



The Jury from SEPTEMBER/OCTOBER 2012
Volume 24, Issue 5

EXPERT

The Art and Science of Litigation Advocacy

A publication of the American Society of Trial Consultants Foundation



Neurolaw: Trial Tips for Today and Game Changing Questions for the Future

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THE FUTURE OF LAW is standing on the courthouse steps. Neurolaw – the combination of neuroscience research and the law – is worthy of attention for a number of reasons. Neuroscientists are conducting ground-breaking research with a machine called a functional MRI, or fMRI, which is similar to traditional MRI technology but focuses on brain activity, not just structure. Some would argue the use of neuroscientific evidence based on fMRI research is a premature adoption of a novel technology, but neurolaw evidence is already influencing jury trials in the United States and abroad. Billions of dollars are being poured into interdisciplinary neuroscience research each year in the United States and abroad. While we

cannot predict the point in time at which the intersection of technology and law will merge to create credible courtroom evidence, we can look to neurolaw research today for research findings that confirm current trial practice techniques and offer new insights into jury decision making and the art of persuasion.

Current Criminal Trial Applications

In the United States, neuroscientific evidence has been admitted in over one hundred criminal trials now, has been cited in at least one U. S. Supreme Court case, and is being admitted as evidence in other countries as well. In many cases,

neuroscientific evidence was offered to mitigate sentencing by presenting neuroimaging highlighting brain damage that could have diminished the perpetrator's capacity and ability to make rational decisions. In one recent trial in Montgomery County, Maryland, Circuit Court Judge Eric M. Johnson allowed pretrial testimony about issues from the minutiae of brain analysis to the nature of truth and lies. After testimony by renowned experts in the field, Judge Johnson decided to keep the evidence out of trial, concluding the current lack of consensus among neuroscientists casts too much doubt on the results to present them as evidence to jurors. However, brain scan evidence was used in 2008, in Mumbai, India, to convict a woman of murder, along with circumstantial evidence. This conviction prompted strong criticism from bioethicists, who posit neurolaw research is still in its infancy, suggesting brain scan findings are not reliable at this point in time.

Implications for Civil Trials: Reading Minds

Neuroscientists, using fMRI technology, are essentially exploring ways to read a person's mind. Civil trial applications are still in the experimental stage, but it is tantalizing to think about the prospect of being able to identify what a person is thinking or has thought in the past, to be able to quantify intangible claims such as pain and suffering, or to identify if a person is lying. Still, there are already companies, such as [No Lie MRI, Inc.](#), which are banking on commercial applications. No Lie MRI is currently testing brain scan technology, boasting it "will enable objective, scientific evidence regarding truth verification or lie detection to be submitted in a similar manner to which DNA evidence is used." It is unclear if any hard data exists to substantiate these claims, but neuroscientists Francis Shen and Owen Jones posed a number of questions that should be considered before adopting fMRI evidence in the courtroom as fact, in a Mercer Law Review article entitled, "[Brain Scans as Evidence: Truths, Proofs, Lies, and Lessons.](#)" Shen and Owen raised the following questions:

1. Can one be reasonably sure the brain activation pattern being reported is being caused by "lying," or the absence of lying, as opposed to some other mental process? Along the same lines, do neuroscientists have enough data to determine if the measured responses of fMRIs vary from person to person?;
2. Does a lie told without consequence in the real world activate the same region of the brain as one told in the real world with a greater consequence?; and
3. Are there countermeasures a subject could use to manipulate an fMRI result, such as the way some people can control their physiological responses enough to manipulate a polygraph? In other words, can someone create a false positive or negative by employing his or her imagination? Researchers have discovered that words describing an experience and experiencing it in real life activate the same regions of the brain. In a [study](#) by cognitive scientist Véronique Boulenger, of the Laboratory of Language Dynamics in France, the brains of participants were scanned as they read sentences like

"John grasped the object" and "Pablo kicked the ball." The scans revealed activity in the motor cortex, which coordinates the body's movements, indicating imagining an action can look similar on an fMRI scan to the action itself. With this in mind, it may be too early to tell if someone can outsmart the fMRI with imagination, or by contrast, could be detrimentally judged by false findings created by an overactive imagination.

With these questions and others in mind, most neuroscientists today are eager to research the possible impact technology could have on the law, but only a few are ready to start experimenting with findings in the courtroom.

Trial Practice Tips Based On Neurolaw Research

While neuroscientists debate whether or not neurolaw research has reached the point of contributing valid, reliable evidence, most would agree research on jury decision making processes, using fMRI technology, has confirmed the validity of current wisdom for some trial techniques and has offered insights into new methods of persuasion.

