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ESSAY

WITHOUT A PRAYER?: SPIRITUALITY AND PERFORMANCE IN LAW SCHOOL-A REPLY TO PROFESSOR TAYLOR

RICHARD E. REDDING*

Professor Scott Taylor's *Spirituality and Academic Performance at a Catholic Law School: An Empirical Study*¹ was disheartening to Catholics and fellow travelers because it reported finding no relationship between the spirituality of law students and their academic performance at a prominent Catholic law school committed to its religious identity. Professor Taylor set out to examine whether "students who have a strong faith identity do better than expected at a faith-based law school."² Forty-three law schools accredited by the American Bar Association (twenty-two percent of all accredited law schools) are religiously-affiliated.³ Twenty-six of the forty-three

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1. Scott A. Taylor, *Spirituality and Academic Performance at a Catholic Law School: An Empirical Study*, 45 CAL. W. L. REV. 89 (2008).

2. *Id.* at 91.

3. *Cf.* ABA *Approved Law Schools Alphabetically*, AM. BAR ASS'N, <http://www.abanet.org/legaled/approvedlawschools/alpha.html> (last visited Nov. 16, 2010). To determine which ABA law schools were religiously affiliated, and which were Catholic, I contacted the ABA. I then verified the information the ABA provided independently with each of the law schools. See E-mail from Beverly P. Holmes, Assistant, Section of Legal Educ., ABA, to author (Sept. 2, 2010) (on file with author).

religiously-affiliated accredited law schools are Catholic.⁴ Often the mission of such schools is to provide instruction that integrates religious perspectives on law and law practice, while also fostering the spiritual needs of their students (with religiously-affiliated schools varying widely on these scores).⁵ The hope is that such efforts will

4. *Id.*

5. Consider, for example, excerpts from the mission statements and dean's messages from a sampling of religiously-affiliated law schools:

1) Baylor Law School "shares the University's mission to educate men and women by integrating academic excellence and Christian commitment within a caring community." *Baylor Law School Mission Statement*, BAYLOR L. SCH., <http://law.baylor.edu/MissionStatement.htm> (last visited Nov. 1, 2010).

2) The Columbus School of Law at Catholic University's

aims and goals manifest themselves in a core commitment to the ideals of the dignity of each person; respect for the inviolability of all human life; justice rooted in the common good; the recognition and protection of human rights as gifts of the Creator; care for the poor, the neglected, and the vulnerable; and the obligation of love for one another. As a law school, we strive to discover, preserve, and impart the truth in all its forms; to achieve academic distinction in the Catholic intellectual tradition; and to assure, in an institutional manner, faithfulness to the university's Christian inspiration.

The school's sense of institutional integrity and community reflects its fidelity to Catholic ideals and beliefs.

Mission Statement, CATHOLIC U. AM., COLUMBUS SCH. L. (Dec. 18, 2009), <http://www.law.edu/missionstatement.cfm>.

3) Marquette University "believe[s] that education must encompass the whole person: spiritual and moral as well as intellectual, the heart as well as the mind." *About Marquette: Our Mission*, MARQUETTE U., <http://www.marquette.edu/about/mission.shtml> (last visited Nov. 1, 2010).

4) Notre Dame Law School "stands in two ancient traditions: English and American tradition of common law . . . and the Catholic tradition, which brings specific spiritual and moral values to bear upon daily life and legal judgments." *History and Mission*, U. NOTRE DAME L. SCH., <http://law.nd.edu/about/mission-and-history/> (last visited Nov. 1, 2010).

5) Pepperdine School of Law's "Christian emphasis leads to a special concern for imbuing students with the highest principles of professional, ethical, and moral responsibility. An effort is made to call together a faculty, staff, and student body who wish to share this experience of quality legal education in a value-centered context." *About Pepperdine School of Law: Mission Statement*, PEPPERDINE U. SCH. L., <http://law.pepperdine.edu/about/mission> (last visited Nov. 1, 2010).

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have the collateral benefit of enhancing student motivation and academic performance. At the very least, one hopes that the mission does not *impede* student achievement.

