advertising, marketing, psychology, eyewitness accuracy studies, internet usage research, health, etc.⁵³

C. Examples of eye tracking

Diagnostic eye tracking is used in psychology, marketing, advertising and ergonomics.⁵⁴ It is also used in law enforcement and policing (security).⁵⁵ Interactive applications include using eye tracking to

Detail Control for Real-time Computer Graphics and Virtual Reality: Applications of Eye-Tracking' <<http://isg.cs.tcd.ie/iwet/Abstract14.htm>> accessed 25 May 2010. Various UK universities also use eye trackers or have eye tracking courses, such a Dundee University. As an example of different UK universities collaborating on eye tracking research see, for example, W. Steptoe *et al*, 'Eye Tracking for Avatar Eye-Gaze and Intentional Analysis in Immersive Collaborative Virtual Environments' (CSCW, 8 November 2008) <<http://www.cs.ud.ac.uk/staff/w.steptoe/files/steptoeCSCWo8.pdf>> accessed 2 August 2010.

- ⁵¹ R.J.K.. Jacob and K.S. Karn "Eye Tracking in Human-Computer Interaction and Usability Research: Ready to Deliver the Promises" in J. Hyona, R. Radach and H. Deubel, Eds, *The Mind's Eye: Cognitive and Applied Aspects of Eye Movement Research* (Amsterdam 2003) p.p 573 – 605. Such research relies on sophisticated software (*Ibid* 88 – 91). Detailed experience and expertise with software, computers, computer science and statistics can also be a prerequisite to undertaking such studies. Note also, *Ibid* 171 and hardware tools, as well as calibration of those tools (see comments in relation to calibration issues, *Ibid* 87 – 99 and 301. Also V Sundstedt, 'Eye Tracking in User Studies' (SIGGRAPH, 2009) <<http://www.siggraph.org/s2009/>> accessed 12 June 2010 and also <<http://www.scss.tcd.ie/Veronica.Sundstedt/>> accessed 12 June 2010.
- ⁵² See A. Duchowski, *Eye Tracking Methodology, Theory and Practice* (2nd ed., London Springer 2007), regarding eye tracking techniques generally, at 52 – 86.
- ⁵³ See also J. Nielsen and K. Pernice, *Eyetracking Web Usability* (Berkeley 2009); M. Wedel and R. Pieters, *Eye Tracking for Visual Marketing* (MA 2008, Hanover); J.M. Spector, *Handbook of Research on Educational Communications and Technology* (New York 2008). See also J.M. Henderson, ed., *Real-world Scene Perception* (New York 2005); G. Hatfield, *Perception and Cognition: Essays in the Philosophy of Psychology* (Oxford 2009); C. Bundesen and T. Habekost, *Principles of Visual Attention: Linking Mind and Brain* (Oxford 2008); P. Shah and A. Miyake, *The Cambridge Handbook of Visuospatial Thinking* (Cambridge 2005).
- ⁵⁴ A. Duchowski (n 52) 205. Also M Bingemann 'Eye-tracking Device Watches You Watching Ads' (*PC World Business*, 10 May 2007) <<http://www.pcwprld.idg.com.au/article/182716/eye-tracking-device-watches-watching-a>> accessed 30 April 2010.
- ⁵⁵ See, for example, <<http://www.setcan.com/eyelock.html>>, accessed 12 June 2010, referring to the EyeLock training system which comprises a forward focus camera and two eye trackers, all of which are encompassed in a pair of glasses that a combat or police trainee wears.

input instructions to or interact with technology devices.⁵⁶ Such applications include the fields of human computer interaction, visual displays and computer graphics.⁵⁷ A person's gaze can be used to give instructions or point to instructions. Quadriplegics, for example, can use their eyes to move a computer pointer or cursor.⁵⁸

Companies and researchers use eye tracking research to test the location of an advert on internet pages, etc. Do viewers look at the advert, for how long, or do they miss the advert entirely because of its location? Where is the best location for the advert? Eye tracking addresses these important commercial issues.

