DISSERTATION

INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY AND THE LAW: EXPERT WITNESS TESTIMONY AND THE FEDERAL JUDICIARY

Submitted by

Peter Hale Wingate

Department of Psychology

In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2002

COLORADO STATE UNIVERSITY

March 8, 2002

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY PETER HALE WINGATE ENTITLED INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY AND THE LAW: EXPERT WITNESS TESTIMONY AND THE FEDERAL JUDICIARY BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

Raymond L. Hogler

Adviser

Department Head

DISSERTATION ABSTRACT

INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY AND THE LAW:

EXPERT WITNESS TESTIMONY AND THE FEDERAL JUDICIARY

This research examined judicial perceptions of the field of industrial/ organizational (I/O) psychology, explored how judges evaluate and weigh I/O psychology expert witness testimony, and scrutinized the use of the *Daubert* criteria in judicial assessments of social scientific evidentiary reliability. In a mail survey, active United States federal district, senior district, and magistrate judges were presented with prototypical descriptions of I/O psychology expert witness testimony in civil age discrimination in employment litigation. Judges were randomly assigned to 4 expert witness scenarios, which systematically varied the foundation and content of the expert's testimony according to the *Daubert* criteria.

Judges were found to be relatively unfamiliar with the field of I/O psychology, and few had previously heard or read the testimony of an I/O psychologist. Sixty-six percent of the federal judges rated themselves at least moderately likely to admit the expert's testimony at trial, regardless of the testimony scenario presented. Nineteen percent of the judges asserted that they were not at all likely to admit the expert's testimony. Judges rated the evidence overall as relevant, moderately reliable, moderately probative, and prejudicial. Both judicial familiarity with the field of I/O psychology and prior experience with I/O testimony were found to be positively related to likelihood of

admitting the evidence. Manipulations of the scientific foundation for the expert testimony did not significantly affect admittance decision. Judges ascribed the most importance to the general acceptance *Daubert* criterion in their evaluation of evidentiary reliability. Written comments provided by judges provided insight into rationales for inclusion or exclusion of the expert evidence, detailed perceptions relating to the field of I/O psychology, and elaborated on the *Daubert* standard's applicability to social scientific evidence. Implications for the science and practice of I/O psychology in the legal system are presented, and practical suggestions for I/O psychologist expert witnesses are discussed.

Peter Hale Wingate
Psychology Department
Colorado State University
Fort Collins, CO 80523
Spring 2002

ACKNOWLEDGEMENTS

I would like to sincerely thank Dr. George C. Thornton III for his extensive guidance and expert tutelage. He has provided me with invaluable academic supervision and innumerable opportunities for professional development during my tenure as a graduate student at Colorado State University. I am also deeply indebted to my dissertation committee members, Dr. Paul Bell, Dr. Brian Cawley, and Dr. Ray Hogler for their input and assistance on industrial/organizational psychology and the law.

Finally, I must express tremendous gratitude to my parents, who have always inspired and encouraged me to pursue knowledge and explore uncharted territory.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The past two decades have witnessed exponential growth in the utilization of social science research as evidence in litigation. Social scientists, and more specifically psychologists, have become increasingly involved in the legal process (Monahan & Walker, 1988, 1991), and the field of law and psychology has recently emerged as a viable scientific discipline which examines the effect people have on the law and the effect the law has on people (Ogloff & Finkelman, 1999; Small, 1993). Despite the proliferation of psychological research that addresses legal issues, courts have often demonstrated ambivalence about admitting relevant empirical research at trial, and ignored or dismissed pertinent psychological research as immaterial to legal questions (Redding, 1998; Wrightsman, 1999). Anecdotal evidence suggests that expert witness testimony by psychologists has fallen under increased legal scrutiny, with public backlash against so-called junk science often cited as a possible rationale (Sleek, 1998a, 1998b). Furthermore, courts have been quick to reject, restrict, or misapply psychological testimony in the courtroom, especially when the data do not conform to the court's opinion (Bersoff & Glass, 1995; Tanford, 1990). While psychology has made substantial gains in influencing the law and establishing itself as a scientific field in its own right, the question remains whether courts are adequately prepared to accept and evaluate valid psychological evidence in a widespread and consistent manner.

The present study is designed to uncover and quantify contemporary judicial perceptions of psychological evidence and expert witness testimony in civil trials. In particular, this research examines the admissibility, impact, and visibility of industrial/organizational (I/O) psychology in Age Discrimination in Employment Act (ADEA) litigation at the federal level. In order to better conceptualize the evolving role of I/O psychology in the legal arena, a brief history of psychology and the law is presented.

Historical Background

A useful way to characterize the interrelationship between psychology and the law was originally proposed by Haney (1980) in a tripartite model. The classification describes three abstract areas of inquiry: (1) psychology in the law, (2) psychology and the law, and (3) psychology of law.

Psychology in the law.

The initial aspect of the model, termed psychology in the law, is comprised of two categories. The first scenario applies to situations where psychological research and testimony are used by the law in the conduct of legal business. Commonly encountered examples include courtroom testimony by a psychologist, and the introduction of psychological research as evidence in a specific trial. In these instances, the law completely dictates the form, admissibility, relevance, and usage of psychology. Consequently, psychological evidence may be viewed as dispositive information that aids the court in resolving a dispute. In the second hypothetical scenario of psychology in the law, psychological techniques are employed to complement traditional legal practices. For example, psychologists may be hired by one party in litigation to analyze jury

selection for a particular trial (Nietzel, McCarthy, & Kerr, 1999). Psychologists also may serve as trial consultants regarding issues including witness preparation and change of venue (Stolle, Robbennolt, & Wiener, 1996), and attorneys may avail themselves of psychological tactics and techniques during different phases of a trial such as cross-examination (Toch, 1961). The essence of psychology in the law therefore is the use of psychological data, research, or testimony in the proceedings of an individual trial or legal action, usually at the behest of one of the parties who maintains a vested interest in the outcome of the litigation. The present research falls in this category.

Psychology and the law.

The second category that Haney (1980) proffered, psychology and the law, applies to the use of psychological principles to scrutinize and inject change into the legal system itself. In this category the use of psychology is not necessarily dictated by the law or attorneys. Instead, psychology is used to evaluate the law externally from a critical, scientific point of view. Prototypical examples of this category include research on such varied topics as police lineup procedures (Wells, Wright, & Bradfield, 1999), the deterrent effect of the death penalty, and the methods by which a court may conclude that confessions are produced voluntarily. This relationship denotes an attempt by psychology to effectuate legal change, alter public policy, or improve upon the legal process in a broad fashion, and research in this area has typically been the domain of cognitive and social psychologists.

Psychology of law.

Third, psychology of law pertains to an analysis of the very existence and purpose of law and the legal process. In this field of inquiry social scientists study such topics as

the origins of law, societal need for the law, and the nature and sources of legal power. There has been little empirical psychological research on this latter category, with the bulk of the work on psychology of law completed by anthropologists and sociologists.

Impact.

The aforementioned taxonomy delineated by Haney (1980) illustrates a variety of ways in which the fields of psychology and the law can potentially interact. While psychologists are conducting ongoing research and participating in activities that bridge all three of the psychology and law categories, there is a dearth of empirical information on the impact of psychological testimony and research in the courtroom. Researchers have lamented the law's handling and use of social science evidence (Bersoff & Glass, 1995; Kovera & McAuliff, 2000; Redding, 1998; Redding & Repucci, 1999), yet most critiques of the law's treatment of psychology have relied upon qualitative review of select court cases, esoteric commentary from disciplines distinct from psychology, and unfavorable personal experiences in the courtroom. As expert witness services and provision of testimony in litigation are perhaps the most common application of psychology to the legal system, it is essential that psychologists discern their capacity to inform judicial decision makers, affect the trial process, and present crucial social science research to the legal community.

To systematically assess the influence of psychology in the courtroom, the current study obtained input from the most influential judicial organization in the country, the federal judiciary. Thus, this investigation queried federal district judges on their attitudes towards I/O psychology evidence and testimony in employment discrimination civil trials.

Industrial/Organizational Psychology and the Law

The field of industrial/organizational psychology, often characterized as the scientific study of workplace behavior (Muchinsky, 1997), is routinely confronted with organizational issues containing legal components. While an array of legislation governs the employer-employee relationship, employment discrimination litigation has proven to be a particularly fertile ground where I/O psychology maintains an ongoing opportunity to inform legal decision makers. The potential relevance of I/O psychology to cases involving employment discrimination is readily apparent, as determinations of guilt or innocence often rely upon social scientific proof of bias, motive, prejudice, and psychological impairment or injury (Goodman-Delahunty, 1999). Furthermore, all aspects of the employment relationship are subject to legal scrutiny (Goodman-Delahunty, 1999), with state and federal statutes outlawing discrimination in the recruitment, selection, termination, and promotion of employees, and in other workplace terms and conditions (Lindemann & Grossman, 1996). Employees are protected against discrimination based upon such factors as age, disability, race, color, religion, national origin, and gender, and coverage typically extends to include part-time and temporary workers.

The increasingly strict regulation of acceptable workplace and organizational behavior has improved the prospects for I/O psychologists to actively participate in the legal process as expert witnesses. Moreover, expert witness testimony by I/O psychologists has the potential not only to affect the outcome of any given case, but also to inform diverse audiences (e.g., lawyers, judges, juries, lawmakers, the public) about

the purpose, methods, content, and scientific contribution of I/O psychology in organizational settings.

I/O Psychologists as Expert Witnesses

The field of I/O psychology has recently devoted increased attention and scholarship to the litigious facets of organizational behavior. However, this heightened legal awareness has been reflected in relatively few peer reviewed publications, and rigorous scientific research has not been conducted on the activities of I/O psychologists in the courtroom. For example, The Industrial-Organizational Psychologist (TIP), the quarterly publication of the Society for Industrial and Organizational Psychology (SIOP), devotes a regular opinion column that includes legal updates with implications for I/O psychology (Gutman, 2001). Recent articles by Baute (2001), Harris (2000), and SIOP annual conference proceedings (Connerly, 2001; Morgeson, Campion, Goldstein, Jacobs, & Kolmstetter, 2001) have also focused on legal challenges and I/O expert witness participation. Yet the contributions by the preceding sources are tempered by a lack of empirical data, and there exists a vital need for information on perceptions of I/O psychology that emanate from within the legal profession itself. As this author could not locate any scientific studies or data on the use of I/O psychologists as expert witnesses, it was imperative to examine existing published case law from federal employment discrimination trials to devise a framework for the present study.

Contemporary Federal Court Opinions and I/O Psychology

A search of the LEXIS-NEXIS® Academic Universe Legal Database was performed using various combinations and permutations of the keywords "work psychology," "industrial psychology," and "organizational psychology." The search

included all published opinions filed in federal district courts and federal courts of appeals between 9/21/90 and 6/1/01. Results of the search indicated that written opinions in 38 federal district court cases and 14 federal courts of appeals cases contained the requisite terms over the nearly 11-year time span (these cases are highlighted in the reference list with an asterisk).

A qualitative examination of the 52 federal case opinions disclosed several notable findings. First, the judicial opinions confirmed that I/O psychologists testify in employment discrimination litigation more frequently than in other types of federal civil litigation, as at least 80% of the cases involved allegations of discrimination. Second, the cases exhibited a wide range of challenged employment actions and personnel practices, including termination, promotion, selection, harassment, affirmative action plans, contractual issues, and adherence to the stipulations of consent decrees. Third, allegations of discrimination encompassed many of the classes protected by law, including claims based upon age, sex, race, and disability. Fourth, the sample of cases included situations with an individual plaintiff, cases involving multiple plaintiffs, and class action lawsuits. Fifth, experts were retained by plaintiffs, defendants, or a mixture of both, and numerous opinions alluded to testimony by multiple expert witnesses. Sixth, the admittance and use of I/O expert witness testimony was often challenged by opposing counsel, and such challenges relied on either The Federal Rules of Evidence or the *Daubert* (1993) standard, which jointly govern the admissibility and usage of expert testimony at the federal level. Lastly, the content of testimony tendered by I/O psychologists was extremely variable; common examples included testimony on job analysis, test

validation, statistical analyses of workplace data, survey design, performance appraisal, and stereotyping in the workplace.

Despite the aforementioned variation in discrimination claims, testimony content, and trial specifics, one scenario in particular emerged from the case analysis and a related literature review that perhaps best exemplifies prototypical I/O expert witness testimony and current trends in workplace litigation, namely, age discrimination in organizational downsizing.