In this essay, I explain how Professor Taylor's study—*the first and only one of its kind*—is so methodologically flawed it leaves us unable to conclude anything about whether spirituality is related to academic performance. After a review of the few prior research studies on spirituality and performance, I explain the methodological problems with the Taylor study that make its results unreliable. The Taylor study serves as a cautionary tale about the pitfalls of empirical research conducted by law school professors, and my explication of the flaws in the study will point the way for how such studies should be conducted in the future. I conclude with observations on the value of empiricism in the legal academy and advice on how law professors could best undertake empirical studies in ways that will ensure their scientific validity and reliability.

PREVIOUS RESEARCH ON SPIRITUALITY AND ACADEMIC PERFORMANCE

As Professor Taylor points out, the research on the relationship between religious faith or practice and academic performance is sparse. Professor Taylor's study is the only study that has been conducted in a law school. The most recent and well-executed study, using data on 3,924 students at twenty-eight colleges and universities from the National Longitudinal Study of Freshmen found that, when controlling for other relevant factors (e.g., previous academic achievement), students who regularly attended religious services and observed religious traditions had higher grades (.24 higher on average) and greater satisfaction with the college experience.⁶ Another study (using an eighty-item religiosity questionnaire) examined the relationship between religious beliefs, religious participation, and

6) Regent Law School "thoroughly integrate[s] a Christian perspective in the classroom." Jeffrey A. Brauch, *A Message from Dean Brauch*, REGENT U. SCH. L., <http://regent.edu/acad/schlaw/dean/home.cfm> (last visited Nov. 1, 2010).

6. Margarita Mooney, *Religion, College Grades, and Satisfaction Among Students at Elite Colleges and Universities*, 71 SOC. RELIGION 197, 200-01, 209 (2010).

grades among 212 Caucasian and African American college students.⁷ It found moderately strong correlations between grades and religious participation, yet, generally, no correlation between religious beliefs and grades—thus highlighting the importance of differentiating between beliefs and participation in religious activities.⁸

Sociologists and psychologists theorize that spirituality (or, “religiosity,” as it is often referred to in the social science literature) increases academic performance because it may instill in students a disciplined lifestyle, strong work ethic, sense of control, and prosocial norms, as well as provide a buffer against stress.⁹ Religion can be a significant motivating influence on people’s lives.¹⁰ Indeed, a recent review concluded that “[a] sizable body of research has demonstrated a positive link between religiousness (particularly religious involvement) and psychological and physical well-being.”¹¹

PROFESSOR TAYLOR’S STUDY OF SPIRITUALITY AND PERFORMANCE IN LAW SCHOOL

Professor Taylor’s study was conducted at the relatively new University of St. Thomas School of Law, a school that “is definitely serious about its Catholic identity.”¹² St. Thomas Law School strives for a religious “culture at the Law School that is entirely different from the kind of culture found at most other law schools.”¹³ The school has a predominately Catholic faculty and student body,

7. Katrina L. Walker & Vicki Dixon, *Spirituality and Academic Performance Among African American College Students*, 28 J. BLACK PSYCHOL. 107, 111-12 (2002).

8. *Id.* at 115-16.

9. See Mooney, *supra* note 6, at 199-200 (reviewing research).

10. See Martin L. Maehr, *The Meaning that Religion Offers and the Motivation that May Result*, in JUDEO-CHRISTIAN PERSPECTIVES ON PSYCHOLOGY: HUMAN NATURE, MOTIVATION AND CHANGE 133 (William R. Miller & Harold D. Delany eds., 2003).

11. CHRISTOPHER PETERSON & MARTIN P. SELIGMAN, CHARACTER STRENGTHS AND VIRTUES: A HANDBOOK AND CLASSIFICATION 610 (2004).

12. Taylor, *supra* note 1, at 94.

13. *Id.* at 121 (citing Jerry Organ, *From Those to Whom Much Has Been Given, Much is Expected: Vocation, Catholic Social Teaching, and the Culture of a Catholic Law School*, 1 J. CATH. SOC. THOUGHT 361 (2004)). See also *id.* at 104-05 (citing Organ, *supra*).

