The Jury EXPERT
The Art and Science of Litigation Advocacy
from May 2015
Volume 27, Issue 2
A publication of the American Society of Trial Consultants

"Soft" vs. "Hard" Psychological Science in the Courtroom

by Geoffrey D. Munro, Ph.D. and Cynthia A. Munro, Ph.D.

Don't miss the responses from trial consultants Kacy Miller and Robert M. Galatzer-Levy below.

Background

The terms "soft science" and "hard science" are commonly applied to different scientific disciplines, and scientists have investigated and theorized about features that apply when placing scientific disciplines on a soft-hard continuum (e.g., Simonton, 2004, 2006, 2009). In the minds of laypeople, however, the difference may lie in the more simple perceptions of different scientific disciplines. The very words themselves, "soft" and "hard", may hint at different reputations. Soft sciences are fuzzy and less rigid, suggesting lower reliability, validity, and rigor than hard sciences possess.

Psychological science includes research that is usually considered to be on the softer side of the continuum (e.g., behavioral science) as well as research that is usually considered to be on the harder side (e.g., neuroscience). However, the name "psychology" appears to elicit less respect from the general public than many other sciences. Survey data show that psychology was judged to be less important than disciplines like biology, chemistry, economics, medicine, and physics by both a random sample of adults as well as by full-time university faculty (Janda, England, Lovejoy, & Drury, 1998). Janda et al. also coded any spontaneous comments made by their respondents. Twenty-five comments concerned psychology, and, tellingly, 24 of them were negative: "Many of the negative comments had as their theme that at least some of what psychologists have to say cannot be believed and that people should rely instead on their common sense. A few respondents had much stronger views, suggesting that psychology was responsible for creating problems for our society" (Janda et al., 1998, p. 141). Findings like these led Lilienfeld (2012) to publish an article in the *American Psychologist*, the official journal of the American Psychological Association, with the provocative title "Public skepticism of psychology: Why many people perceive the study of human behavior as unscientific". In the article, Lilienfeld concludes that the general public does agree with the soft science nomenclature that is frequently applied to psychology and offers a host of reasons why.

Interestingly, Lilienfeld (2012) suggests that neuroscience might be perceived to be more like a "hard" science than other "softer" psychological sub-disciplines. Research questions from most sub-disciplines of psychology (e.g., cognitive psychology – why do some people have trouble following directions?) were judged to be easier to answer than research questions from neuroscience (e.g., why is it that when you get tired, your brain doesn't work as well?) (Keil, Lockhart, & Schlegel, 2010). Also, people (including the media; Beck, 2010) appear to prefer neuroscience explanations of psychological phenomena (e.g., Greene & Cahill, 2012; Weisberg, Keil, Goodstein, Rawson, & Gray, 2008). Part of the attractiveness of neuroscience ex-

planations might be attributed to the images of the brain that neuroscience evidence can often provide (McCabe & Castel, 2008). However, others have not found that the images themselves have any effect over and above a verbal description of neuroscientific evidence (in comparison to clinical psychology evidence that did not employ neuroscientific techniques) (Schweitzer, Saks, Murphy, Roskies, Sinnott-Armstrong, & Gaudet, 2011; see also, Farah & Hook, 2013). In addition to brain images, the label (e.g., "psychology" vs. "neuroscience") may impact perceptions of the scientific value of the research. Greenberg and Wursten (1988) showed that expert testimony in an insanity defense case provided by a "PhD" (i.e., psychologist) was less convincing than the identical testimony provided by an "MD" (i.e., psychiatrist). So, there is evidence that neuroscience explanations, the presence of neuroscience images, and labels that are consistent with neuroscience can favorably affect perceptions of scientific evidence.

The Current Research

The first goal of our research (Munro & Munro, 2014) was to focus not on explanations, images, or labels, but on the very techniques favored by those in the neuroscience field versus those used by psychological subdisciplines that are less obviously biologically oriented. All else being equal, do people favor neuroscientific evidence such as brain MRI over behavioral evidence such as cognitive test results?