Age Discrimination and Organizational Downsizing

The effect of layoffs on older workers has gained recent prominence in American society. Age discrimination concerns in downsizing contexts are of paramount importance to organizations, as individual filings of age discrimination (based upon the Age Discrimination in Employment Act of 1967) with the EEOC rose to over 17,400 charges in the year 2001, representing 21.5% of all discrimination filings that the Equal Employment Opportunity Commission (EEOC) received for the year (EEOC, 2002). Insofar as many age discrimination claims are lodged in state courts, through private plaintiff attorneys, and not with the EEOC, the above numbers may represent a small fraction of age discrimination claims that organizations are routinely confronted with (Federal Judicial Center, 1999; Highberger, 1996). Furthermore, the wide scope of the ADEA (workers aged 40 and over are protected), the aging U.S. population, increases in life expectancy, and anticipated increased workforce participation by citizens 40 and over all combine to bring age discrimination concerns to the forefront in downsizing organizations (Bessey & Ananda, 1991; Fullerton, 1997; U.S. Department of Health and Human Services, Administration on Aging, 1999).

I/O psychologists are singularly qualified to provide expert witness services in age discrimination and workplace reduction in force (RIF) litigation. Their scientific background and training are well suited to informing the courts on organizational downsizing efforts, and for investigating the existence of age-related bias during the different phases of a RIF. For example, in recent federal courts, I/O psychologists have provided (or endeavored to provide) testimony on: the legal defensibility and validity of RIF procedures (Gonzalez v. Conoco, 1999; Mooney v. Aramco, 1995), job analysis and performance appraisals used to determine terminations (Graffam v. Scott Paper, 1994, 1995), and the pervasiveness of age stereotyping (Camp v. Lockheed Martin, 1998; Hurst v. Woolworth, 1997). However, the admittance and use of I/O expert witness testimony is dependent not only upon scientific rigor and SIOP and APA ethical principles, but also upon courtroom rules and legal precedent that govern the application of social science evidence in judicial contexts.

The Admittance and Application of Scientific Testimony

Guidelines on the admissibility of scientific evidence in federal courts were clarified in the landmark 1993 U.S. Supreme Court decision, *Daubert v. Merrell Dow*. The *Daubert* decision held that The Federal Rules of Evidence (especially Rule 702) supercede the previous requirements for expert witness testimony detailed in the 1923 *Frye* standard (Frye v. United States, 1923). The earlier *Frye* test of admissibility had mandated that for expert testimony to be admissible, it merely had to be generally accepted by the relevant scientific community. The majority opinion in *Daubert* elaborated on the pre-existing *Frye* standard by articulating that it is a trial judge's task to ensure that the testimony of an expert witness is scientifically valid, in that it is both

methodologically reliable and relevant to the given task. The Court looked upon Rule 702 as the foundation for expert testimony, and concluded that inferences and assertions posited by experts must be grounded foremost in the scientific method. The *Daubert* decision confides to trial judges the responsibility to screen expert evidence, whereby every judge serves as a gatekeeper to determine the reliability and relevance of expert testimony.

The *Daubert* decision articulated four components that a trial judge may scrutinize when attempting to gauge whether evidence proffered by an expert is reliable. These four factors include whether: (1) the expert's theory or technique has been tested or is testable, (2) the expert's methods have been subjected to peer review or publication, (3) the techniques and methods used by an expert have a known or potential rate of error, and (4) the methodology employed by the expert has been generally accepted by the relevant scientific community. The Court in the *Daubert* decision articulated that flexibility must exist when inspecting the reliability of evidence, and further emphasized that any admissibility inquiry should primarily concentrate on an expert's principles and methodology, not concomitant conclusions.

The relevance standard imposed by *Daubert* is described in Federal Rules of Evidence 401 and 402, and is a relatively liberal hurdle (as compared to the reliability requirement) for an expert to surmount. Rule 401 proscribes that for evidence to be considered reliable, it must "make the existence of any fact that is of consequence to the determination of the action more or less probable than it would be without the evidence" (Mueller & Kirkpatrick, 1999, p. 71). Furthermore, it should be noted that other Federal Rules of Evidence apply to expert testimony in certain contexts, including Rules

regarding hearsay (Rule 703), appointment of experts by the court (Rule 706), and the potentially prejudicial nature of evidence (Rule 403).

In summary, the admissibility criteria delineated in *Daubert* require that federal trial judges screen potential expert evidence to ensure adequate reliability and relevancy. Recent Supreme Court rulings, in particular *General Electric Company v. Joiner* (1997) and *Kumho Tire v. Carmichael* (1999), have supplemented the *Daubert* ruling by clarifying that *Daubert* applies to all expert testimony (not just scientific testimony), and by reinforcing the role of the trial judge as that of a gatekeeper (Cwik, 1999; Tenopyr, 1999).

The *Daubert* decision and its progeny present many critical issues that currently remain unanswered in the legal forum (Shuman & Sales, 1999). For example, the Supreme Court has not elucidated how to weigh or prioritize the four *Daubert* reliability factors, did not explain a method to address factor-specific concerns (e.g., how much/what kind of testing is sufficient, how should peer review be operationalized, what is an acceptable level of error, what constitutes general acceptance, etc.), and did not detail if the *Daubert* criteria should be applied with greater or less rigor depending on the form of litigation, or type of evidence (Mark, 1999; Shuman & Sales, 1999). In *Kumho* (1999), the Supreme Court explicitly endorsed a nondoctrinaire, adaptable approach to evidentiary admissibility whereby district courts are encouraged to focus on case specific circumstances; therefore, the four *Daubert* factors may or may not be pertinent as the facts of the case require (Berger, 2000). Moreover, the Supreme Court mandates an "abuse of discretion" standard for reviews of district court evidentiary rulings, which grants trial judges great latitude in their determination to admit or refuse testimony.

Under this standard, courts of appeal will not overturn district court decisions solely on the issue of admissibility of evidence except in the very rare instance of abuse of judicial privilege (Berger, 2000; Youngstrom & Busch, 2000).

There is not only concern over the uniform interpretation and application of the *Daubert* factors, but serious doubts persist over the ability of judges to appraise the reliability and validity of scientific evidence. Legal training alone does not ensure methodological and statistical abilities (Lehman, Lempert, & Nisbett, 1988), and there is little reason to believe that judges possess the proper education and sophistication in the scientific method to evaluate and subsequently weigh complex scientific evidence appropriately (Grove & Barden, 1999; Kovera & McAuliff, 2000; Shuman & Sales, 1999). Furthermore, results by Gatowski et al., (2001) found that for a sample of state judges, only 5% were able to demonstrate a clear understanding of falsifiability (testability), and only 4% could produce a clear understanding of error rate.

There is currently no empirical data on the application of the *Daubert* standard to I/O psychological evidence in federal courts. In fact, Redding and Repucci (1999) assert that their study (which surveyed state judges on the use of social scientific death penalty research at trial) was the first empirical examination of legal decision making with reference to *any* type social science research evidence. A more recent national survey of state judges (Gatowski, et al., 2001) on the topic of the *Daubert* criteria added to this important initial foray into active judicial decision making at the state level, yet we have no present insight as to federal judicial assessments of psychological evidence.

Overview of the Present Study

The present study is designed to address two pressing topics that have received negligible attention from social scientists and legal researchers. First, what are judicial perceptions of the field of I/O psychology? Are federal judges cognizant of the role that I/O psychologists may play in litigation stemming from organizational settings? Second, how is I/O psychology testimony admitted and weighed in employment discrimination litigation? In what manner are federal judges applying the *Daubert* reliability admissibility criteria to I/O testimony, and what are the implications for the science and practice of I/O psychology?

In order to explore these issues, this study compared and contrasted I/O psychology testimony that is based upon personal experience and observation with I/O testimony that is predicated upon empirical research findings that vary in their level of testability, peer review, potential error rate, and general acceptance. Using I/O expert witness testimony in ADEA RIF litigation as an exemplar, this study presented federal judges with a simulation of written expert testimony provided by an I/O psychologist hired by a defendant organization.

All judges read a brief generic description of a mid-sized organization and associated RIF details, and a description of a male plaintiff, aged 55, who alleged that he was terminated in a RIF illegally due to his age. Judges were then provided with a more detailed report of proposed expert testimony by an I/O psychologist ("Dr. Smith") hired by the defending organization. The expert testimony was manipulated so that there were four different versions, with each judge randomly receiving one of the four. In all four versions of testimony, Dr. Smith's credentials, personal characteristics, and conclusions

regarding the RIF situation were the same. Dr. Smith testified that the organization used acceptable RIF practices, and that the RIF criteria were generally appropriate, job-related, valid, and reliable.

The four versions of expert testimony differed on the source of the information from which the conclusion was based: personal experience versus scientific data. The four versions of Dr. Smith's expert testimony compared I/O evidence on RIF personnel practices that originated from either: (1) personal experience alone, (2) personal experience and a single unpublished empirical study, (3) personal experience and a single published empirical study, or (4) personal experience and a published empirical meta-analysis. Accordingly, the four different expert testimony versions tapped into various aspects of the *Daubert* criteria, with each sequential version from 1 to 4 complying with the *Daubert* reliability criteria to a greater degree.

Viewed from a slightly different perspective, these four testimony scenarios can be classified as representing a continuum of expert evidence, where "clinical" or "experiential" evidence given by experts (e.g., expert opinions based upon personal experience, or nonvalidated and untested assertions perhaps only minimally grounded in research) is contrasted to evidence that may be construed as "scientific" or "actuarial" in nature (e.g., expert opinions based upon research grounded in the scientific method). As researchers (Krauss & Sales, 2001; Redding, 1998; Shuman & Sales, 1998) have opined, clinical evidence and empirical scientific research evidence may be treated very differently by the courts in terms of both admissibility and dispositive weight. Yet there is currently no consensus in the scientific literature on how the federal judiciary is (and should be) treating expert evidence that oftentimes diverges in both its origin and its

allegiance to scientific methodologies. In general, data analyses in the present study examined the mean responses of judges to the four scenarios. It was hypothesized that if the *Daubert* standards were being applied, the testimony that relied on experience alone should be deemed less reliable and admissible than the testimony based upon additional scientific information, and that increasing levels of empirical scientific evidence should receive stronger endorsements from judges.

Based upon the above discussion, there are a number of evidentiary evaluations that are of particular import in the present research. The individual comparisons of scenario 1 vs. scenarios 2, 3, & 4 provide information on how clinical evidence is viewed in relation to varying types of scientific evidence. The comparison of scenario 2 vs. scenario 3 provides information on how judges weigh the importance of peer review and publication status, and extends extant research (Kovera & McAuliff, 2000) that proposed (but did not find) admissibility differences as a function of peer review with a sample of state judges. The comparison of scenario 3 vs. scenario 4 demonstrates contrasts between the admissibility of high quality scientific research in isolation vs. meta-analytic research, in which the findings transcend the results of any one individual study. Whereas meta-analytic techniques have recently achieved prominence and widespread attention in the social sciences, it is critical to ascertain if judges are familiar and comfortable with such an important (and scientifically complex) methodological tool.

CHAPTER II

METHOD

Design

A total of 1429 United States federal district court judges, federal district court senior judges, and federal magistrate judges were mailed a packet of survey materials in October, 2001. All judges received a follow-up postcard reminder to complete the survey three weeks after the original mailing. Participants were guaranteed anonymity in their responses, and were given the opportunity to receive a summary of results and a copy of the SIOP brochure entitled *The science and practice of industrial and organizational psychology* upon completion of the study. Judges were informed that a financial contribution would be made to the American Red Cross for every survey returned. Surveys that were returned by February, 2002 were included in the present study.

The original mailing included a cover letter (See Appendix A) which described the procedures and purpose of the study, and additionally contained three distinct substantive sections related to the project: (1) a written scenario that outlined a representative RIF age discrimination case and accompanying details of a prototypical ADEA federal civil lawsuit, (2) a written scenario that depicted proposed I/O psychology defense expert witness testimony for the case, and (3) a questionnaire that sought to elicit demographic information and responses to the dependent variables.

All participants were sent documents containing identical information as it pertained to the cover letter and parts (1) and (3) of the survey as mentioned above. These portions of the survey stipulated the relevant employment discrimination law, related burden of proof, and described a standard motion by the plaintiff to exclude the proposed testimony of the I/O psychologist defense expert witness. Furthermore, the nature of the civil ADEA lawsuit, the plaintiff's background and bases for the age discrimination claim, and the factual description of the defendant organization and related RIF particulars were invariant across surveys and participants. Questions related to demographic material and all of the dependent variables were also constant across surveys. However, the scenario which described the I/O psychology expert witness testimony for the defense differed across surveys; judges were randomly assigned to one of four possible expert witness testimony conditions. These four scenarios altered the proposed expert witness testimony in its adherence to the four indicia of reliability bearing on the admissibility of expert witness evidence that the Supreme Court delineated in the *Daubert* decision.