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integrates Catholic social thought and religious values throughout the curriculum, encourages pro bono service, has daily Catholic mass, and offers a number of religiously-oriented extracurricular activities.¹⁴ The law school has built a “community of faith” in which students “connect their spiritual lives to their professional identities”¹⁵ by “integrat[ing] faith with morality to promote justice.”¹⁶ One can see how such a mission might enhance student motivation to achieve in law school, particularly among those whose choice of law school was guided by the school’s religious affiliation.¹⁷

Using a spirituality survey (which asked about frequency with which they discuss their religious beliefs, the religious basis of their moral views, and whether they viewed the legal profession as a divine calling),¹⁸ the study correlated students’ spirituality with their academic performance in the first year of law school.¹⁹ Professor Taylor’s study found a low but statistically significant negative correlation (-.26) between spirituality and academic performance for the overall sample, but a much stronger negative correlation (-.47) among the thirty students in the sample who performed worse than expected in their first year of law school.²⁰ While noting that his findings are based on a small sample and calling for further research,²¹ Professor Taylor offers several possible explanations for what he considers to be the study’s “surpris[ing]” finding.²² He suggests that highly religious students may prioritize family, faith, and religious

14. *Id.* at 101-07.

15. *Id.* at 101 (quoting Thomas M. Mengler, *What’s Faith Got to Do With It? (With Apologies to Tina Turner)*, 35 U. TOL. L. REV. 145, 151 (2003)).

16. *Id.*

17. See Taylor, *supra* note 1, at 112 (“I assumed that the faith-based environment would produce positive emotions and motivations that, in turn, would enhance learning. This enhanced learning would enable the affected students to achieve higher than expected grades on their exams and papers. In addition, students who are connected to each other through faith in a faith-based community would help and encourage each other to learn. This mutual support, I hypothesized, would enhance learning and improve grades.”).

18. *Id.* at 116-17.

19. *Id.* at 112.

20. *Id.* at 118-19.

21. *Id.* at 120.

22. *Id.*

activities over studying, that they may be less competitive in law school and instead devote their energies to helping their classmates and others in the community, or that they may be complacent about their employment prospects (and thus less concerned about grades) if they believe they can rely on the faith community to secure employment or if they primarily seek public interest law jobs.²³

THE METHODOLOGICAL AND STATISTICAL FLAWS IN PROFESSOR TAYLOR'S STUDY

Professor Taylor developed an eleven-question survey to measure the strength of students' "spirituality,"²⁴ each answered on a three- to five-point scale.²⁵ However, Professor Taylor decided to use responses to only *four* of the questions (all dealing with the "faith-based mission" of the law school and asking about "frequency of worship, discussions about religion, faith and morality, and vocation") as the measure of spirituality.²⁶

Professor Taylor correlated the spirituality survey score with the first-year law school performance of ninety-seven second- and third-year law students who were enrolled in two of his upper-level courses (Federal Income Taxation and Native American Law).²⁷ The expected first-year GPA of the students was calculated by combining their LSAT score with their undergraduate GPA, a measure of expected law school success developed by the Law School Admissions Council (the measure correlates .59 with law school success at St. Thomas Law School).²⁸ Attempting to control for differences in ability levels across students, Professor Taylor then computed a "variance index" of the difference between each student's expected GPA and his or her actual first-year GPA, and correlated this variance index of academic performance with their score on the spirituality measure.²⁹

23. *Id.* at 121-34.

24. *Id.* at 114.

25. *Id.* at 115.

26. *Id.* at 116-17.

27. *Id.* at 112.

28. *Id.* at 112-13.

29. *Id.* at 113.

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The study has a number of serious design flaws and errors in the data analyses, as follows:

1. *Use of a Very Brief Unvalidated Survey to Measure Spirituality.*

There are several problems with the spirituality survey used in the study. First, it was constructed by the author without going through any of the formal or informal survey refinement or validation procedures typically employed by social scientists.³⁰ (For example, Professor Taylor did not take the simple but important step of pilot testing and refining the survey questions.³¹ Had he done so, ambiguous or problematic questions could have been revised and used in the survey.³²) Thus, we do not know whether the survey is valid or reliable. Professor Taylor does not explain why he chose to develop his own measure when there are more comprehensive, validated measures of religiosity or spirituality that could have been used in whole or in part.³³ Second, unlike Professor Taylor's survey measure, spirituality should not be conceptualized and measured as though it were a single construct. Instead, research suggests it is important to differentiate among spiritual beliefs, participation in spiritual activities, spiritual support, and living in accordance with religious values,

30. See generally DAVID L. FAIGMAN ET AL., *SCIENCE IN THE LAW: STANDARDS, STATISTICS AND RESEARCH ISSUES* 257-62 (2002); FLOYD J. FLOWER, *SURVEY RESEARCH METHODS* (4th ed. 2009).