Trustworthiness

When jurors look at players in the courtroom, they rapidly make subjective judgments of trustworthiness, experienced as intuition. At this time, neuroscientists are just beginning to understand why different people may judge similar stimuli differently when forming an opinion, but current research findings are leading them to focus on how the amygdala processes emotional information. Ralph Adolphs examined this issue in a Nature Neuroscience journal article entitled, "[What Makes Someone Look Trustworthy, Trust in the Brain.](#)" Adolphs reported expressions of happiness were positively correlated with trust, lending credibility to previous research findings on the positive benefits of building rapport with jurors. Accordingly, trial attorneys and witnesses wishing to engender trust should project happiness where appropriate. Happiness is an emotion that may seem counter-intuitive in the solemn atmosphere of most courtrooms, and indeed could appear disingenuous if employed at the wrong time, but smiling during voir dire and at jurors as they enter the room is almost always appropriate. In the courtroom, the significance of a smile cannot be overstated.

Third Party Punishment Research: What Drives Jury Decision Making

According to a [decision-making model](#) proposed by neuroscientists Joshua Buckholtz and Rene Marois, jurors make punishment decisions based on their evaluation of the actions and intentions of the parties involved, driven by a negative emotional response to the possible harm. This finding may not be particularly insightful, but Buckholtz and Marois have been able to identify five distinct areas of the brain associated with the decision-making process: two in the frontal cortex, which is involved in executive decision-making, the amygdala, which is involved with emotional responses, and two other areas of the brain involved in social evaluation and response selection.

This is significant, as breaking down the complex cognitive processes involved in jury decision-making can aid us in better understanding what drives the process as a whole, offering rich insight into the art of persuasion. Today we know emotional responses in the amygdala appear to play a primary role in the decision-making process, making emotional judgments of the attorneys and parties in a lawsuit key to the decision-making process. This finding further reinforces the need to develop positive rapport with jurors, but it also confirms what trial attorneys have known for years, that emotion guides the decision-making process over logic. Knowing this should influence the way trial attorneys prepare their cases. For example, an Opening Statement written to touch a juror's emotions begins with a story narrative focusing on the big picture, guiding the juror through the most important facts using sensory-inspired language and rhetorical questions designed to encourage empathy. By contrast, an Opening Statement focused on logic drowns jurors with details, leaving them to construct their own story of the events. Persuasion in the courtroom begins with emotion wrapped around the facts, not the other way around.

Memory

Scientists used to think about memory in terms of the processes of encoding, storage and retrieval, but today more attention is being paid to the concept of long term memory consolidation. Memory consolidation is the processing of memory over a period of time. Research indicates people need time – and sleep - to process a sequence of actions before they commit them to long term memories. In simple terms, memory consolidation fixes memories in the brain so they can be retrieved later. This process was originally thought to occur during the time information was being encoded, but neuroscientists are discovering that long term memory takes a longer period of time to form. In the courtroom, the trial team that encourages the best memory of the facts important to their case has a distinct advantage in the deliberation room. To this end, recent research indicates the following three practices can aid in the creation of positively persuasive memories for a juror during a trial:

1. Answer the juror's questions. Encourage jurors to pay attention and engage in an internal dialogue during the trial by raising rhetorical questions during Opening Statement and proactively addressing questions jurors

are already asking themselves throughout the trial. Since most people learn by discussing information, including asking questions, a trial attorney desiring to be persuasive will focus on answering questions the jurors are asking themselves, instead of trying to persuade jurors with information she wants them to know. If you are meeting their need for knowledge, they are more likely to pay attention to you;

2. End a line of questioning on a surprise. Recent research on memory consolidation indicates people are more likely to remember something if they are surprised by it. Thus, while the presentation of courtroom testimony and evidence should answer the questions jurors are asking themselves, surprising them with a new insight or unexpected facts at the end of a line of questioning, or at the end of Opening Statement or Closing Arguments, can be equally important in gaining their attention and helping them remember important facts. Attorneys could conceivably "train" jurors to pay attention by ending each line of questions with a surprising question or surprising insight; and
3. Encourage jurors to get a good night's sleep. Simply put, it is becoming apparent that sleep plays a key role in memory consolidation. Knowing this, attorneys should be reluctant to seat a juror who has a night job, as a sleep-deprived juror will be more difficult to persuade. Along the same lines, a prudent attorney will be respectful of a juror's time and encourage the early release of jurors when possible.

Conclusion

Neurolaw research has already generated rich insights into jury decision-making and is being introduced in courtrooms in the United States and around the world. If neuroscience research is one day able to link brain scan findings with behavior, or the presence or absence of certain thoughts, it will change litigation at a fundamental level. As the law changes with technology, it will be imperative for legal professionals to educate themselves and be prepared. To this end, it would be advisable to attend a Continuing Legal Education course on neurolaw, or attend a symposium such as Penn State's annual [Neuroscience Boot Camp](#), which offers a basic foundation in cognitive and affective neuroscience to equip legal professionals to be informed consumers of neuroscience research. With neurolaw, the future is now.

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