Sample

Federal judges were chosen for this study as federal court cases are presumably of greater interest and applicability than state court cases (Williamson, Campion, Malos, Roehling, & Campion, 1997), and because the influence of social scientific evidence generally, and I/O psychology evidence specifically, have been heretofore untested at the federal level. District judges were chosen because district courts are the only federal courts where attorneys examine and cross examine witnesses; the factual record is established at the district level, whereas federal courts of appeals concentrate on

remedying errors and interpreting the law, not reexamining facts (Carp & Stidham, 1996, 2001).

The 1429 federal judges who were contacted presided over 94 federal judicial districts, including all districts in the 50 United States, the District of Columbia, Guam, Puerto Rico, the Virgin Islands, and the Northern Mariana Islands. Judges were located and contacted using information contained in the Judicial Staff Directory (Congressional Quarterly, 2001), and a mailing list provided by CQ Press.

The final sample was comprised of 150 federal district judges, federal district senior judges, and federal magistrate judges who were serving in United States federal district courts as of September 2001, and who voluntarily responded to the survey.

Organizational RIF Scenario and ADEA Claim

The scenario describing the organizational RIF (see Appendix B) was constructed to best exemplify a commonly encountered corporate RIF situation where an individual plaintiff alleges age discrimination in termination under the ADEA. The legal framework for the scenario conformed to a claim of disparate treatment, which may be analyzed under the guidelines (which are slightly modified for RIF situations) put forth in *McDonnell Douglas Corp. v. Green* (1973) and later refined in *Texas Department of Community Affairs v. Burdine* (1981) and *St. Mary's Honor Center v. Hicks* (1993). Case specifics contained in the scenario were based upon recurring themes and details culled from a review of hundreds of ADEA RIF cases tried at the federal level (Wingate, Thornton, McIntyre, & Frame, in press), information from the aforesaid qualitative review of 52 federal case opinions involving I/O expert witnesses, and a comprehensive scrutiny of the academic and legal literature.

The scenario was intentionally designed to provide a context in which judges could render a decision on the admissibility and utility of the expert witness evidence (e.g., Is it relevant? Is it reliable? Admissible overall?) without being forced to decide the actual merits of the plaintiff's case. In other words, the scenario provided the judges with general relevant details on the ADEA discrimination claim, yet was sufficiently ambiguous that neither the plaintiff nor defendant would prevail in court without additional case-specific facts. The reasons for this scenario design are twofold: (1) to minimize the length of the survey and thereby maximize response rate, which is a veritable consideration when attempting to survey highly esteemed and overworked federal judges (Johnson, Krafka, & Cecil, 2000), and (2) to ensure that judges would not furnish a decision on the case as a matter of law, but would instead attend to the salient points of the proposed expert witness testimony offered by the I/O psychologist.

Expert Witness Testimony Scenarios

Four scenarios were developed which described proposed expert witness testimony (see Appendix C for descriptions). Scenarios varied in the foundation for the expert's testimony, with each of the four scenarios presenting evidence that is commonly encountered in employment discrimination litigation.

All four expert witness scenarios included the following facts, which were designed to represent the profile of a typical I/O expert witness. First, the defending organization wishes to introduce expert witness evidence to be provided by a male I/O psychologist who was hired to examine the RIF efforts after the plaintiff had filed his ADEA claim. Second, the I/O psychologist possessed a Ph.D. in I/O psychology, was a member of the Society for Industrial and Organizational Psychology (SIOP), and had

been a professor and researcher at a major research university for over 25 years. Third, the I/O psychologist had been consulting in varied organizational settings for 20 years, had provided expert witness services for both plaintiffs and defendants for the previous 10 years, and had numerous publications in scholarly journals and books.

The expert's conclusions were the same across all four scenarios. The expert's testimony summarized that the organization used acceptable RIF processes, procedures, and performance appraisal mechanisms, and that the RIF layoff system overall appeared appropriate, job-related, valid, and reliable.

In all four scenarios the initial foundation for the expert's conclusions were the expert's education, expertise, training, a one-day visit to the organization, repeated telephone, fax, and e-mail communications with company executives and management, and a review of pertinent company documents. This foundation was labeled personal experience.

In the first scenario, the only basis for the expert's conclusion was the personal experience as described above.

In the second scenario, the basis for the expert's conclusion hailed from both his personal experience, and his interpretation and summary of findings from a single unpublished study (created for the purposes of this research) that he believed was relevant to the case. This unpublished study was described as having been conducted and written by a reputable I/O psychology researcher who currently was employed at a different university. The study was completed recently, and the sample in the study was approximately 100 employees who were employed at a mid-size organization (a different organization than the defendant organization) which was undergoing a RIF. The study

was empirical in nature, and it described processes and procedures that allowed the organization to achieve the goals of the RIF by identifying the best performers and selecting the worst performers for termination. This manipulation investigated judicial perceptions of I/O evidence as a function of personal experience and empirical data that had not been scrutinized by other researchers.

The third scenario was similar to the second scenario, except the single study alluded to by the expert was described as having been recently published in a peer-reviewed, reputable I/O psychology journal, The Journal of Applied Psychology. This manipulation investigated differences in judicial perceptions of I/O evidence as a function of peer review and publication status.

The fourth scenario was similar to the third scenario, except the study alluded to by the expert was described as a meta-analysis of 30 published and unpublished studies on RIF procedures and processes, which had recently been published in The Journal of Applied Psychology. The meta-analysis was also described as having been cited repeatedly in popular I/O and human resources textbooks as an important study. This manipulation increased the potential generalizability and general acceptance of findings from the study, and investigated judicial perceptions of I/O evidence as a function of peer review, generalizability, and general acceptance of findings by the relevant research community.

Survey Items

Demographic and exploratory data were gathered with a survey (see Appendix D) that allowed a thorough description of the sample, including information on gender, tenure, nominating president (for district and senior district judges only), judicial

position, familiarity with I/O psychology (1-7 scale), and prior exposure to I/O testimony. Ancillary information on judges that could have compromised their anonymity (e.g., district court membership, age) was not obtained in the survey.

Dependent variables gauged responses to the scenarios, and allowed additional relationships with demographic and exploratory variables to be determined. The following dependent variables (all measured on a 1-7 scale) were included: (1) the likelihood that the expert evidence would be admitted, (2) the relevancy of the expert evidence, (3) the prejudicial nature of the expert evidence, (4) the reliability of the expert evidence, (5) the probative value of the expert evidence, and (6) judicial reliance on the four *Daubert* factors in their assessment of the expert evidence (separate scales for expert evidence: testability, peer review and publication status, known or potential error rate, and general acceptance).

Finally, judges were given the opportunity to provide written comments regarding the survey and its subject matter.

CHAPTER III

RESULTS

Demographics

Table 1 presents demographic information for the sample. The sample was comprised of 87 district and 63 magistrate judges, for a final total of 150 federal judges. Of the 1429 judges who were originally contacted, only 5 judges actively declined to participate, citing such reasons as time pressure ($n = 1$), a policy not to respond to survey questionnaires ($n = 2$), or concerns over the subject matter ($n = 2$). An additional 7 judges were excluded from the sample, as they noted that their work revolves solely around criminal cases ($n = 4$), or they felt otherwise unqualified to respond to the topic presented ($n = 3$). Thus, the overall response rate for the study was approximately 11%. This response rate may be attributed in part to the length of the survey, the nature of the population being sampled, and unfortunate world events and disruptions in postal service that coincided with the timing of the survey mailings.

The sample consisted of 122 males (81%) and 27 females (18%), with an average tenure of 12.2 ($SD = 7.1$) years on the bench. The average tenure for district judges was 13.91 years ($SD = 7.74$), whereas the average tenure for magistrate judges was 10 years ($SD = 5.47$). The political party affiliation of the 87 district judges was 39% Democrat and 55% Republican (using the political affiliation of the respective nominating United States President as a proxy). Judges were fairly evenly distributed across the four expert

Table 1
Demographic Information for the Entire Sample

Variable		n	% of sample
Gender			
Male		122	81
Female		27	18
Unknown		1	1
Job Title			
District Judge		87	58
Magistrate Judge		63	42
Tenure in Years (M = 12.2, SD = 7.1)			
1-5		24	16
6-10		45	30
11-15		31	21
16-20		25	17
21-25		10	7
Over 25		8	5
Unknown		7	5
Nominating President (Magistrates Excluded)			
Clinton	(D)	24	28
Bush Sr.	(R)	16	18
Reagan	(R)	26	30
Carter	(D)	9	10
Ford	(R)	2	2
Nixon	(R)	4	5
Johnson	(D)	1	1
Unknown		5	6
Judicial Party Affiliation (Magistrates Excluded)			
Democrat		34	39
Republican		48	55
Unknown		5	6
Judges per Scenario			
(1) Clinical		40	27
(2) Non-published		30	20
(3) Published		36	24
(4) Meta-analysis		44	29
Familiarity with I/O Psychology (M = 2.1, SD = 1.1)			
(1) Not at all familiar		64	43
(2)		32	21
(3) Moderately familiar		42	28
(4)		7	5
(5) Very familiar		4	3
(6)		1	1
Previous Courtroom Exposure to I/O Testimony			
No		118	79
Yes		32	21

witness conditions, with 40 (27%) judges assigned to scenario 1, 30 (20%) to scenario 2, 36 (24%) to scenario 3, and 44 (29%) to scenario 4.

Judges rated themselves as relatively unfamiliar with the field of I/O psychology, with a mere 8% professing a level of "familiar" or higher. Sixty-four (43%) of the judges were not at all familiar with the field, 32 (21%) were slightly familiar, and 42 (28%) were moderately familiar. Only 32 (21%) of the judges had previously heard or read the testimony of an I/O psychologist. Among those judges, the average number of times they had encountered I/O psychology testimony was on 2.3 ($SD = 1.37$, $n = 23$) separate occasions. Familiarity with the field of I/O psychology was correlated with having previously heard or read the testimony of an I/O psychologist, $r(150) = .49$, $p < .001$. Judicial job title was unrelated to familiarity with the field of I/O psychology, $t(148) = 1.54$, $p = .13$. Judicial job title was also unrelated to previous exposure to written or oral I/O psychology testimony, $\chi^2(1, N = 150) = .97$, $p = .32$.

Aggregate Assessments of Expert Witness Testimony for the Entire Sample

Raw statistics for the dependent variables and the *Daubert* factors are displayed in Table 2. In the entire sample, judges were moderately likely ($M = 3.49$, $SD = 1.76$) to admit the expert testimony. There was significant variability on the likelihood of admittance, with 28 (19%) of the judges not at all likely, 22 (15%) slightly likely, 26 (18%) moderately likely, 10 (7%) likely, 51 (35%) very likely, 5 (3%) extremely, and 6 (4%) completely likely to admit the testimony. The means for related evaluations of the evidence reveal that overall, judges rated the testimony on a 1 to 7 scale as relevant ($M = 3.79$, $SD = 1.59$), prejudicial ($M = 3.50$, $SD = 1.49$), moderately reliable ($M = 3.33$, $SD = 1.28$), and moderately probative ($M = 3.31$, $SD = 1.43$).

Table 2
Descriptive Statistics for the Dependent Variables and *Daubert* Factors

	Overall Sample n=150		Scenario 1 n=40 (Clinical)		Scenario 2 n=30 (Non-Published)		Scenario 3 n=36 (Published)		Scenario 4 n=44 (Meta-Analysis)		ANOVA		
	M	SD	M	SD	M	SD	M	SD	M	SD	F	p	η^2
Dependent Variables													
1. Admittance	3.49	1.76	3.15	1.71	3.37	1.69	3.34	1.80	4.00	1.75	1.88	.14	.04
2. Relevance	3.79	1.59	3.45	1.58	3.97	1.63	3.74	1.52	4.00	1.61	1.00	.39	.02
3. Prejudicial Nature	3.50	1.49	3.34	1.56	3.57	1.38	3.57	1.50	3.55	1.53	.20	.90	.00
4. Reliability	3.33	1.28	3.17	1.13	3.43	1.33	3.31	1.45	3.43	1.25	.35	.79	.01
5. Probative Value	3.31	1.43	3.05	1.39	3.20	1.49	3.35	1.28	3.59	1.51	1.07	.37	.02
(1-7 scales, 1 = "Not at all", 3 = "Moderately", 5 = "Very", 7 = "Completely")													
Reliance on the *Daubert* Factors													
1. Testability	4.38[a]	1.51	4.13	1.79	3.86	1.64	4.62	1.23	4.75	1.26	2.72	.05	.06
2. Peer Review	4.08[a,c]	1.45	3.77	1.46	4.17	1.44	4.06	1.50	4.32	1.39	1.04	.38	.02
3. Error Rate	3.98[c]	1.46	3.84	1.60	3.70	1.58	4.00	1.30	4.27	1.35	1.08	.36	.02
4. General Acceptance	4.75[b]	1.31	4.69	1.34	4.77	1.48	4.82	1.03	4.73	1.40	.07	.98	.00
(1-7 scales, 1 = "Disagree very strongly", 3 = "Disagree", 5 = "Agree", 7 = "Agree very strongly")													

Note: Sample sizes vary slightly from the respective group sample size for each mean computed. All variables were measured on 1-7 scales. Superscripts for the *Daubert* factors represent overall sample pairwise comparisons; pairs sharing the same superscript did not have statistically significant mean differences.