31. For example, a prior study of spirituality and academic performance used an eighty-item questionnaire that was first pilot tested. See Walker & Dixon, *supra* note 7, at 112.

32. See *infra* note 34 and accompanying text.

33. See generally MEASURES OF RELIGIOSITY (Peter C. Hill & Robert W. Wood eds., 1999); Peter C. Hill & Kenneth I. Pargament, *Advances in the Conceptualization and Measurement of Religion and Spirituality: Implications for Physical and Mental Health Research*, 58 AM. PSYCHOLOGIST 64, 66-71 (2003); PETERSON & SELIGMAN, *supra* note 11, at 605-07 (reviewing measures of spirituality).

For example, the *Religious Commitment Inventory* includes questions that assess many of the same issues Professor Taylor attempted to assess in his survey and has been scientifically validated. See E.L. Worthington et al., *The Religious Commitment Inventory—10: Development, Refinement, and Validation of a Brief Scale for Research and Counseling*, 50 J. COUNSELING PSYCHOL. 84, 85 (2003).

because each of these factors may differentially affect outcomes.³⁴ *The distinction between spiritual beliefs and participation appears to be especially important.*³⁵ Third, Professor Taylor deleted from his measure of spirituality the questions about prayer because he found that they “fit no particular pattern”; he deleted the questions about belief in God because most students responded that they believed in God; and, he deleted a question about expressing gratitude to God because of “inconsistent responses.”³⁶ One’s strength of belief in God and use of prayer are among the most critical aspects of spiritual belief and practice, respectively, yet Professor Taylor’s measure was unable to capture these critically important factors.

2. *Improperly Using Spirituality in the Second and Third Years to Postdict Academic Performance in the First Year.* Rather than measuring students’ spirituality in their first year, Professor Taylor instead took a retrospective or “postdictive” approach and correlated spirituality in students’ second or third years with their earlier academic performance in their first year.³⁷ Particularly because they are attending a strongly faith-based law school offering a myriad of religious programs, it is possible that students’ spirituality, or level of religious engagement, may change between their first and third years of

34. See, e.g., Hill & Pargament, *supra* note 33, at 66-71 (reviewing measures that assess different aspects of spirituality); George D. Kuh & Robert M. Gonyea, *Spirituality, Liberal Learning, and College Student Engagement*, 92 LIBERAL EDUC. 40, 45 (2006) (finding differential effects of spiritual beliefs and practices on various measures of college student engagement); Kenneth I. Pargament & Elizabeth J. Krumrei, *Clinical Assessment of Clients’ Spirituality*, in SPIRITUALITY AND THE THERAPEUTIC PROCESS: A COMPREHENSIVE RESOURCE FROM INTAKE TO TERMINATION 93, 108-10 (Jamie D. Aten & Mark M. Leach eds., 2009) (arguing for the need for research and practitioners to measure all aspects of an individual’s spirituality); Teresa E. Seeman et al., *Religiosity/Spirituality and Health: A Critical Review of the Evidence for Biological Pathways*, 58 AM. PSYCHOLOGIST 53, 61 (2003).

35. Walker & Dixon, *supra* note 7, at 107-08.

36. Taylor, *supra* note 1, at 117.

37. *Id.* at 112.

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law school.³⁸ Hence, we do not have data about the students' spirituality during the critical time period—their first year of law school. We do not really know from the study what the relationship might be between spirituality and academic performance because it compared students' first-year academic performance with their spirituality during their second or third years of law school.