Duchowski refers to various eye tracking examples in neuroscience and psychology⁵⁹, industrial engineering, aviation, driving, visual inspection⁶⁰, marketing and advertising (e.g. advert design and placement, label and product design and placement, television, internet)⁶¹, and computer science.⁶² SMI refer to eye tracking applications in medical research, diagnostics, surgery, psychology, sports and performance, human machine interactions, market research, neuroscience research, psycholinguistics, ophthalmology, ergonomics, etc.⁶³ Further eye tracking applications exist in visual systems and linguistics. Other eye tracking applications include uses in relation to gaming machines, medical instruments, vehicles, vehicle safety, computer interaction, medical diagnostics, security, law enforcement, video conferencing, information kiosks, interactive advertising, etc.⁶⁴ 'Eye movements are the only means of communication for some severely disabled people.'⁶⁵ Mercedes use

⁵⁶ A. Duchowski (n 52) 205.

⁵⁷ Ibid.

⁵⁸ Ibid 206.

⁵⁹ Ibid 207 *et seq.*

⁶⁰ Ibid 241 *et seq.*

⁶¹ Ibid 261 *et seq.*

⁶² Ibid 275.

⁶³ See Structured Market Inc. <<http://www.smi.com>>, accessed 5 June 2010.

⁶⁴ Referred to by Tobii, at Tobii Technology, <<http://www.tobii.com>> accessed 30 April 2010.

⁶⁵ J.S. Agustin, as referred to in the eye tracking blog of Martin Tall, 'Martin Tall on Gaze Interaction, A Blog on Research and Developments in Eye Tracking and Gaze Interaction' <<http://gazeinteraction.blogspot.com/2009/04/research-paper-on-itu-gaze-tracker-that.html>> accessed 30 April 2010.

eye tracking technology for driver fatigue alert systems.⁶⁶ There are also potential applications in security and computer security.⁶⁷ There are also many market research applications.⁶⁸ Computer games development is another area where eye tracking is utilised.⁶⁹ Eye tracking can also be used to develop more general mass market applications, such as gaze controls for heating, lighting⁷⁰ or perhaps television. Overall, there are many current applications.⁷¹

Eye trackers are increasingly used in psychology and eyewitness identification research. Sheree and Holmes used eye trackers recently to examine whether eyewitness use scanpaths to recognise suspects in suspect photograph lineups.⁷² Loftus *et al*, in researching the weapons focus effect,⁷³ used a corneal reflection eye tracking device⁷⁴ to discover where and for how long individuals would focus their attention. However, while there has been psychology and eye focus research on particular legal issues, primarily eyewitness identification issues, the issue of television courtroom broadcasting effects is so far ignored.

D. Eye tracking: in-court effects

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- ⁶⁶ See Jeff Nolan, 'Eye Tracking' (*Venture Chronicles*, 25 March 2010) <<http://jeffnolan.com/wp/2010/03/25/eye-tracking/>> last accessed 30 April 2010. Note also Q. Ji and X. Yang, 'Real-Time Eye, Gaze, and Face Pose Tracking for Monitoring Driver Vigilance' (2002) 8: 5 *Real-Time Imaging* 357 – 377.
- ⁶⁷ D Silver and A Biggs, 'Abstract: Keystroke and Eye-Tracking Biometrics for User Identification' <<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.88.4306>> accessed 5 June 2010.
- ⁶⁸ See <<http://www.eyetracking.com>> accessed 30 April 2010.
- ⁶⁹ For example, see *Sundstedt* (n 51).
- ⁷⁰ See 'An Affordable Future for Eye Tracking in Sight' <<http://www.physorg.com/news63294534.html>> accessed 30 April 2010.
- ⁷¹ See also D Richardson and M Spivey, 'Eye Tracking: Research Areas and Applications' in G. Bowlin and G. Wnek (eds.), *Encyclopedia of Biomaterials and Biomedical Engineering* (Taylor & Francis 2005).
- ⁷² An example is S. Josephson and M. Holmes, 'Have You Seen Any of These Men? Looking at Whether Eyewitnesses Use Scanpaths to Recognize Suspects in Photo Lineups', *ETRA, Proceedings of the 2010 Symposium on Eye-Tracking Research & Applications*, Austin, Texas, March 22 – 24, 2010.
- ⁷³ E. Loftus, G. Loftus and J. Messo, 'Some Facts About "Weapon Focus"' (1987) 11:1 *Law and Human Behaviour*, 55, footnote 43.
- ⁷⁴ As originally used by G.R. Loftus and N.H. Mackworth, 'Cognitive Determinants of Fixation Location During Picture Viewing' (1978) 4:4 *Journal of Experimental Psychology*, 565-572.

Eye tracking and psychology research can begin to address the empirical research gaps in television courtroom broadcasting effects research. The US Supreme Court has been calling for empirical research and has set a challenge in the three US Supreme Court cases highlighted above.