The decision to admit the expert testimony was unrelated to judicial job title $t(146) = .95, p = .34$, judge tenure $r(141) = .06, p = .48$, and judicial political affiliation $t(78) = .05, p = .96$. Although there appeared to be a gender difference in admissibility decisions, with men ($M = 3.61$, $SD = 1.78$) more likely to admit the evidence than women ($M = 2.88$, $SD = 1.53$), this difference in means was not statistically significant $t(145) = 1.93, p = .06$.

Admittance of the expert testimony was related to familiarity with the field of I/O psychology $r(148) = .17, p = .04$, with greater familiarity associated with a greater likelihood to admit. Prior exposure to I/O psychology testimony in written or oral form was also related to admittance, as judges who had previous exposure were more likely ($M = 4.06$, $SD = 1.71$) to admit the evidence than those who did not have previous exposure ($M = 3.34$, $SD = 1.74$) to I/O psychology testimony, $t(146) = -2.06, p = .04$.

In the overall sample, judges did not appear to rely heavily upon all four *Daubert* factors in their assessment of the expert's testimony. Judges rated themselves neutral as to the extent to which testability ($M = 4.38$, $SD = 1.51$), peer review ($M = 4.08$, $SD = 1.45$), and error rate ($M = 3.98$, $SD = 1.46$) concerns affected their judgment of evidentiary reliability. Judges ascribed the most weight to the fourth *Daubert* factor, and on average agreed to the notion that general acceptance by the relevant scientific community ($M = 4.75$, $SD = 1.31$) affected their judgment of evidentiary reliability.

In order to explore whether in the overall sample judges emphasized some of the *Daubert* factors over others (regardless of scenario presented), a one-way within-subjects ANOVA was performed. A significant difference in reliance on the *Daubert* factors was observed, Wilks' $\Lambda = .73$, $F(3, 141) = 17.60, p < .001$. Six follow-up pairwise

comparisons were then conducted using paired-samples *t*-tests to analyze the differences in emphasis among the *Daubert* factors. Utilizing a Bonferroni-adjusted *p*-value of .008 to maintain a familywise error rate of $\alpha = .05$, 4 of the 6 pairwise comparisons were statistically significant. Mean differences were observed on all 3 comparisons involving the general acceptance *Daubert* factor; general acceptance received a statistically higher mean rating than the *Daubert* factors of testability, peer review, and error rate. The pairwise comparison of testability and error rate revealed a statistically significant higher rating on the testability factor than for the error rate factor. The pairwise comparisons of testability to peer review and peer review to error rate were not statistically significant.

Table 3 presents patterns of relationships among all the dependent variables and the 4 *Daubert* factors. Evidence admittance, relevance, reliability, and probative value were all positively correlated, $p < .01$, with the intercorrelations varying between .60 and .80. Of particular note are the correlations of these four dependent variables with the prejudicial nature of evidence dependent variable. Prejudice was inversely correlated, $p < .05$, with assessment of evidentiary admittance, relevance, reliability, and probative value. Thus, greater attributions of prejudice were associated with lower likelihood to admit the evidence, and affiliated with decreased confidence in evidence relevance, reliability, and probative value. The four Daubert factors were all positively correlated, $p < .01$, with the intercorrelations ranging between .38 and .54.

Table 3
Correlation Matrix of the Dependent Variables and *Daubert* Factors for the Entire Sample

Variable		1	2	3	4	5	6	7	8	9
1.	Admittance	148								
2.	Relevance	.72**	149							
3.	Prejudicial Nature	-.32**	-.21*	147						
4.	Reliability	.71**	.60**	-.22**	148					
5.	Probative Value	.80**	.73**	-.20*	.75**	147				
6.	Testability	.41**	.24**	-.18*	.34**	.43**	145			
7.	Peer Review	.22**	.25**	-.06	.21*	.28**	.45**	147		
8.	Error Rate	.16	.07	-.02	.08	.24**	.54**	.53**	146	
9.	General Acceptance	.28**	.28**	-.15	.13	.30**	.38**	.46**	.48**	147

Note. Variable sample sizes are listed on the diagonal. All variables are continuous and measured on 7-point scales. Variables 1-5 represent dependent variables, and variables 6-9 denote reliance on the *Daubert* factors. * $p < .05$; ** $p<.01$

Judicial Assessments of Expert Witness Testimony by Scenario

Random assignment of judges to the four scenarios appeared to be successful, as statistical tests (chi-square analyses and ANOVAs) and qualitative inspection revealed that there were no statistically significant differences on the demographic and exploratory variables (gender, title, tenure, nominating president, party affiliation, familiarity with I/O psychology, and prior exposure to I/O testimony) observed across the four scenarios.

A one-way ANOVA revealed that admittance likelihood was unrelated to the expert witness scenario presented, $F(3, 144) = 1.88$, $p = .14$. In order to ascertain if scenario was related to admittance likelihood after controlling for judicial familiarity and previous judicial exposure to I/O psychology, 2 separate ANCOVAs were conducted. Scenario was unrelated to admittance likelihood after controlling for familiarity, $F(3, 143) = 1.84$, $p = .14$, and after controlling for previous exposure, $F(3,143) = 1.56$, $p = .20$. Because admittance likelihood was the dependent variable of greatest interest, we additionally performed two types of exploratory analyses: polynomial analyses, and pairwise comparisons of scenario means. The follow-up linear polynomial contrasts of the four means did reveal a linear increase in mean admittance across the four expert witness scenarios, $F(1, 144) = 4.20$, $p = .04$. Pairwise comparisons of admittance likelihood among the 4 scenarios were computed using t-tests. A statistically significant difference in likelihood of admittance was observed between scenario 1, clinical evidence ($M = 3.15$) and scenario 4, meta-analytic evidence ($M = 4.00$), $t(144) = -2.21$, $p = .03$. There were no statistically significant mean differences in admittance likelihood for the remaining 5 pairwise comparisons (scenario 1 v. 2, 1 v. 3, 2 v. 3, 2 v. 4, and 3 v. 4).

The effect of scenario on the other four dependent variables was also examined with one-way ANOVA analyses. The scenario presented did not affect assessment of evidentiary relevance, $F(3, 145) = 1.00, p = .39$, prejudicial nature, $F(3, 143) = .20, p = .90$, reliability, $F(3, 144) = .35, p = .79$, or probative value, $F(3, 143) = 1.07, p = .37$.

Qualitative interpretation of the raw statistics and associated judicial commentary for the 5 dependent variables are included in following sections.

A MANOVA was performed to examine potential relationships among the four *Daubert* factors and the four expert witness scenarios. Reliance on the four *Daubert* factors was unrelated to scenario, Wilks' $\Lambda = .91$, $F(12, 363) = 1.11, p = .35$. Individual one-way ANOVAs were computed to supplement the MANOVA finding. A difference in reliance on the testability *Daubert* factor was observed across the 4 scenarios, $F(3, 141) = 2.72, p < .05$. Pairwise comparisons of scenario means for the testability factor revealed 2 statistically significantly differences. Scenario 2, non-published evidence ($M = 3.86$) received lower reliance on testability than scenario 3, published evidence ($M = 4.62$), $t(141) = -2.01, p < .05$. Furthermore, scenario 2, non-published evidence ($M = 3.86$) received lower reliance on the testability *Daubert* factor than scenario 4, meta-analytic evidence ($M = 4.75$), $t(141) = -2.50, p = .01$. The other 4 pairwise comparisons for testability (scenario 1 v. 2, 1 v. 3, 1 v. 4, and 3 v. 4) were not statistically significant.

Three one-way ANOVAs demonstrated that the scenario assigned did not affect judicial reliance on the other 3 *Daubert* factors of evidentiary peer review status, $F(3, 143) = 1.04, p = .38$, error rate, $F(3, 142) = 1.08, p = .36$, or general acceptance, $F(3, 143) = .07, p = .98$.

To supplement the information gleaned from the statistical tests described above, it is informative to probe the underlying meaning affiliated with the judges' quantitative responses to the dependent variables.

Judicial Evaluation of Personal Experience/Clinical Testimony (Scenario 1)

The clinical testimony scenario based solely upon personal experience received the lowest mean ratings on all 5 dependent variables, although judges indicated that they were still moderately likely to admit the evidence (M= 3.15, SD = 1.71). Judges rated this testimony as moderately relevant, moderately reliable, moderately probative, and moderately prejudicial.

Judicial Evaluation of Unpublished vs. Published Data Testimony (Scenarios 2 & 3)

Scenarios 2 and 3, which relied upon a description of the clinical testimony and the addition of the expert discussing either an unpublished study (scenario 2) or a published study (scenario 3), received very similar ratings on all 5 dependent variables. For both scenarios, judges were moderately likely to admit the proffered evidence (M = 3.37, SD = 1.69 and M = 3.34, SD = 1.80, for scenarios 2 and 3 respectively). In contrast to the first scenario, scenarios 2 and 3 were given somewhat higher mean ratings of relevance, reliability, probative value, and prejudicial nature.

Judicial Evaluation of Meta-Analytic Testimony (Scenario 4)

Scenario 4, which described the clinical testimony and additional discussion of a relevant published meta-analytic study, received the highest overall mean ratings for admittance (M = 4.00, SD = 1.75), relevance (M = 4.00, SD = 1.61), and probative value (M = 3.59, SD = 1.51). Thus, judges were likely to admit this testimony, and rated it on

average, as relevant and probative. The testimony in scenario 4 was also labeled as prejudicial ($M = 3.55$, $SD = 1.53$), and moderately reliable ($M = 3.43$, $SD = 1.25$).

Qualitative Judicial Commentary

Approximately 56 (37%) of the judges provided written commentary related to the study. Recurring issues that emerged from the written comments can be roughly categorized into four areas: (1) judicial justification for the evidentiary admittance decision and related assessments of the evidence, (2) knowledge and perceptions of I/O psychology, (3) discussion of *Daubert* and its application to social scientific evidence, and (4) observations on the study and its survey methodology.

CHAPTER IV

DISCUSSION

Judicial Evaluation of I/O Psychology Expert Witness Testimony

The federal judges surveyed in the present study were relatively unacquainted with the field of I/O psychology. A scant 8% of the judges rated themselves as at least familiar with the field, and only 21% had previously heard or read the testimony of an I/O psychologist in a legal context. Qualitative commentary provided by a number of judges demonstrates that I/O psychology is a scientific discipline which is somewhat foreign to many members of the federal judiciary. In illustrative written comments, some judges inquired whether I/O psychology has sets of defined principles, and disputed whether the field of I/O psychology even encompasses the subject matter in the situation presented. Other judges queried if industrial psychology is actually a recognized scientific field, and declared that considerations such as job performance and economics seem to have marginal psychological components at best.

Notwithstanding the aforementioned judicial unfamiliarity with the field of I/O psychology, the majority (66%) of the judges were at least moderately likely to admit the expert's testimony, regardless of the scenario presented. Less than a fourth of the judges (19%) rated themselves as not at all likely to admit the evidence. Thus, the likelihood of admitting the evidence compares very favorably to Kovera and McAuliff's (2000) recent findings, where only 17% of Florida state circuit court judges decided to admit relevant and valid psychological expert testimony in a description of a civil case involving

workplace sexual harassment. Not only were judges in the present sample typically persuaded to admit the expert's testimony, they also tended to view it on average as relevant to the company's RIF endeavors, moderately probative, and moderately reliable. However, judges did show some concern over the potential for unfair prejudice in the expert's testimony, with judges rating the testimony as prejudicial overall. Numerous judges alluded to Federal Rule of Evidence 403, which provides the following: "Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence" (Mueller & Kirkpatrick, 1999, p.75). More specifically, some judges feared that the testimony's probative value would be exceeded by its potential for misleading the jury, especially if the expert's conclusions strayed into speculation regarding the company's motive. It is instructive to further explore these issues of evidentiary relevance, reliability, probative value, and unfair prejudice by contrasting written judicial rationales for inclusion or exclusion of the evidence.