3. *Failure to Control for Other Important Variables that May Affect the Relationship between Spirituality and Academic Performance.* We can never conclude causation from correlational studies (as is commonly said in the social sciences: "correlation is not causation"). Correlational studies only show whether variables are related or tend to vary together (not whether one variable causes another). Only experimental studies properly allow for conclusions about causation.³⁹ Correlational studies are often conducted as a first step in inferring causation (e.g., that the level of spirituality to some degree affects academic performance), but to successfully infer causation, the study must measure and control for possible confounding variables. A confounding variable is a third variable that may intervene between the two variables of interest.⁴⁰ For example, class, race, prior academic performance, amount of study time, participation in other extracurricular activities—all of which are known to predict academic achievement—may also be related to spirituality. Therefore, these variables have been measured and controlled for in previous studies on spirituality and academic performance.⁴¹ In fact, some or all of the factors discussed by

38. For example, some students may become more spiritual or religiously engaged (e.g., as a way to cope with law school stress, due to the school's religiously-oriented programming and activities), while others may become less so (e.g., due to time pressures, capture by the allure of a profitable legal career, a questioning of religious beliefs as a result of exposure to law).

39. See ARTHUR ARON ET AL., STATISTICS FOR PSYCHOLOGY 466-68 (4th ed. 2006).

40. See *id.* (discussing how other variables may be causing the correlation between the variables measured in a study).

41. See Mooney, *supra* note 6, at 204-05 (discussing how and why the study

Professor Taylor as possible explanations for his study's "surprising" finding (e.g., time spent on activities other than studying; views about employment prospects)⁴² probably were confounding variables. These should have been measured as such and included in his study as part of a regression analysis.⁴³

Unfortunately, Professor Taylor failed to measure or control for such factors. Thus, we cannot make inferences about whether there is a meaningful relationship between spirituality and academic performance. From Professor Taylor's study it is unclear whether spirituality and academic performance are merely associated, not because one causes or affects the other, but because there are other causal variables that intervene and serve to mediate or moderate the relationship between spirituality and academic performance. (We also cannot infer the direction of the effect, if there is one. Does spirituality affect performance or does performance affect spirituality?)

4. *Improper Statistical Analyses.* Even more serious than the above problems are the improper statistical analyses conducted in the study. First, the analysis found a modest but statistically significant⁴⁴ negative correlation⁴⁵ (-.26) between spirituality

measured and controlled for class, race, previous academic achievement, time spent studying, time spent partying, and participation in extracurricular activities).

42. See *supra* notes 22-23 and accompanying text.

43. Regression analysis is a statistical technique that allows one to examine how much of the variability in outcome (e.g., academic performance) is explained by specific variables (e.g., spirituality) while controlling for other variables (e.g., amount of study time). See ARON ET AL., *supra* note 39, at 497-544.

44. "Statistical significance" is a technical term indicating that the results reflect associations or differences that are statistically unlikely to be due to chance. The term does not refer to the importance or magnitude of the results nor does it mean that the results are reliable if, as in Professor Taylor's study, there are underlying errors in the study design or statistical methodology. See *id.* at 715.

45. A correlation reflects the degree of association between variables—i.e., whether they covary together. Correlations can range from -1.0 (a perfect negative correlation or association) to 1.0 (a perfect positive correlation or association). A zero correlation reflects no association whatever between the variables. See *id.* at 449-56.

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and first-year academic performance. Spirituality accounts for 7% (.26 squared)⁴⁶ of the variability in academic performance (the degree to which academic performance can be explained or predicted by spirituality). To be sure, social scientists frequently report modest findings such as this in the context of a larger set of findings, but this one correlation, standing alone, is of little note given the modest size of the effect.

Second, Professor Taylor went further, also calculating the correlation for a subset of the overall study sample—the thirty students who academically underperformed the most in relation to their predicted performance (based on LSAT score and undergraduate GPA).⁴⁷ Among this subset of students, he found a much stronger correlation of $-.47$ between spirituality and academic performance,⁴⁸ with spirituality thus accounting for a far more meaningful 22% of the variance in academic performance.⁴⁹ *It is this stronger correlation that then becomes the central finding of the study, but it is also this correlation that is at the crux of the study's improper statistical analyses.* Calculating a correlation on a sample subset, which is selected on the basis of extreme scores, often produces an artificially inflated correlation due to what statisticians call the “restricted range” problem.⁵⁰ The problem arises because two central assumptions underlying standard statistical analyses are (1) that the data are normally distributed (i.e., along the bell curve)⁵¹ and (2) that the entire distribution of scores is represented among the data being analyzed. Neither of these

46. The square of the correlation reflects the degree of variance (i.e., the degree to which variability in one factor can be predicted by variability in another factor) accounted for by the correlation value. *See id.* at 469.