The US Supreme Court referred to various potential effects. Two of these are attraction (participants having to deal with courtroom broadcasting issues) and distraction (being distracted by the cameras and or the camera operators). Another issue is the location of the camera. Some of these in-court research gaps where eye tracking may be applied are referred to below.

E. Attraction

One of the frequent arguments is that some or all courtroom actors will be attracted to looking at or having to deal with the television camera in the courtroom. Even if some are less amenable to being so attracted, e.g. possibly because of professional training, this does not mean that all courtroom actors are not so attracted. If some or all courtroom actors are attracted by the television camera, does this mean they missed something important or that they are underperforming in their particular task? Up to now we have only been able to look to a limited number of self reports, opinion reports and questionnaires. Eye tracking changes this fundamentally, as we can actually monitor what simulated courtroom actors are actually doing and watching.

In addition, how much supervisory attention must a judge or court personnel give to the television cameras and television issues in the courtroom? The amount of attention can be measured by eye trackers in properly designed research tests.

The literature to date does not incorporate an analysis of the different tasks of the different courtroom actors when discussing or researching effects. How do in-court television cameras affect the different courtroom actors while they are undertaking tasks? Eye tracking, and other research, can assist in researching these issues.

We should employ eye tracking to examine attention of courtroom actors in the context of task analysis.⁷⁵ A 'critical variable ... is the task that the user is expected to carry out.'⁷⁶

⁷⁵ Wickens *et al* refer to task analysis issues and research, see C.D. Wickens, M. Vincow and M. Yeh, 'Design Applications of Visual Spatial Thinking: The Importance of Frame of Reference' in P. Shah and A. Miyake, *The Cambridge Handbook of Visuospatial Thinking* (Cambridge 2005) 385 *et seq.* See also P. Shah, E. Freedman and I. Vekiri, 'The Comprehension of Quantitative Information in

Dual tasking and multi-tasking in the courtroom have not been researched or addressed yet. What are the effects on a courtroom actor of doing various tasks at once? These complex issues have yet to be considered in the courtroom broadcasting context. While there is some eye tracking research⁷⁷ referring to this issue in other fields, this is a complex issue which needs detailed consideration in the courtroom broadcasting context.

F. Distraction

One of the concerns with television courtroom broadcasting is that the cameras in court ‘might be so completely and thoroughly disruptive and distracting as to make a fair trial impossible.’⁷⁸ Mr Justice White states that:

the currently available [research] materials assessing the effect of cameras in the courtroom are too sparse and fragmentary ... ‘we know too little of the actual impact ... to reach a conclusion ... evidence before us. It may well be, however, that as further experience and informed judgment do become available, the use of cameras in the courtroom, as in this trial, will prove to pose such a serious hazard to a defendant's rights that a violation of the Fourteenth Amendment will be found without a showing on the record of specific demonstrable prejudice to the defendant.’⁷⁹

Again, one of the concerns with television courtroom broadcasting has been the distracting effect on the courtroom actors. Up until now, however, the Supreme Court has not realised that research tools actually exist to examine these issues. Eye tracking provides tangible methods for examining actual distraction of courtroom actors caused by television cameras in court.

We should apply eye tracking to the various courtroom actors who are involved in televised cases. Do they look at the television

Graphical Displays’ in P. Shah and A. Miyake, *The Cambridge Handbook of Visuospatial Thinking* (Cambridge 2005) 450 *et seq.* regarding task demands.

⁷⁶ C.D. Wickens, M. Vincow and M. Yeh (n 75) 415.

⁷⁷ A. Duchowski (n 52) 239.

⁷⁸ *Estes* (n 6) p. 544.

⁷⁹ *Ibid* 616. White, J. Minority opinion.

camera? If so, for how long? What is the effect? Eye trackers allow us to begin this research.

Are there different effects for 'camera only' versus 'camera plus cameraman'? Are there different effects for different types of camera? Again, eye trackers allow us to begin the research.

Many issues of confidence and ratings come up in relation to television courtroom broadcasting research. Many opportunities arise in terms of examining these issues with eye tracking technology. For example, an eye tracker and an observer could both look at a particular courtroom actor and examine how many times they focus their attention or look at the television camera in the courtroom. The observer could press a button to record each time they perceive the courtroom actor to look at the camera. The observer in court can be tested against what is recorded by the eye tracker. Thus far the use of observers in court to record the effects of television courtroom broadcasting has not been independently assessed.