A subjective review of judicial comments revealed that judges who mentioned they were inclined to exclude the evidence were quick to point out that the ultimate issue in a RIF age discrimination case is that of intent. As the expert in this case cannot testify as to the underlying motivation of the corporation and company officials, or provide insight on whether the particular employee suffered from age-related bias, some judges viewed the expert's testimony as merely *ex post* rationalization of an employer's decisions. These judges highlighted that the expert is serving only to bolster the claims of company officials, and is evaluating their version of events, rather than providing distinct

information on the issue of age discrimination. In addition, some judges believed the expert's testimony to be within the realm and commonsense of the jury, and thus, jurors would be equally qualified to assess the RIF process. However, a number of these judges avowed that they would have included the evidence had the expert been hired prior to the litigation, if the expert had assisted in the actual RIF efforts, or if the expert had conducted earlier scientific RIF studies with the company.

Judges who wrote that they were inclined to include the evidence emphasized a number of different key points. Whereas these judges reiterated that the expert cannot conclude that age discrimination did not occur, they did support the expert's testimony on the legitimacy of the RIF process, and the testimony as to the extent to which reliable and valid criteria were employed in employee performance appraisal and RIF procedures. Other judges who were inclined to admit the evidence made the observation that the expert's testimony would be useful if it showed that the company adhered to any kind of performance appraisal system (no matter how unreliable or ill-conceived), as long as that system was not a discriminatory one. In other words, the expert's testimony was most useful if it portrayed the utilization of a structured systematic RIF process, and the testimony was of lesser importance in addressing whether that process was the most efficient or effective one in achieving stated company objectives.

It is especially noteworthy that both judicial familiarity with I/O psychology and previous judicial exposure to I/O psychology courtroom testimony were found to be positively related to the decision to admit the expert's testimony. These findings may indicate that federal judges who are exposed to I/O psychology subsequently possess greater confidence in its scientific underpinnings, methodologies, and potential

contribution to legal settings than judges who are unfamiliar with the field. Unfortunately, most of the judges in this sample were unfamiliar with I/O psychology, and were unaware that it is a recognized scientific field relatively distinct from the more commonly known areas of psychology (e.g., clinical, counseling).

The Impact of *Daubert* and Judicial Gatekeeping on Social Scientific Expert Testimony

Judges' evaluations of the expert testimony shed light on the general use and application of the *Daubert* standard to I/O psychology social scientific evidence. On average, judges did not place much overt emphasis on the *Daubert* factors of testability, peer review, and error rate in their assessments of evidentiary reliability. However, judges did explicitly ascribe greater importance to the general acceptance *Daubert* factor. These findings conform with the results of Gatowski et al. (2001), where state judges had extreme difficulties in operationalizing falsifiability (testability) and error rate, and tended to grant general acceptance the most weight when posed with reliability and admissibility issues. Gatowski et al. (2001) further discovered that judicial perceptions, understanding (or misunderstanding), and application of the *Daubert* standards were similar across different states, irrespective of whether the judge presided in a state that mandated *Daubert* or non-*Daubert* (e.g., *Frye,* or *Frye* hybrid) standards. Our results have extended Gatowski et al.'s findings to the federal level, where comparable confusion appears to exist over the utilization of *Daubert* criteria with social scientific evidence. Our findings are also consistent with the notion that judges are more comfortable employing the earlier *Frye* (1923) admissibility standard, which revolved exclusively around the general acceptance of an expert's techniques and methods by the relevant scientific community. In addition, it is likely that judges had difficulty

operationalizing *Daubert* in the context presented; clinical behavioral and social scientific testimony pose unique challenges to judges who must make assessments of scientific validity. In such social scientific situations, judges may decide to simply rely on the experience of the expert or compare that expert's credentials with similar practitioners, instead of dissecting the evidence with scientific rigor (Shuman & Sales, 1999).

Comments provided by many judges revealed that they support their gatekeeping role as envisioned by *Daubert,* and that they would be inclined to hold a *Daubert* hearing to specifically address the foundation upon which the expert's testimony resides. Nevertheless, these same judges highlighted the flexible nature of any *Daubert* inquiry, and professed that they would rather err liberally on the side of inclusion when presented with idiosyncratic social scientific evidence.

This liberal bias towards inclusion of the evidence was most evident in the finding that there were not substantial differences in likelihood of admittance observed across the four scenarios. It appears that for most judges, the information contained in scenario 1 (personal experience alone) was sufficient to persuade them that the evidence was adequately reliable, relevant, and admissible. This result points to the importance of an expert's credentials, background, training, and interactions with an organization. Despite the fact that this personal experience foundation for expert testimony does not offer data on evidentiary testability, error rate, and peer review status, it appears to satisfactorily convince judges regarding evidentiary relevance, reliability, and probative value. The addition of specific testimony on a relevant scientific study (or studies) to the expert's personal experience testimony did not appreciably affect the judges' assessments of the testimony. This finding may point to the inherent strengths in the first scenario, a lack of

confidence in, or understanding of, the scientific studies summarized in scenarios 2-4, or a combination of both. It also raises the question of whether judges possess the requisite scientific literacy to act as critical consumers of social scientific expert evidence as prescribed by *Daubert* (Gatowski et al., 2001). Conversely, this finding may reveal that judges are simply not swayed by social scientific studies that are not directly tailored to the facts of an individual case, regardless of whether they exist in isolation or in meta-analytic research, or have been published or not. In the present study, judges were content to rely upon an expert's testimony that was based upon case-specific interactions and consultation with the defending organization rather than empirical research of any type.

One federal judge's remarks (who responded to the description of scenario 4 involving meta-analytic evidence) perhaps best exemplify the prototypical viewpoint of the judges in this sample towards the evidence presented:

> The opinion evidence is likely to be helpful to the trier of fact and is rational on its face. The experience of the witness is adequate...There are distinct limits to the value of the *Daubert* rule which when carried beyond the facts of the case, and *Kumho Tire*, trespass on the right of the trial jury to determine the facts and the weight and the significance of the evidence. The theory of the Federal Rules of Evidence is one of inclusiveness. The proffered evidence is not hard science, but it is not junk science either. Plausible opinions from individuals trained and experienced in a specialized field ought to be admitted even if the Trial Judge disagrees.

Limitations

One significant constraint on the interpretation of results from this study is the artificial nature of the scenarios presented to the judges. Due to practical considerations, the descriptions of the RIF scenario and expert witness scenarios were necessarily condensed, and these abridged documents presented to the judges did not contain the extensive information that would be encountered in an actual trial setting. Furthermore, as a number of judges lamented, we did not provide a scenario with expert witness testimony for the plaintiff side. Some judges affirmed that such contrasting expert testimony offered by the opposing side would have been admitted as well, and subsequent cross-examination of the witnesses would have illuminated many of the issues we sought to investigate. Despite these caveats, the survey research methods applied to this study have distinct advantages over the more commonly used judicial decision making research method, analysis of published case law. First, published case law does not allow the researcher to create and manipulate variables of interest for research purposes. Second, published case law entails examining *post hoc* justifications for courtroom decisions, which do not entirely capture the factors that affect judicial decisions (Gatowski, et al., 2001). Finally, our survey guaranteed anonymity for respondents, and allowed for both quantitative and qualitative input, thereby allowing judges to freely voice their opinions on the subject matter.

The response rate of 11% and accompanying sample size of 150 federal judges met or exceeded our expectations. The federal judiciary is an august, exclusive society, comprised of highly educated individuals with pressing workloads and extreme time demands. Whereas we could locate no other comparable external survey attempts

involving the federal judiciary, it is interesting to note that The Federal Judicial Center, the internal research and education agency of the entire federal judicial system, achieved a response rate of 51% in a recent survey of all active district judges (Johnson et al., 2000). Indubitably, the length and scope of our survey, judicial unfamiliarity with our academic affiliation and research interests, and the inopportune timing of the survey mailing prohibited us from achieving this upper bound response rate of 51%. Notwithstanding the satisfactory response to the survey, the statistical results in the present study were undoubtedly affected by the relatively small sample sizes for the four scenarios. Moreover, concerns over the small sample sizes and Type I error limited the overall number of analyses we performed.

Conclusions and Recommendations

This is the first empirical examination of judicial decision making involving the field of industrial/organizational psychology and active members of the federal judiciary. Moreover, to our knowledge, it is the only study to date that assesses the perceptions of active federal judges towards psychological testimony that varies in content according to the *Daubert* criteria. The results from this study provide a solid foundation for future research on the topics of I/O psychology and the law, psychological expert witness testimony in employment discrimination litigation, and the application of the *Daubert* criteria to social scientific evidence.

The ramifications from these survey results can also be used to provide pragmatic guidance to I/O psychologists and other social scientists who aim to serve as expert witnesses in employment discrimination litigation in the federal court system. Drawing

upon the quantitative and qualitative responses to this study, a number of enduring themes materialized that proved integral to judicial assessments of the expert testimony.

First, experts may want to present the court with a comprehensive depiction of their credentials, education, training, and organizational experiences, as these factors may affect judicial assessments of evidentiary value. Second, if an expert's specialty is outside the quotidian experience of the court (e.g., I/O psychology), or is a relatively obscure scientific discipline, the expert might want to take extra steps to clarify the nature and origin of his or her specialty. It would behoove the expert to supply the court with information that details the scientific methods, academic institutions and publications, and professional societies that are associated with that specialty. Providing the court with information on how their specialty is similar/dissimilar to other recognized specialties may especially assist experts in establishing their credibility. Third, experts may wish to emphasize how their contribution to the present litigation is unique; in other words, experts must stress that their testimony and conclusions are based upon advanced education, experiences, or scientific or technical knowledge, that is unavailable to the average juror. Judges in the present study viewed the testimony negatively when they believed it to be within the realm and commonsense of the jury, or when it was perceived as consuming excessive amounts of time while containing little original or new information. Fourth, experts are advised to avoid the pitfall of offering conclusions that are solely within the province of the jury, or attempting to testify as to the intent or motivation behind company actions; very rarely can an expert offer testimony on the ultimate issue of whether discrimination actually occurred. Fifth, the expert may wish to accord special attention in demonstrating that his or her methods have gained general

acceptance within the scientific community, as judges apparently scrutinize evidentiary reliability with added emphasis on this *Daubert* factor. Sixth, it is recommended that experts underscore their adherence to ethical and scientific principles, and affirm that their judgments in the case are not biased simply because they have been retained by the defending party in litigation. Even more convincing would be evidence that the expert had worked for the defendant on related organizational matters prior to the civil litigation. Seventh, experts who wish to offer testimony involving scientific studies may want to accentuate the concrete linkages between the cited research and the relevant litigation; this is particularly important when the potential exists that the studies may be viewed by the judge as abstract academic exercises unrelated to the defending organization.

The above guidelines represent various ways in which expert witnesses may wish to tailor their testimony in order to influence the legal process. Based on the results of this study, it is also incumbent upon the field of I/O psychology to better educate judges and other members of the legal profession about its scientific and professional foci. Scholars and practitioners would be well advised to disseminate their findings in outlets that reach the legal community, and expert witnesses must be cognizant that their testimony may significantly influence judicial perceptions of their scientific discipline.

Future research should additionally explicate the impact of I/O psychology in the courtroom, and examine potential interactions between social science, expert testimony, and the law. Scientists can expand upon the nascent literature on I/O psychology and the law by examining the role of I/O psychology in other legal settings such as state courts and federal courts of appeals. Other fertile avenues for research include analyzing the role of I/O psychology in litigation that varies according to the bases for discrimination claims

(e.g., race, gender), organizational employment issues (e.g., hiring, promotion) and category of discrimination (e.g., adverse impact).

REFERENCES

(An asterisk is used to denote federal court cases involving I/O psychology expert witnesses)

*Adams v. City of Chicago, 1996 U.S. Dist. LEXIS 3567 (1996).

*Adams v. Indiana Bell Tel. CO., 1998 U.S. Dist. LEXIS 5676 (1998).

*AFSCME v. County of Nassau, 1997 U.S. App. LEXIS 25259 (1997).

Age Discrimination in Employment Act of 1967, 29 U.S.C. § 621-634.

*Albright v. City of New Orleans, 1999 U.S. Dist. LEXIS 5634 (1999).

*Ashton v. City of Memphis, 1999 U.S. Dist. LEXIS 7311 (1999).

*Association of Mexican-American Educators v. California, 1996 U.S. Dist. LEXIS 13787 (1996).

Baute, P. (2001). Further guidelines for the organizational psychologist preparing for expert witness. The Industrial-Organizational Psychologist, 38 (3), 128-130.