At the same time, we wanted to determine whether or not people who were motivated to disbelieve the evidence would more easily dismiss behavioral evidence in comparison to neuroscientific evidence. Many studies have established that people discount scientific evidence that threatens a strongly-held belief or attitude (e.g., Lord, Ross, & Lepper, 1979; Munro & Ditto, 1997) and information that threatens a group important to one's identity like political party identification (Cohen, 2003; Hulsizer, Munro, Fagerlin, & Taylor, 2004; Munro et al., 2002). Research has even shown that neuroscience evidence is selectively accepted depending on whether it supports or challenges a person's prior attitude (Shniderman, 2014). However, no studies have directly tested neuroscience evidence against behavioral science evidence. Thus, our second goal was to test whether differences exist between evaluations of neuroscience evidence and behavioral science evidence when one is motivated (because of their identification with a particular group) to believe or disbelieve the evidence.

The sample consisted of 106 participants who had completed a pretest indicating their political party and the strength of identification with that party. They began the experiment by reading about a politician who was either a member of the same or different political party as they (the participants) were. The politician had recently been cited for ethical violations. The ethics committee required the politician to be evaluated by an expert to determine if cognitive problems would prevent him from carrying out his duties as an elected representative. If the expert concluded that the politician did have cognitive limitations that would prevent him from performing his duties, then the politician would be required to resign, and the Governor, a member of the opposing political party, would appoint a replacement. This outcome would be viewed as unfavorable to the participant if the politician's political party matched the participant's political party, as the politician's replacement would be from the opposing party.

The expert used either neuroscience or behavioral observation techniques to test the politician for possible dementia. The expert was identified as only "Dr.", with no mention of whether he had an M.D. or a Ph.D., and no brain images or test data were shown to participants. For half the participants, the expert's techniques involved reviewing the politician's medical history and conducting verbal or paper-and-pencil cognitive tests (like those often used by clinical neuropsychologists). For the other half of the participants, the expert's techniques involved reviewing the politician's medical history and obtaining an MRI scan of the politician's brain. Participants were then provided with specific findings from the experts' evaluations that formed the basis for the experts' opinions. For all participants, the expert concluded that the politician was suffering from Alzheimer's disease, that the symptoms will continue, and that the symptoms will interfere with the politician's ability to perform his duties.

After reading the expert evaluation, participants answered questions assessing their opinions of the quality of the evidence provided in the expert's evaluation. Two questions assessed "how strong" and "how convincing" the evidence was and were combined into a quality index. Four questions focused on specific aspects of the evidence (reliability, validity, objectivity, and relevance) and were combined into a reasons index. One question asked participants to indicate which of the specific aspects of the evidence, if any, best represented their opinion. Two questions focused on the conclusions and consequences of the evidence asking participants to indicate their opinions about the degree to which the politician a) has beginning stage Alzheimer's disease, and b) should be required to resign from public office. These two items were combined into a conclusion index.

To analyze the results, participants were divided into groups depending on whether they read about an ingroup (same political party) or an outgroup (different political party) politician being tested for cognitive problems, whether they were strongly or weakly identified with their political party, and whether they received the scenario containing neuroscience evidence or behavioral evidence. The pattern of findings was consistent across the quality, reasons, and conclusion indices.

Neuroscience evidence was seen as better

First, a main effect of type of evidence was found. Compared to behavioral science evidence, neuroscience evidence was judged to be of higher quality, it was judged to be more reliable, valid, objective, and relevant, and participants reading it endorsed greater agreement with the expert that the politician had Al-

zheimer's disease and should be required to resign. In response to the question regarding which reason best fit their opinion about the evidence, 69.8% of participants who read neuroscience evidence selected the option that the evidence was strong and convincing, whereas only 39.6% of participants who read behavioral evidence did so. Instead, participants indicated that the behavioral science evidence was subjective (24.5%), unreliable (15.1%), and irrelevant (11.3%).