The various results would then be compared. The observers would also be tested for their confidence ratings.⁸⁰ This would assist in dealing with the problem of most television courtroom broadcasting research, namely, that of relying solely upon self report, opinion reports and questionnaires.

There are various types of eye trackers. One avenue for in-court research is to use eye trackers which are incorporated into lightweight glasses.⁸¹ With eye tracking glasses⁸² it is possible for one or all courtroom actors in a research experiment to be tested for distraction. This type of research allows itself to be adopted to different courtroom actors and also in realistic settings and in real (non-live) court settings. There are also various types of head

⁸⁰ Note that the Short Report in California did attempt to have observers in court to ascertain if the courtroom actors were affected by the cameras. However, they did not have the benefit of eye trackers, nor do they appear to have been tested for confidence. Indeed the test recording sheet does not appear to rate whether or how many times a particular courtroom actor is (a) distracted by and (b) focuses at the television camera. Schmidt used a press button system once the subject perceived a target effect. See H.C. Schmidt, 'Effects of Interrogator Tactics and Camera Perspective Bias on Evaluations of Confession Evidence', (MSc 2006, Ohio University) 18, 30. Also note 39 above.

⁸¹ See example reference to same at <<http://www.eyetracker.co.uk/>> accessed 12 June 2010.

⁸² One example of glasses with eye trackers is the EyeLock training system. See <<http://www.setcan.com/eyelock.html>> accessed 12 June 2010.

mounted eye tracking tools.⁸³ These can also be used for television courtroom broadcasting effects studies.

Other studies can use a variety of eye trackers where subjects can view pictures or videos of court scenes on a PC, laptop or projection screen. This particular method may allow for examination of greater numbers of test subjects.

In terms of television courtroom broadcasting numerous research possibilities arise. Various types of research experiments can be conducted of eye tracking monitoring of different camera and courtroom ‘photographic stimuli.’⁸⁴

One could have separate subject groups who also have to perform tasks and tap a spacebar. Reaction times and eye movement can be tracked and coded. The groups might, in one scene, have to tap the space bar as soon as the judge arrives into the courtroom. In one group, the scene may have a camera and cameraman moving; in another, a camera and cameraman with no movement; another with camera only; and a final control group with no camera at all. In each, the judge arrives in (after introducing the camera focus element). The research can then be compared.

G. False confessions

False confession research is also relevant to eye tracking effects research. There is increasing psychology eye tracking research into the effects of cameras and camera perspective in recorded police interviews and confessions.⁸⁵ This is partly driven by the knowledge that there can be false convictions and confessions – some captured on video recording. The research has found that different camera angles and focus orientations of the interview camera can significantly alter how viewers of such film footage rate the genuineness and voluntariness of the recorded ‘confessions.’ The manner in which the evidence is filmed, i.e. the confession footage, can influence judgments of guilt.⁸⁶ Mock jurors have been found to

⁸³ In terms of head mounted display applications see discussion in C.D. Wickens, M. Vincow and M. Yeh ‘Design Applications of Visual Spatial Thinking: The Importance of Frame of Reference’ in P Shah and A Miyake, *The Cambridge Handbook of Visuospatial Thinking* (Cambridge 2005) 406 *et seq.*

⁸⁴ To use the words of W. Sato and S. Yoshikawa in ‘Detection of Emotional Facial Expressions and Anti-Expressions’ (2010) *Visual Cognition* 18: 3 369 – 388.

⁸⁵ This is also noted by L.J. Ware, *Monitoring Visual Attention in Videotaped Interrogations: An Investigation of the Camera Perspective Bias*, MSc thesis, Ohio University (2006), 35.

⁸⁶ *Schmidt* (n 80).

be influenced by the camera angle from which the interrogation is filmed.⁸⁷ This is now known as *camera perspective bias*. This is additionally significant since the Innocence Project, which applies DNA technology and techniques to past cases. It found that a quarter of the DNA exoneration cases originally relied strongly on false confessions.⁸⁸