Berger, M. A. (2000). The Supreme Court's trilogy on the admissibility of expert testimony. In The Federal Judicial Center's Reference manual on scientific evidence (2nd ed., pp. 9-38) [On-line]. Available: http:// air.fjc.gov/public/fjcweb.nsf/pages/16

Bersoff, D. N., & Glass, D. J. (1995). The not-so Weisman: The Supreme Court's continuing misuse of social science research. University of Chicago Law School Roundtable, 2 (1), 279-302.

Bessey, B. L., & Ananda, S. M. (1991). Age discrimination in employment: An interdisciplinary review of the ADEA. Research on Aging, 13, 413-457.

*Bridgeport Guardians Inc., v. Bridgeport, 1991 U.S. App. LEXIS 10852 (1991).

*Brink v. Union Carbide Corp., 1999 U.S. Dist. LEXIS 1732 (1999).

*Brown v. City of Chicago, 1998 U.S. Dist. LEXIS 10721 (1998).

*Brunet v. City of Columbus, 1995 U.S. App. LEXIS 15896 (1995).

*Brunet v. City of Columbus, 1993 U.S. App. LEXIS 19315 (1993).

*Camp v. Lockheed Martin Corp., 1998 U.S. Dist. LEXIS 20750 (1998).

Carp, R. A., & Stidham, R. (1996). Judicial process in America. Washington, DC: Congressional Quarterly Inc.

Carp, R. A., & Stidham, R. (2001). The federal courts (4th ed.). Washington, DC: Congressional Quarterly Inc.

Congressional Quarterly's Judicial staff directory (18th ed.). (2001). Washington, D.C.: CQ Press.

Connerley, M. L., Arvey, R. D., Cascio, W. F., Harris, M. M., Hough, L. M., & Jeanneret, P. R. (2001). Everything you want to know about being an expert witness. Panel discussion conducted at the 16th annual meeting of the Society for Industrial and Organizational Psychology, San Diego, CA.

*Cook v. Billington, 1992 U.S. Dist. LEXIS 12519 (1992).

*Crum v. American Airlines Inc., 1991 U.S. App. LEXIS 26410 (1991).

Cwik, C. H. (1999). Guarding the gate: Expert evidence admissibility. Litigation, 25 (4), 6-12.

Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993).

*Davis v. Alabama Department of Education, 1991 U.S. Dist. LEXIS 20096 (1991).

*Dicker v. Allstate Life Ins. CO., 1997 U.S. Dist. LEXIS 4512 (1997).

*Dipompo v. West Point Military Academy, 1991 U.S. Dist. LEXIS 11457 (1991).

EEOC (2002). Charge statistics FY 1992 through FY 2001 [On-line]. Available: http://www.eeoc.gov/stats/charges.html

*EEOC v. Joe's Stone Crab Inc., 1998 U.S. Dist. LEXIS 12604 (1998).

*EEOC v. Simpson Timber CO., 1992 U.S. Dist. LEXIS 5829 (1992).

Federal Judicial Center (1999). Understanding the federal courts. Retrieved from http://www.uscourts.gov/UFC99.pdf

*Flavel v. Svedala Industries, 1994 U.S. Dist. LEXIS 19774 (1994).

Frye v. United States, 1923 U.S. App. LEXIS 1712 (1923).

Fullerton, H. N., Jr. (1997). Labor force 2006: Slowing down and changing composition. Monthly Labor Review, 120 (11), 23-28.

Gatowski, S. I., Dobbin, S. A., Richardson, J. T., Ginsburg, G. P., Merlino, M. L., & Dahir, V. (2001). Asking the gatekeepers: A national survey of judges on judging expert evidence in a post-*Daubert* world. Law and Human Behavior, 25 (5), 433-458.

General Electric Co. v. Joiner, 522 U.S. 136 (1997).

*Gonzalez v. Conoco, Inc., 1999 U.S. Dist. LEXIS 19936 (1999).

Goodman-Delahunty, J. (1999). Civil law: Employment and discrimination. In R. Roesch, S. D. Hart, & J. R. P. Ogloff (Eds.), Psychology and law: The state of the discipline (pp.277-337). New York: Kluwer Academic/Plenum.

*Graffam v. Scott Paper, Inc., 1994 U.S. Dist. LEXIS 18127 (1994).

*Graffam v. Scott Paper CO., 1995 U.S. App. LEXIS 17120 (1995).

Grove, W. M., & Barden, R. C. (1999). Protecting the integrity of the legal system: The admissibility of testimony from mental health experts under Daubert/Kumho analyses. Psychology, Public Policy, and Law, 5 (1), 224-242.

Gutman, A. (2001). On the legal front. The Industrial-Organizational Psychologist, 38 (3), 76-79.

Haney, C. (1980). Psychology and legal change: On the limits of a factual jurisprudence. Law and Human Behavior, 4 (3), 147-200.

*Harper v. Sullivan, 1990 U.S. Dist. LEXIS 15302 (1990).

Harris, M. M. (2000). I-O Psychology in the courtroom: Implications of the Daubert standard. The Industrial-Organizational Psychologist, 38 (2), 42-46.

*Haschmann v. Time Warner Entertainment CO., 1998 U.S. App. LEXIS 17153 (1998).

Highberger, W. F. (1996). Current evidentiary issues in employment litigation. Employee Relations, 22, 31-56.

*Hixson v. County of Alameda Sheriff's Dept., 1999 U.S. Dist. LEXIS 7215 (1999).

*Hurst v. F. W. Woolworth CO., 1997 U.S. Dist. LEXIS 17233 (1997).

Johnson, M. T., Krafka, C., & Cecil, J. S. (2000). Expert testimony in federal civil trials: A preliminary analysis. Washington, DC: Federal Judicial Center.

*Johnson v. Garrett, 1991 U.S. Dist. LEXIS 8185 (1991).

*Johnson v. Uncle Ben's, 1992 U.S. App. LEXIS 14931 (1992).

*Kelly v. Drexel University, 1995 U.S. Dist. LEXIS 16873 (1995).

Kovera, M. B., & McAuliff, B. D. (2000). The effects of peer review and evidence quality on judge evaluations of psychological science: Are judges effective gatekeepers? Journal of Applied Psychology, 85 (4), 574-586.

Krauss, D. A. & Sales, B. D. (2001). The effects of clinical and scientific expert testimony on juror decision making in capital sentencing. Psychology, Public Policy, and Law, 7 (2), 267-310.

Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

*Lanning v. SEPTA, 1998 U.S. Dist. LEXIS 9388 (1998).

*Lanning v. SEPTA, 2000 U.S. App. LEXIS 14607 (2000).

*Latson v. GC Services., 2000 U.S. Dist. LEXIS 6295 (2000).

Lehman, D. R., Lempert, R. O., & Nisbett, R. E. (1988). The effects of graduate training on reasoning: Formal discipline and thinking about everyday life events. American Psychologist, 43, 431-443.

*Lenihan v. Boeing CO., 1998 U.S. Dist. LEXIS 11931 (1998).

Lindemann, B., & Grossman, P. (1996). Employment discrimination law (3rd ed.). Washington, DC: Bureau of National Affairs.

*Manns v. Fieldcrest Cannon, Inc., 1999 U.S. Dist. LEXIS 21872 (1999).

Mark, M. M. (1999). Social science evidence in the courtroom: Daubert and beyond? Psychology, Public Policy, and Law, 5 (1), 175-193.

McDonnell Douglas Corp. v. Green, 411 U. S. 792 (1973).

*McNamara v. City of Chicago, 1997 U.S. Dist. LEXIS 2477 (1997).

Monahan, J., & Walker, L. (1988). Social science research in law: A new paradigm. American Psychologist, 43 (6), 465-472.

Monahan, J., & Walker, L. (1991). Judicial use of social science research. Law and Human Behavior, 15 (6), 571-584.

*Mooney v. Aramco Services CO., 1995 U.S. App. LEXIS 15107 (1995).

Morgeson, F. P., Campion, M. A., Goldstein, I. L., Jacobs, R. R., & Kolmstetter, E. B. (2001). Developing human resource systems in legally contentious environments. Panel discussion conducted at the 16th annual meeting of the Society for Industrial and Organizational Psychology, San Diego, CA.

Muchinsky, P. M. (1997). Psychology applied to work. Pacific Grove, CA: Brooks/Cole.

Mueller, C. B., & Kirkpatrick, L. C. (1999). Federal rules of evidence, with advisory committee notes, legislative history, and cases. New York, NY: Aspen Law and Business.

*Myracle v. General Electric, 1992 U.S. Dist. LEXIS 22474 (1992).

*Myracle v. General Electric, 1994 U.S. App. LEXIS 23307 (1994).

*Nash v. Consolidated City of Jacksonville, 1995 U.S. Dist. LEXIS 16397 (1995).

Nietzel, M. T., McCarthy, D. M., & Kerr, M. J. (1999). Juries: The current state of the empirical literature. In R. Roesch, S. D. Hart, & J. R. P. Ogloff (Eds.), Psychology and law: The state of the discipline (pp.23-52). New York: Kluwer Academic/Plenum.

*NLRB v. Oregon Steel Mills, 1994 U.S. App. LEXIS 3320 (1994).

Ogloff, J. R. P., & Finkelman, D. (1999). Psychology and law: An overview. In R. Roesch, S. D. Hart, & J. R. P. Ogloff (Eds.), Psychology and law: The state of the discipline (pp.1-20). New York: Kluwer Academic/Plenum.

*Police Officers for Equal Rights v. Columbus, 1990 U.S. App. LEXIS 18394 (1990).

*Puhy v. Delta Air Lines, 1993 U.S. Dist. LEXIS 14210 (1993).

Redding, R. E. (1998). How common-sense psychology can inform law and psycholegal research. University of Chicago Law School Roundtable, 5 (1), 107-142.

Redding, R. E., & Repucci, N. D. (1999). Effects of lawyer's socio-political attitudes on their judgments of social science in legal decision making. Law and Human Behavior, 23 (1), 31-54.

*Reynolds v. Alabama DOT, 1998 U.S. Dist. LEXIS 10715 (1998).

Roesch, R., Hart, S. D., & Ogloff, J. R. P. (Eds.). (1999). Psychology and law: The state of the discipline. New York: Kluwer Academic/Plenum.

*Roniger v. McCall, 2000 U.S. Dist. LEXIS 11999 (2000).

Shuman, D. W., & Sales, B. D. (1998). The admissibility of expert testimony based upon clinical judgment and scientific research. Psychology, Public Policy, and Law, 4 (4), 1226-1252.

Shuman, D. W. & Sales, B. D. (1999). The impact of Daubert and its progeny on the admissibility of behavioral and social science evidence. Psychology, Public Policy, and Law, 5 (1), 3-15.

*Sims v. Montgomery County Commission, 1996 U.S. Dist. LEXIS 10674 (1996).

Sleek, S. (1998a). APA works to secure psychologists' ability to serve as expert witnesses. APA Monitor, 29 (2), 34.

Sleek, S. (1998b). Is psychologists' testimony going unheard? APA Monitor, 29 (2), 1, 34.

Small, M. A. (1993). Legal psychology and therapeutic jurisprudence. Saint Louis University Law Journal, 37, 675-700.

Society for Industrial and Organizational Psychology. The science and practice of industrial and organizational psychology. [Brochure]. Bowling Green, OH: Author.

*Sperling v. Hoffman-La Roche Inc., 1996 U.S. Dist. LEXIS 10674 (1996).

St. Mary's Honor Center v. Hicks, 509 U.S. 502 (1993).

*Stender v. Lucky Stores, 1992 U.S. Dist. LEXIS 12546 (1992).

Stolle, D. P., Robbennolt, J. K., & Wiener, R. L. (1996). The perceived fairness of the psychologist trial consultant: An empirical investigation. Law and Psychology Review, 20, 139-177.

Tanford, J. A. (1990). The limits of scientific jurisprudence: The Supreme Court and psychology. Indiana Law Journal, 66, 137-173.

Tenopyr, M. L. (1999). A scientist-practitioner's viewpoint on the admissibility of behavioral and social scientific information. Psychology, Public Policy, and Law, 5 (1), 194-202.

Texas Department of Community Affairs v. Burdine, 450 U.S. 248 (1981).

Toch, H. (1961). Legal and criminal psychology. New York, NY: Holt, Rinehart, & Winston.

*Tye v. Cincinnati, 1992 U.S. Dist. LEXIS 7708 (1992).

*United States v. City of Torrance, 2000 U.S. App. LEXIS 10971 (2000).

*United States v. Montgomery, 1991 U.S. Dist. LEXIS 14898 (1991).

United States Department of Health and Human Services, Administration on Aging (1999). Age discrimination: A pervasive and damaging influence. Washington, DC: U. S. Government Printing Office.