Behavioral Science Evidence Was Easier to Dismiss Than Neuroscience Evidence

In addition to the general preference for neuroscience evidence, we also found that behavioral science evidence was more easily dismissed than neuroscience evidence when participants were motivated to disbelieve it. That is, among participants who identified weakly with their own political party, neuroscience evidence was rated as being of higher quality than evidence based on cognitive testing, regardless of the political party of the politician who was found to have Alzheimer's disease based on either type of evidence. In contrast, participants who strongly identified with their political parties had greater motivation to view the evidence more strongly, negative or positive, depending on the political party of the politician. Indeed, when reading about a politician from their own party who would be forced to resign because of the expert's opinion, this group of participants rated neuroscience evidence to be of much higher quality than evidence based on cognitive testing. When the politician was from the opposing party, however, neuroscience evidence was rated to be of only slightly higher quality than evidence based on cognitive testing.

Implications for the Courtroom

By using specific examples of psychological evidence in a context that is similar to real-world judgments, our study has implications in forensic settings wherein laypersons' evaluations of psychological methods and their use as a basis for expert opinions are of interest. Our first finding, that when participants selected a negative reason for their overall opinion of the behavioral evidence, they tended to select subjectivity, unreliability, and irrelevance of the evidence, reflects a lack of appreciation by laypersons of the methods used in clinical psychology and its subdiscipline neuropsychology. For this reason, attorneys might wish to request that their experts educate the jury about the psychological methods they use in order to address their potential biases against such methods, and hence, the very basis of the experts' opinions. For example, the expert could inform the jury about the absence of formalized criteria for interpreting brain imaging data and/or the inability of brain imaging techniques to quantify behavior in order to allow for a more balanced appraisal of such evidence. Similarly, education about the lengthy manuals and procedures for both administration and interpretation of psychometric tools could help jurors not dismiss these "softer science" tools.

Our second finding is that people are particularly likely to discount behavioral science evidence, compared to neuroscience evidence, when the specific conclusions are undesirable for them. This finding suggests that jurors whose strongly held values or identification with specific groups motivate them to disagree with an expert's opinion would be especially likely to discount an expert's opinions if they are based on behavioral science (e.g., cognitive test results), rather than on neuroscience (e.g., brain imaging). In cases for which experts rely on traditional paper-and-pencil psychological methods in forming the basis of their opinions, identifying potential jurors with strongly held values beliefs and identities that may bias their ability to objectively consider experts' opinions is of particular relevance during voir dire and jury selection.

References

Cohen, G. L. (2003). Party over policy: The dominating impact of group influence on political beliefs. *Journal of Personality and Social Psychology, 85*, 808-822.

Farah, M. J., & Hook, C. J. (2013). The seductive allure of "seductive allure". *Perspectives on Psychological Science, 8*, 81-90.

Greenberg, J. & Wursten, A. (1988). The psychologist and psychiatrist as expert witnesses: Perceived credibility and influence. *Professional Psychology: Research and Practice, 19*, 373-378.

Greene, E., & Cahill, B. S. (2012). Effects of neuroimaging evidence on mock juror decision making. *Behavioral Sciences and the Law, 30*, 280-296.

Hulsizer, M. R., Munro, G. D., Fagerlin, A. & Taylor, S. (2004). Molding the past: Biased assimilation of historical information. *Journal of Applied Social Psychology, 34,* 1048-1072.

Janda, L. H., England, K., Lovejoy, D., & Drury, K. (1998). Attitudes toward psychology relative to other disciplines. *Professional Psychology: Research and Practice, 29,*140-143.

Keil, F. C., Lockhart, K. L., & Schlegel, E. (2010). A bump on a bump? Emerging intuitions concerning the relative difficulty of the sciences. *Journal of Experimental Psychology: General, 139*, 1-15.

Lilienfeld, S. O. (2012). Public skepticism of psychology: Why many people perceive the study of human behavior as unscientific. *American Psychologist, 67*(2), 111-129.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subse-

quently considered evidence. *Journal of Personality and Social Psychology, 37*, 2098-2109.

McCabe, D. P., & Castel, A. D. (2008). Seeing is believing: The effect of brain images on judgments of scientific reasoning. *Cognition, 107*, 343-352.

Munro, G. D., & Ditto, P. H. (1997). Biased assimilation, attitude polarization, and affect in reactions to stereotype-relevant scientific information. *Personality and Social Psychology Bulletin, 23*, 636-653.

Munro, G. D., Ditto, P. H., Lockhart, L. K., Fagerlin, A., Gready, M. & Peterson, E. (2002). Biased assimilation of sociopolitical arguments: Evaluating the 1996 U. S. Presidential Debate. *Basic and Applied Social Psychology, 24*, 15-26.