Many criminal investigation interviews that are recorded adopt a suspect-focused angle only. This is as opposed to focusing on the police officer or focusing on both of them at the same time. This also enhances the salience of the suspect and also the perceived voluntariness of any confession.⁸⁹ Lassiter and Irvine⁹⁰ showed the same interview recorded on different cameras to show: suspect only, police officer only, and both equally focused. The research study subjects then viewed one of the videos, depending on which group they were in. The ones who saw the 'suspect only video' perceived less coercion.⁹¹ Other research also confirmed that 'suspect focus only' videos, yielded significantly higher ratings for perceived guilt and voluntariness.⁹² Ware⁹³ also examined camera perspective bias and used eye trackers to monitor visual attention. She also refers to studies and the literature which shows that 'suspect focus only' camera perspective creates a bias for judgments of voluntariness and guilt.⁹⁴

⁸⁷ G.D. Lassiter and A.A. Irvine, 'Videotaped Confessions: The Impact of Camera Point of View on Judgements of Coercion' (1986) 16 *Journal of Applied Social Psychology* 286 – 276. Referred to in *Schmidt* (n 80) 9 – 10.

⁸⁸ See <<http://www.innocenceproject.org>>, and as referred to in *Schmidt*, (n 80) 11.

⁸⁹ *Schmidt* (n 80) 25 - 26.

⁹⁰ *Lassiter and Irvine* (n 87) 286 – 276. Referred to in *Schmidt* (n 80) 26.

⁹¹ *Ibid.*

⁹² See, for example, G.D. Lassiter, P.J. Munhall, R.J. Ploutz-Snyder and D.L. Breitbecher, 'Illusory Causation: Why It Occurs' (2002) 13 *Psychological Science* 299 – 305, as referred to in *Schmidt* (n 80) 28.

⁹³ *Ware* (n 85).

⁹⁴ W.A. Geller, *Police Videotaping of Suspect Interrogations and Confessions: A Preliminary Examination of Issues and Practices* (A Report to the National Institute of Justice, Washington, DC: US Department of Justice, (1992); S.M. Kassin, 'The Psychology of Confession Evidence' (1997) 52 *American Psychologist* 221 – 233; and G.D. Lassiter 'Illusory Causation in the Courtroom' (2002) 11 *Current Directions in Psychological Science* 204 – 208; each as referred to in *Ware* (n 85) 10.

As a result of the Lassiter and Irvine⁹⁵ study, police practice in New Zealand changed to ensure that there were no ‘suspect only’ video recordings, and that suspect and questioner were always in frame.⁹⁶ Pressure is increasing to change policies elsewhere also.

The research into false confessions and camera perspective bias shows that more sophisticated research can be applied to legal issues and problems. Another example occurred recently when research was published in the Harvard Law Review questioning empirically the comments of the US Supreme Court in a particular case.⁹⁷ Not only should eye tracking be applied to television courtroom broadcasting effects research, but the US Supreme Court has called for empirical research.

H. Frames

In terms of designing television courtroom broadcasting, and forms of such broadcasting, we should consider how to get the best broadcast footage for education purposes and the optimum scenario for filming without adverse effects upon courtroom actors. Issues which have not been considered before are how best to tailor initial design features⁹⁸ to try and accomplish these aims. Additional design features, both in terms of in-court and out-of-court effects, are camera type, height and location. These design features have not been addressed in the general television courtroom broadcasting literature nor in the limited effects literature. Wickens *et al*, for example, refer to and examine issues involved with framing issues with design applications and visual spacing⁹⁹ and refer to different effects.¹⁰⁰

Adapting, in even a very general manner, the frames referred to by Wickens *et al*,¹⁰¹ to television courtroom broadcasting, we might

⁹⁵ *Lassiter and Irvine* (n 92) 286 – 276. Referred to in *Schmidt* (n 80) 26.

⁹⁶ See *Schmidt* (n 80) 31.

⁹⁷ D.M. Kahan, D.A. Hoffman, and D. Braman, ‘Whose Eyes Are You Going to Believe? Scott V. Harris and the Perils of Cognitive Illiberalism’, *Harvard Law Review*, 122, January 2009, 3, 837 – 906, referring to the case of *Scott v Harris* 127 S Ct 1769 (2007).

⁹⁸ Consider generally C.D. Wickens, M. Vincow and M. Yeh (n 75) 383 – 425.

⁹⁹ *Ibid* 384.

¹⁰⁰ *Ibid* 418 – 419.

¹⁰¹ *Ibid* 383 – 425 and 384.

consider the following frames in television courtroom broadcasting research (including eye tracking):

- Courtroom frame, details of the parameters of the instant courtroom setting and environment;
- Actor head frame, defined in terms of their orientation of head;
- Trunk frame, if different from head (e.g. a juror may have to look left or right to see the witness stand, camera, etc.);
- Camera location frame;
- Camera focus frame, orientation and direction of camera focus;
- Camera control frame, e.g. details of the camera operator.