*Waldorf v. Shuta, 1992 U.S. Dist. LEXIS 17613 (1992).

Wells, G. L., Wright, E. F., & Bradfield, A. L. (1999). Witnesses to crime: Social and cognitive factors governing the validity of people's reports. In R. Roesch, S. D. Hart, & J. R. P. Ogloff (Eds.), Psychology and law: The state of the discipline (pp.277-337). New York: Kluwer Academic/Plenum.

Williamson, L. G., Campion, J. E., Malos, S. B., Roehling, M. V., & Campion, M. A. (1997). Employment interview on trial: Linking interview structure with litigation outcomes. Journal of Applied Psychology, 82 (6), 900-912.

Wingate, P. H., Thornton, G. C., McIntyre, K. S., & Frame, J. H. (in press). Organizational downsizing and age discrimination litigation: The influence of personnel practices and statistical evidence on litigation outcomes. Law and Human Behavior: Special Issue on Civil Litigation.

Wrightsman, L. S. (1999). Judicial decision making: Is psychology relevant? NY: Kluwer Academic/Plenum.

Youngstrom, E. A., & Busch, C. P. (2000). Expert testimony in psychology: Ramifications of Supreme Court decision in *Kumho Tire Co., Ltd. v. Carmichael.* Ethics and Behavior, 10 (2), 185-193.

APPENDIX A

COVER LETTER

October, 2001

Dear Honorable Member of the Federal Judiciary,

The utilization of expert testimony in civil litigation is a topic of great import to judges, scientists, scholars, participants in legal disputes, and members of the legal profession. Psychologists and other social scientists are currently in dire need of your contemporary perspective on their role as expert witnesses in federal civil trials.

Enclosed is a very brief survey that is designed to obtain judicial views on the field of Industrial/Organizational Psychology, and associated expert testimony. This survey is being sent to all U.S. district court judges and magistrate judges. Your voluntary participation will provide crucial insight on the admittance and usage of expert evidence, will help you and other judges understand peer views on this topic, and allow Industrial/Organizational Psychologists to realize their potential contribution within legal settings. The survey may take 10-20 minutes to complete, and a financial contribution will be made to the American Red Cross for every survey returned.

This research study, entitled *Industrial/Organizational Psychology and the Law*, has been approved by the Human Research Committee at Colorado State University, and your involvement will help to satisfy requirements for a Doctoral Degree in Industrial/Organizational Psychology. Responses to the survey are confidential, all participants will remain anonymous, and there are no known risks associated with this research.

Results of this study will be provided to you if desired; simply return the enclosed postcard separately, and you will receive a summary of the findings (in the format of your choice) upon completion of the study. Questions about the rights of participants may be directed to Celia Walker, Director of the CSU Regulatory Compliance Office at (970) 491-1563.

We greatly appreciate your input and assistance in advancing our knowledge of the interrelationship between psychology, expert witness testimony, and the law. Please complete the survey and return it in the white envelope by October 31st, or at your earliest convenience. Thank you in advance for your cooperation.

Yours truly,

Peter H. Wingate, M.A.
Ph.D. Candidate

Department of Psychology
Colorado State University
Fort Collins, CO 80523
(970) 493-5663
pwingate@lamar.colostate.edu

George C. Thornton III, Ph.D.
Professor
Diplomate, American Board of
Industrial/Organizational Psychology

Department of Psychology
Colorado State University
Fort Collins, CO 80523
(970) 491-5233
thornton@lamar.colostate.edu

APPENDIX B

ORGANIZATIONAL RIF SCENARIO

Instructions

Below is a short description of a civil case involving employment discrimination law. Read the case information contained on this page, and the expert witness information described on page 2. Due to practical constraints, the material has been condensed and oversimplified. Role-play that you are the Judge presiding over this case in a District Court, and then based on these summarized materials, complete the enclosed survey. Thank you for your participation.

Mark Johnson, Plaintiff, vs. Anycorp, Inc., Defendant

United States District Court

I. Introduction

Plaintiff Mark Johnson ("Johnson") has sued his former employer, Defendant Anycorp, Inc. ("Anycorp") alleging that he was terminated unlawfully from his employment during a reduction in force ("RIF") in violation of the Age Discrimination in Employment Act of 1967, 29 U.S.C. § 621, et seq. ("ADEA"). Anycorp contends that Johnson was terminated as part of a financially motivated RIF, and that age played no part in the decision. Anycorp argues that the termination was necessitated by economic factors, and that Johnson was selected for termination based upon valid RIF performance criteria. The Plaintiff moves to exclude the testimony of Anycorp's expert witness (described on page 2), claiming his testimony is not relevant, not reliable, and prejudicial.

II. Factual Background

At all times relevant to this case, Anycorp was a private manufacturing corporation headquartered in the United States, with a total workforce in excess of 5000 employees. In the 3 years preceding Johnson's termination, Anycorp posted a decline in sales, and suffered a notable drop in profits.

Johnson was 55 years old when terminated. Johnson had worked as a manager for Anycorp for the preceding 20 years, and had received adequate performance evaluations during the span of his employment. At the Anycorp Plant where Johnson worked, there were approximately 800 full-time workers immediately prior to the RIF, and the RIF efforts resulted in the termination of a number of workers, including Johnson and 15 coworkers from the same Plant location.

III. Summary

The Plaintiff intends to introduce circumstantial, comparative, statistical, and other evidence that he was treated in a discriminatory fashion based on his age. Johnson maintains that less qualified similarly situated younger workers in equivalent positions were retained by Anycorp, and that less qualified younger workers also assumed his duties and responsibilities. Johnson specifically attacks the RIF process and criteria that Anycorp used in determining who was selected for termination, and believes that his age was the determinative factor in his discharge.

The Defendant contends that they have legitimate, nondiscriminatory reasons for terminating the Plaintiff. Anycorp claims that economic factors prompted the RIF, and that Johnson was selected for termination based upon his inferior performance, as compared to retained employees. Anycorp intends to discuss at length their RIF process, the nature of the performance criteria used to select employees for discharge in the RIF, and the application of the RIF criteria to Johnson's particular termination.

IV. Stipulations

For the purposes of this research, assume that both Defendant and Plaintiff agree to the following:

(1) The Plaintiff's case is based upon a disparate treatment theory of discrimination.

(2) The Plaintiff was within the protected age group when given notice of his termination and discharged.

(3) The Plaintiff's lawsuit was filed in a timely fashion with the proper agencies, and the procedural aspects of this lawsuit are in accordance with all applicable laws and regulations.

APPENDIX C

EXPERT WITNESS TESTIMONY SCENARIOS

Expert Witness Information

This page describes information related to proposed expert witness testimony. The defendant, Anycorp, Inc., wishes to introduce the following expert witness testimony provided by a Dr. Smith to aid in rebutting the plaintiff's claims of age discrimination, as summarized in the preceding scenario.

Dr. Smith's Credentials

Dr. Smith, a 60 year-old male, has a Ph.D. in Industrial/Organizational (I/O) Psychology, and is currently employed as a tenured professor at a major research university. He has been a professor and researcher for more than 25 years, and has taught dozens of classes at both the undergraduate and graduate level. Dr. Smith is an active member of a number of professional organizations, including the Society for Industrial and Organizational Psychology (SIOP), and the American Psychological Association (APA). Dr. Smith has published numerous articles in scientific journals, and has authored book chapters and scholarly texts on a variety of human resources and personnel topics.

Dr. Smith's professional and scientific activities are not limited to academics. He has been consulting in organizational settings for more than 20 years, with organizations that have ranged widely in size, financial situation, geographical location, industry, and organizational structure. His consulting projects have involved diverse issues such as employee assessment and selection, organizational development, statistical analyses of workplace data, litigation support, and test construction and validation. Dr. Smith has been providing expert witness services for over 10 years, and has been previously retained by lawyers working for both plaintiffs and defendants.

Dr. Smith's Involvement in the Age Discrimination Case

Dr. Smith was initially contacted by Anycorp's legal team after the plaintiff was terminated and filed an age discrimination lawsuit. Dr. Smith did not have a pre-existing professional relationship or prior personal contact with Anycorp, and was retained as an expert witness based upon his reputation and a word-of-mouth recommendation. After an initial phone conversation with an Anycorp lawyer, Dr. Smith agreed to provide expert witness services and litigation support. Dr. Smith is being compensated at an hourly billable rate for his services until this case is resolved, and details of his participation in the case are as follows.

Dr. Smith visited Anycorp for a one-day site visit, during which time he toured the facilities where the plaintiff had worked. On the visit Dr. Smith additionally met with numerous company executives, human resource personnel, company lawyers, former coworkers of the plaintiff, and management, including the plaintiff's immediate supervisor, the head of human resources, and the CEO of Anycorp. During the visit, and on several subsequent occasions, Dr. Smith was provided with pertinent company documents that included information on the reduction in force efforts at Anycorp. Dr. Smith also received written reports on the performance appraisal process at Anycorp, plaintiff-specific data regarding job performance, and a detailed work history describing the plaintiff's employment at Anycorp. After his site visit to Anycorp, Dr. Smith maintained ongoing contact with individuals at Anycorp as related to the case, and obtained supplementary information through phone conversations, mailings, e-mail transmissions, and fax transmittals. Dr. Smith wants to highlight the importance of job analytic techniques, the existence of a standard performance rating system, extensive training and written guidelines for supervisors involved in the RIF, and review of ratings and terminations by upper level supervisors and managers at Anycorp.

Dr. Smith's Conclusions

Based upon all of the information described above, Dr. Smith offers testimony that describes the Anycorp reduction in force process, specific layoff procedures, and performance appraisal system as being valid, reliable, and job-related, and in accordance with the principles of Industrial/Organizational Psychology.

Expert Witness Information

This page describes information related to proposed expert witness testimony. The defendant, Anycorp, Inc., wishes to introduce the following expert witness testimony provided by a Dr. Smith to aid in rebutting the plaintiff's claims of age discrimination, as summarized in the preceding scenario.

Dr. Smith's Credentials

Dr. Smith, a 60 year-old male, has a Ph.D. in Industrial/Organizational (I/O) Psychology, and is currently employed as a tenured professor at a major research university. He has been a professor and researcher for more than 25 years, and has taught dozens of classes at both the undergraduate and graduate level. Dr. Smith is an active member of a number of professional organizations, including the Society for Industrial and Organizational Psychology (SIOP), and the American Psychological Association (APA). Dr. Smith has published numerous articles in scientific journals, and has authored book chapters and scholarly texts on a variety of human resources and personnel topics.

Dr. Smith's professional and scientific activities are not limited to academics. He has been consulting in organizational settings for more than 20 years, with organizations that have ranged widely in size, financial situation, geographical location, industry, and organizational structure. His consulting projects have involved diverse issues such as employee assessment and selection, organizational development, statistical analyses of workplace data, litigation support, and test construction and validation. Dr. Smith has been providing expert witness services for over 10 years, and has been previously retained by lawyers working for both plaintiffs and defendants.

Dr. Smith's Involvement in the Age Discrimination Case

Dr. Smith was initially contacted by Anycorp's legal team after the plaintiff was terminated and filed an age discrimination lawsuit. Dr. Smith did not have a pre-existing professional relationship or prior personal contact with Anycorp, and was retained as an expert witness based upon his reputation and a word-of-mouth recommendation. After an initial phone conversation with an Anycorp lawyer, Dr. Smith agreed to provide expert witness services and litigation support. Dr. Smith is being compensated at an hourly billable rate for his services until this case is resolved, and details of his participation in the case are as follows.

Dr. Smith visited Anycorp for a one-day site visit, during which time he toured the facilities where the plaintiff had worked. On the visit Dr. Smith additionally met with numerous company executives, human resource personnel, company lawyers, former coworkers of the plaintiff, and management, including the plaintiff's immediate supervisor, the head of human resources, and the CEO of Anycorp. During the visit, and on several subsequent occasions, Dr. Smith was provided with pertinent company documents that included information on the reduction in force efforts at Anycorp. Dr. Smith also received written reports on the performance appraisal process at Anycorp, plaintiff-specific data regarding job performance, and a detailed work history describing the plaintiff's employment at Anycorp. After his site visit to Anycorp, Dr. Smith maintained ongoing contact with individuals at Anycorp as related to the case, and obtained supplementary information through phone conversations, mailings, e-mail transmissions, and fax transmittals.