Munro, G. D., & Munro, C. A. (2014). "Soft" versus "hard" psychological science: Biased evaluations of scientific evidence that threatens or supports a strongly-held political identity. *Basic and Applied Social Psychology, 36*, 533-543.

Schweitzer, N. J., Saks, M. J., Murphy, E. R., Roskies, A. L., Sinnott-Armstrong, W., & Gaudet, L. M. (2011). Neuroimages as evidence in a *mens rea* defense: No impact. *Psychology, Public Policy, and Law, 17*, 357-393.

Shniderman, A. B. (2014). The selective allure of neuroscience and its implications for the courtroom. *The Jury Expert*, *26*, 1-3.

Simonton, D. K. (2004). Psychology's status as a scientific discipline: It's empirical placement within an implicit hierarchy of the sciences. *Review of General Psychology, 8,* 59-67.

Simonton, D. K. (2006). Scientific status of disciplines, individuals, and ideas: Empirical analyses of the potential impact of theory. *Review of General Psychology, 10,* 98-112.

Simonton, D. K. (2009). Varieties of (scientific) creativity: A hierarchical model of domain-specific disposition, development, and achievement. *Perspectives on Psychological Science, 4,* 441-452.

Weisberg, D., Keil, F., Goodstein, J., Rawson, S., & Gray, J. (2008). The seductive allure of neuroscience explanations. *Journal of Cognitive Neuroscience, 20*, 470-477.

Kacy Miller responds:

Kacy Miller is president and founder of CourtroomLogic Consulting, a full-service trial consulting firm in Dallas, Texas. She specializes in theme identification, strategy development, pretrial research, witness preparation, jury selection and a host of other services designed to maximize the client's position in settlement conferences or the courtroom.

The battle between "soft" and "hard" psychological science is nothing new. While general bias regarding one or the other has existed for ages, the advances in brain science, imaging, and technology have given neuroscience a boost in credibility.

When working a case where one party has evidence involving behavioral science and the other side has evidence of brain science, the research shared by the authors clearly suggests that brain science evidence would have more persuasive power with potential jurors. If you're on the "soft" science side, what can you do to even the playing field? If you're on the "hard" science side, what can be done to maximize the commonly held perceptions that neuroscience is "better" science?

Here are a few suggestions.

1. Pretrial Jury Research

I'm a huge advocate of pretrial jury research. The benefit of conducting well-designed, professionally facilitated research justifies any additional costs, and I have yet to conduct research that failed to provide strategy-changing data. The research cited above was based on participant perceptions of a political scenario, and I'm sure we can all appreciate how strong an individual's political beliefs can be. But, what if your case involves something less emotional or personal to the members of the jury: a medical malpractice claim involving future medical care; a personal injury claim involving psychological impairment or distress; or even a criminal case involving mitigation? A focus group or mock trial could reveal whether jurors are strongly influenced by one science or the other, or whether jurors who are less "emotionally connected" to the fact pattern perceive both sciences as equally valid.

2. Voir Dire

Knowing that most people have strong feelings about psychology and brain science, it's absolutely critical to ask targeted questions during the jury selection process. The trick is creating an environment that encourages juror participation… and juror honesty. "Bias and prejudice" have such a negative connotation in today's world, that I find it best to ease jurors into the discussion with more benign queries. Using juror number cards and incorporating scaled or forced choice questions is a fabulous way to assess the entire panel, and to identify the specific jurors you need to know more about. And the bonus? It's a relatively quick process so it won't suck up your precious limited time.

For example:

a) On a scale of 1-10, with 10 being high, how would you rate the trustworthiness of written tests designed to evaluate a person's psychological wellbeing? [Have jurors raise their cards for various numbers.]

b) Which of the following two phrases do you think would provide the most accurate information: soft science or hard science? [Ask jurors to choose a category and raise their cards when you state that particular category.]

c) Knowing only that one witness is a

psychologist (Ph.D.) and the other a medical doctor (M.D.), do have any feelings right off the bat that one is more credible than the other? Which one and why? [Ask this question to the group and hope for volunteers. If the panel is quiet, choose a couple group members and ask them specifically. Then loop around to other jurors for additional feedback.]