Wickens *et al*¹⁰² suggest that the interaction of the different frames and the effort necessary to deal with same will vary in cognitive demand, time, workload, etc. between frames. They also note that in particular high risk systems (the examples they give are vehicle control and medical operations) the premium is put on reducing errors.¹⁰³ Schmidt also refers to the high stakes of criminal cases and investigations.¹⁰⁴ Many would agree that court cases, and especially certain types of court cases, are equally important and high risk systems. This emphasised the need for empirical research.

I. Camera Location

What difference does the location of the camera have on the different courtroom actors? Potentially different effects can be caused by the type of camera, the location of the camera, the height of the camera, the extent to which the camera moves, tilts and pans, and whether there is or is not a camera operator beside the camera. Almost invariably the literature and limited research to date ignores reference to and consideration of camera location and frame issues.¹⁰⁵

Distraction and distraction research needs to incorporate reference to the various camera location issues. While eye tracking can assist the research effort, we also need to start recording where the camera is located in the courtroom, so that different research studies can be compared for camera effects.

¹⁰² Ibid pp. 384 - 385.

¹⁰³ Ibid p. 385.

¹⁰⁴ *Schmidt* (n 80).

¹⁰⁵ See generally discussion of frame representation issues in C.D. Wickens, M. Vincow and M. Yeh (n 76) at 387 *et seq.*

It is equally important in studies, to know where the different courtroom actors are located and which direction they are facing, and how this compares with the camera location. For example, are the courtroom actors facing straight on, left or right when they look at the camera? We need to be able to compare this across research findings.

In most research, the location and height of the camera is not considered or even documented. So we cannot look back to assess and compare different research studies on these points.

J. Advantages of eye tracking for television courtroom broadcasting research

Eye tracking ‘provides a more direct and continuous measure of attention’ than manual measurements.¹⁰⁶ It also overcomes the limitations of opinion reports and self reports. Furthermore, it can be used to test and validate opinion reports and self reports. ‘[E]ye movements are a direct indicator of overt attention’ and provide ‘a highly direct measure of visual attention, eye systems also allow continuous measurement of eye movements.’¹⁰⁷ We should be researching this in the context of television courtroom broadcasting. Eye tracking permits testing and direct observation of fixation, focus and attention of television cameras.¹⁰⁸ Eye tracking research also has the advantage that it tracks and documents exactly what people see.¹⁰⁹

V. CONCLUSION

We should not automatically accept common sense views in the television courtroom broadcasting debate just because they appear to be logical or common sense. We should seek to analyse and research the issues. The US Supreme Court challenge remains. We have significant advanced research tools available with eye trackers. These were never envisaged by the US Supreme Court.

¹⁰⁶ T. Armstrong and B.O. Olatunji, ‘What They See Is What You Get: Eye Tracking of Attention in the Anxiety Disorders’ (*American Psychological Society*, March 2009) <<http://www.apa.org/science/about/psa/2009/03/science-briefs.aspx>> accessed 30 April 2010.

¹⁰⁷ Ibid.

¹⁰⁸ See *Ware* (n 85) 11.

¹⁰⁹ See Perception Research Services International, ‘PRS Tools’ <<http://www.prsresearch.com/prs-tools/>>, accessed 25 May 2010, accessed 12 June 2010.

Schmidt states that the current research in psychology on videotaped confessions is motivated by the US Supreme Courts treatment of confession evidence cases.¹¹⁰ It is surprising that more research has not been undertaken into the effects of television courtroom broadcasting, given that the Supreme Court first called for empirical research studies as far back as the *Estes*¹¹¹ case in 1965.

The time has come to address the research challenge set by the US Supreme Court and also to ensure that the research effort into the effects of television courtroom broadcasting advances beyond the criticism that '[s]ocial scientists measure the intelligence of monkeys more effectively than courts have attempted to ascertain the effects of television in the courtroom.'¹¹² It is time to move beyond limited self reports and opinion reports and embrace eye tracking research. The Supreme Court challenge needs to be addressed.

¹¹⁰ Schmidt (n 80) 74.

¹¹¹ *Estes* (n 6) 532 – 616.

¹¹² J. Hirschhorn, 'Cameras in the Courtroom? No' (1980) 7: 3 *Barrister* 7 and 9.