In addition to his interactions with the Anycorp organization, Dr. Smith wishes to call attention to a research study that he believes has bearing on the case at hand. Dr. Smith has read and summarized a study that was recently conducted by a well-known I/O psychologist (Dr. Brown), and believes that the study provides insight on the matter of organizational reductions in force. The study, entitled "Layoffs and organizational behavior: How to identify and retain the best performers" was conducted on a sample of 100 managerial level employees who were the target of layoffs at a different mid-size organization (Widgets, Inc.). The study systematically contrasted different existing performance appraisal standards and reduction in force procedures that were used at Widgets in a layoff situation. The goal of the study was to identify the most efficient and valid layoff methods that allow an organization to correctly classify employees according to their job performance, and consequently terminate the worst performers and keep the best performers. The study empirically identified an optimal method for conducting valid layoffs, and the results were statistically significant, using a standard scientific statistical significance criterion of 5%. The study established the importance of job analytic techniques, the existence of a standard performance rating system, extensive training and written guidelines for supervisors involved in the RIF, and review of ratings and terminations by upper level supervisors and managers. Dr. Brown's study has not been published.

Dr. Smith's Conclusions

Based upon all of the information described above, Dr. Smith offers testimony that describes the Anycorp reduction in force process, specific layoff procedures, and performance appraisal system as being valid, reliable, and job-related, and in accordance with the principles of Industrial/Organizational Psychology.

Expert Witness Information

This page describes information related to proposed expert witness testimony. The defendant, Anycorp, Inc., wishes to introduce the following expert witness testimony provided by a Dr. Smith to aid in rebutting the plaintiff's claims of age discrimination, as summarized in the preceding scenario.

Dr. Smith's Credentials

Dr. Smith, a 60 year-old male, has a Ph.D. in Industrial/Organizational (I/O) Psychology, and is currently employed as a tenured professor at a major research university. He has been a professor and researcher for more than 25 years, and has taught dozens of classes at both the undergraduate and graduate level. Dr. Smith is an active member of a number of professional organizations, including the Society for Industrial and Organizational Psychology (SIOP), and the American Psychological Association (APA). Dr. Smith has published numerous articles in scientific journals, and has authored book chapters and scholarly texts on a variety of human resources and personnel topics.

Dr. Smith's professional and scientific activities are not limited to academics. He has been consulting in organizational settings for more than 20 years, with organizations that have ranged widely in size, financial situation, geographical location, industry, and organizational structure. His consulting projects have involved diverse issues such as employee assessment and selection, organizational development, statistical analyses of workplace data, litigation support, and test construction and validation. Dr. Smith has been providing expert witness services for over 10 years, and has been previously retained by lawyers working for both plaintiffs and defendants.

Dr. Smith's Involvement in the Age Discrimination Case

Dr. Smith was initially contacted by Anycorp's legal team after the plaintiff was terminated and filed an age discrimination lawsuit. Dr. Smith did not have a pre-existing professional relationship or prior personal contact with Anycorp, and was retained as an expert witness based upon his reputation and a word-of-mouth recommendation. After an initial phone conversation with an Anycorp lawyer, Dr. Smith agreed to provide expert witness services and litigation support. Dr. Smith is being compensated at an hourly billable rate for his services until this case is resolved, and details of his participation in the case are as follows.

Dr. Smith visited Anycorp for a one-day site visit, during which time he toured the facilities where the plaintiff had worked. On the visit Dr. Smith additionally met with numerous company executives, human resource personnel, company lawyers, former coworkers of the plaintiff, and management, including the plaintiff's immediate supervisor, the head of human resources, and the CEO of Anycorp. During the visit, and on several subsequent occasions, Dr. Smith was provided with pertinent company documents that included information on the reduction in force efforts at Anycorp. Dr. Smith also received written reports on the performance appraisal process at Anycorp, plaintiff-specific data regarding job performance, and a detailed work history describing the plaintiff's employment at Anycorp. After his site visit to Anycorp, Dr. Smith maintained ongoing contact with individuals at Anycorp as related to the case, and obtained supplementary information through phone conversations, mailings, e-mail transmissions, and fax transmittals.

In addition to his interactions with the Anycorp organization, Dr. Smith wishes to call attention to a research study that he believes has bearing on the case at hand. Dr. Smith has read and summarized a study that was recently conducted by a well-known I/O psychologist (Dr. Brown), and believes that the study provides insight on the matter of organizational reductions in force. The study, entitled "Layoffs and organizational behavior: How to identify and retain the best performers" was conducted on a sample of 100 managerial level employees who were the target of layoffs at a different mid-size organization (Widgets, Inc.). The study systematically contrasted different existing performance appraisal standards and reduction in force procedures that were used at Widgets in a layoff situation. The goal of the study was to identify the most efficient and valid layoff methods that allow an organization to correctly classify employees according to their job performance, and consequently terminate the worst performers and keep the best performers. The study empirically identified an optimal method for conducting valid layoffs, and the results were statistically significant, using a standard scientific statistical significance criterion of 5%. The study established the importance of job analytic techniques, the existence of a standard performance rating system, extensive training and written guidelines for supervisors involved in the RIF, and review of ratings and terminations by upper level supervisors and managers. Dr. Brown's study has been published in a prestigious scientific journal, The Journal of Applied Psychology.

Dr. Smith's Conclusions

Based upon all of the information described above, Dr. Smith offers testimony that describes the Anycorp reduction in force process, specific layoff procedures, and performance appraisal system as being valid, reliable, and job-related, and in accordance with the principles of Industrial/Organizational Psychology.

Expert Witness Information

This page describes information related to proposed expert witness testimony. The defendant, Anycorp, Inc., wishes to introduce the following expert witness testimony provided by a Dr. Smith to aid in rebutting the plaintiff's claims of age discrimination, as summarized in the preceding scenario.

Dr. Smith's Credentials

Dr. Smith, a 60 year-old male, has a Ph.D. in Industrial/Organizational (I/O) Psychology, and is currently employed as a tenured professor at a major research university. He has been a professor and researcher for more than 25 years, and has taught dozens of classes at both the undergraduate and graduate level. Dr. Smith is an active member of a number of professional organizations, including the Society for Industrial and Organizational Psychology (SIOP), and the American Psychological Association (APA). Dr. Smith has published numerous articles in scientific journals, and has authored book chapters and scholarly texts on a variety of human resources and personnel topics.

Dr. Smith's professional and scientific activities are not limited to academics. He has been consulting in organizational settings for more than 20 years, with organizations that have ranged widely in size, financial situation, geographical location, industry, and organizational structure. His consulting projects have involved diverse issues such as employee assessment and selection, organizational development, statistical analyses of workplace data, litigation support, and test construction and validation. Dr. Smith has been providing expert witness services for over 10 years, and has been previously retained by lawyers working for both plaintiffs and defendants.

Dr. Smith's Involvement in the Age Discrimination Case

Dr. Smith was initially contacted by Anycorp's legal team after the plaintiff was terminated and filed an age discrimination lawsuit. Dr. Smith did not have a pre-existing professional relationship or prior personal contact with Anycorp, and was retained as an expert witness based upon his reputation and a word-of-mouth recommendation. After an initial phone conversation with an Anycorp lawyer, Dr. Smith agreed to provide expert witness services and litigation support. Dr. Smith is being compensated at an hourly billable rate for his services until this case is resolved, and details of his participation in the case are as follows.

Dr. Smith visited Anycorp for a one-day site visit, during which time he toured the facilities where the plaintiff had worked. On the visit Dr. Smith additionally met with numerous company executives, human resource personnel, company lawyers, former coworkers of the plaintiff, and management, including the plaintiff's immediate supervisor, the head of human resources, and the CEO of Anycorp. During the visit, and on several subsequent occasions, Dr. Smith was provided with pertinent company documents that included information on the reduction in force efforts at Anycorp. Dr. Smith also received written reports on the performance appraisal process at Anycorp, plaintiff-specific data regarding job performance, and a detailed work history describing the plaintiff's employment at Anycorp. After his site visit to Anycorp, Dr. Smith maintained ongoing contact with individuals at Anycorp as related to the case, and obtained supplementary information through phone conversations, mailings, e-mail transmissions, and fax transmittals.

In addition to his interactions with the Anycorp organization, Dr. Smith wishes to call attention to a research study that he believes has bearing on the case at hand. Dr. Smith has read and summarized a study that was recently conducted by a well-known I/O psychologist (Dr. Brown), and believes that the study provides insight on the matter of organizational reductions in force. The study, entitled "Layoffs and organizational behavior: How to identify and retain the best performers" was conducted by mathematically synthesizing the results of 30 other published and unpublished studies, using a technique known as meta-analysis. Each of the samples in the 30 studies consisted of sizable amounts of managerial level employees who were the target of layoffs at different mid-size organizations. The meta-analysis systematically contrasted different existing performance appraisal standards and reduction in force procedures that were used in layoff situations. The goal of the meta-analysis was to identify the most efficient and valid layoff methods that allow an organization to correctly classify employees according to their job performance, and consequently terminate the worst performers and keep the best performers. The meta-analysis empirically identified an optimal method for conducting valid layoffs, and the results were statistically significant, using a standard scientific statistical significance criterion of 5%. The study established the importance of job analytic techniques, the existence of a standard performance rating system, extensive training and written guidelines for supervisors involved in the RIF, and review of ratings and terminations by upper level supervisors and managers. Dr. Brown's meta-analytic study has been published in a prestigious scientific journal, The Journal of Applied Psychology, and has been cited as an "important study" in leading Industrial/Organizational Psychology and human resources textbooks.

Dr. Smith's Conclusions

Based upon all of the information described above, Dr. Smith offers testimony that describes the Anycorp reduction in force process, specific layoff procedures, and performance appraisal system as being valid, reliable, and job-related, and in accordance with the principles of Industrial/Organizational Psychology.

APPENDIX D

SURVEY QUESTIONNAIRE

Survey

Instructions: Write or circle the requested information as necessary. All responses are confidential, and data will be aggregated across respondents.

1. Gender: Male Female

2. Current job title: District Judge Magistrate Judge Other_____

3. What is your tenure (in years) for the job title referenced above?_____

4. Which U. S. President appointed you (if applicable)?_____

5. How familiar are you with the field of Industrial/Organizational (I/O) Psychology? (Circle a number)

1	2	3	4	5	6	7
Not at all Familiar		Moderately Familiar		Very Familiar		Completely Familiar

6. Have you ever heard or read the testimony of an Industrial/Organizational Psychologist? (Circle No or Yes)

No Yes If Yes, on approximately how many separate occasions?_____

7. How likely is it that you would *admit* the proposed testimony of Dr. Smith? (Circle a number)

1	2	3	4	5	6	7
Not At All Likely		Moderately Likely		Very Likely		Completely Likely

8. Rate the *relevancy* of Dr. Smith's proposed testimony. (Circle a number)

1	2	3	4	5	6	7
Not At All Relevant		Moderately Relevant		Very Relevant		Completely Relevant

9. Rate the *prejudicial nature* of Dr. Smith's proposed testimony. (Circle a number)

1	2	3	4	5	6	7
Not At All Prejudicial		Moderately Prejudicial		Very Prejudicial		Completely Prejudicial

Instructions: Circle the requested information. All responses are confidential, and data will be aggregated across respondents.

10. Rate the *reliability* of Dr. Smith's proposed testimony. (Circle a number)

1	2	3	4	5	6	7
Not At All Reliable		Moderately Reliable		Very Reliable		Completely Reliable

11. Rate the *probative value* of Dr. Smith's proposed testimony. (Circle a number)

1	2	3	4	5	6	7
Not At All Probative		Moderately Probative		Very Probative		Completely Probative

12. My judgment of the reliability of Dr. Smith's proposed testimony and evidence is dependent *upon the fact that his theories or techniques have been or can be tested.* (Circle a number)

1	2	3	4	5	6	7
Disagree Very Strongly		Disagree		Agree		Agree Very Strongly

13. My judgment of the reliability of Dr. Smith's proposed testimony and evidence is dependent *upon its peer review or publication status.* (Circle a number)

1	2	3	4	5	6	7
Disagree Very Strongly		Disagree		Agree		Agree Very Strongly

14. My judgment of the reliability of Dr. Smith's proposed testimony and evidence is dependent *upon its known or potential error rate.* (Circle a number)

1	2	3	4	5	6	7
Disagree Very Strongly		Disagree		Agree		Agree Very Strongly

15. My judgment of the reliability of Dr. Smith's proposed testimony and evidence is dependent *upon its general acceptance by the scientific community.* (Circle a number)

1	2	3	4	5	6	7
Disagree Very Strongly		Disagree		Agree		Agree Very Strongly

Use the space below to provide any additional comments related to this survey and its subject matter.

Thank you for your participation!

Please mail this 3-page survey in the accompanying stamped and pre-addressed white envelope.
Return the postcard separately if you would like to be provided with a summary of the results.

Peter Wingate
Department of Psychology
Colorado State University
Fort Collins, CO 80523-1876