3. Graphics

Visual aids and graphics not only complement your witness's testimony, but they also aid juror learning, attention, and retention. If jurors are being asked to evaluate evidence involving behavioral science and neuroscience, they must comprehend the how's and why's of the testimony. For example, if you're attempting to boost the credibility and believability of psychological testing (MMPI, Beck, CPI, Rorschach, etc.), consider providing jurors with a series of charts, checklists, and/or graphics that illustrate the laundry list of information considered when rendering the test results. If you're attempting to boost a neuroscience argument, show those pretty brain scans big as life with a projector/screen. Or, if you'd like to chip away at the panel's perceived trust in either behavioral science or neuroscience, graphics designed to clearly point out assumptions or "overlooked" criteria can be very influential.

4. Experts

Finally, consider hiring an expert… but choose carefully. The best experts are teachers, not lecturers; friendly and neighborly, not aloof or condescending; and the very best experts are often those with boots-on-the-ground-hands-on expertise, rather than those with only a list of academic accolades. Experts typically have the attention of the jury panel before they ever open their mouth, so capture the power of your expert witness testimony by encouraging them to get off the stand and "teach" the panel with a laser pointer and a large board. And remind the witness that expertise and know-how can be exuded by incorporating everyday language and examples into testimony.

Robert M. Galatzer-Levy responds:

Robert M. Galatzer-Levy, M.D. is Clinical Professor of Psychiatry and Behavioral Neurosciences at the University of Chicago. You can contact him by email here.

Comments on Munro and Munro, "Soft" vs "Hard" Psychological Science in the Courtroom

Five years ago my status suddenly changed. I had been a member of a department of "psychiatry". Now I belonged to a department of "psychiatry and behavioral neurosciences". Although the make up and activities of the department remained unchanged, its status in the university brightened.

The prestige of "neuroscience" compared to that of psychology and psychiatry is visible everywhere from the internet, to bookstores, to academia, to the courts. Munro and Munro appear to confirm this common observation and provide suggestions for its management in the courtroom.

It would, of course, be interesting to see the effects of training and sophistication of the subjects on these results. To what extent they apply to experienced judges sophisticated about scientific evidence as opposed to juries whose knowledge of these matters is gleaned from television remains unclear. But the tendency to see "hard" neuroscience as more credible than "soft" psychological science seems to be present in almost all courtrooms. As the authors suggest, the attorney who wants to use psychological evidence of almost any kind will need to educate the jury or judge about its merits, especially if that evidence runs contrary to their biases.

The comparison of "hard" and "soft" science as it relates to human behavior seems to me a somewhat limited focus because it so frequently happens that when triers of fact believe themselves to know truths about human conduct that conviction outweighs evidence of any kind. Two examples:

Even in the presence of exonerating DNA evidence and clear explanations of how the defendant came to make a false confession, juries sometimes continue to believe that no innocent person would confess and thus return guilty verdicts.

In *Miller vs. Alabama*, the SCOTUS majority opinion held that life without parole could not be imposed on adolescents because of their immature brain-psychological function . The court opined, in essence, that questions about the scientific findings, both psychological and neuroscientific were resolved by "what every parent knows" from the experience of raising adolescents.

In other words, everyday knowledge outweighs science, hard or soft, when it comes to psychological function.

While scientific prestige may influence some triers of fact, it is a hard road for scientific prestige to overcome "common sense" in the arena of human behavior, even when the former is admissible and the latter, in theory, is not. One route to addressing this problem is to address the meaning of the scientific data in terms of everyday experience. Thus, for example, when the difference between rational and emotional information processing is being explained, reference to MRIs of the amygdala and the prefrontal cortex accompanied by good anatomical drawings and/or reference to Nobel Prize winning research on "*Thinking Fast and Thinking Slow*" only comes alive to most judges and juries through examples such as the impulse to smash that malfunctioning computer or the involuntary jumping back from a car that seems headed toward you.

It is only when testimony about behavior makes sense that it is believed.

Conversely behavioral science testimony is best impeached by showing it does not "make sense".