47. Taylor, *supra* note 1, at 118.

48. *Id.*

49. *Id.* at 119. Correlations higher than about .50 are typically considered to be strong, correlations between about .30 and .50 are considered moderately strong, and correlations under about .30 are considered to be modest or weak. *See ARON ET AL., supra* note 39, at 476.

50. *See ARON ET AL., supra* note 39, at 469.

51. In addition, if the spirituality and academic performance scores for the overall sample were not normally distributed, then a mathematical transformation should have first been conducted to “normalize” the data before conducting any statistical analyses whatsoever. *See id.* at 588-94 (discussing data transformation).

assumptions are present in a sample subset selected on the basis of extreme scores.⁵² If standard statistical analyses are performed on such a subset, the results become suspect, if not invalid. Therefore, in Professor Taylor's study, the -.26 correlation carried out on the entire data set is more likely the *true* correlation than is the -.47 correlation carried out on a restricted subset of the overall data. (But, as we have seen, the study's methodological problems make even the -.26 result unreliable.)

If Professor Taylor wanted to test for a possible curvilinear relationship⁵³ between spirituality and academic performance, he should have conducted what is known as a curvilinear correlational analysis.⁵⁴ Indeed, previous research has found a curvilinear relationship between religiosity and various life outcomes (e.g., happiness, health, performance), with the best outcomes obtained among those who are moderately religious and the worst outcomes among those who are highly religious or anti-religious.⁵⁵

Summary. Any of the above methodological and statistical shortcomings⁵⁶ would call the study into question. Taken together, they deal a fatal blow to the reliability of the study's findings.

52. *See id.* at 465, 588.

53. A curvilinear relationship is one that is non-linear, such as a U-shaped relationship between two variables.

54. *See* ARON ET AL., *supra* note 39, at 448-50, 472-73 (discussing curvilinear correlations and providing examples).

55. *See* Kenneth Livingston, *Faith, Reason, and the Good Life*, NAVIGATOR, Apr. 2002, at 6, 8-10, available at <http://www.atlassociety.org/print/458>.

56. Other smaller missteps also betray a lack of sophistication about statistical analyses and results reporting. Taylor carried out correlations to the meaningless third decimal point, repeated the set of intercorrelations twice in Table 2, *see* ARON ET AL., *supra* note 39, at 478-79, possibly confused the relationship between statistical significance and effect size, and used a somewhat unorthodox method of calculating a difference score rather than analyzing the question through regression analyses. *See* Taylor, *supra* note 1, at 113-14, 118.

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A CAUTIONARY TALE ABOUT EMPIRICISM IN THE LEGAL ACADEMY:
WHAT CAN BE DONE?

*“[T]he black letter man may be the man of the present,
but the man of the future is the man of statistics.”⁵⁷*

Empirical questions (usually relating to social science) are at the heart of law and legal education, with assumptions about human behavior underlying virtually every legal doctrine and pedagogical or institutional decision.⁵⁸ Although legal realism has long been a part of law and legal education—“we are all legal realists now”—law schools have lagged far behind in catching up to the legal realist ideal of using empirical methods and data to inform legal problems.⁵⁹ Fortunately, perhaps in part because “American courts’ reliance on social science [is] now firmly established,”⁶⁰ that is changing. Not since the halcyon days of early legal realism at Yale Law School has the legal academy seen greater interdisciplinarity and efforts at empirical inquiry.⁶¹ For example, “empirical scholarship” was the theme for the 2006 Annual Meeting of the American Association of Law Schools.⁶² We also now

57. Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARV. L. REV. 457, 469 (1897).

58. See John Monahan & Laurens Walker, *Empirical Questions Without Empirical Answers*, 1991 WIS. L. REV. 569, 569 (stating that empirical questions are at the heart of law). See generally PAUL W. ENGLISH & BRUCE D. SALES, *MORE THAN THE LAW: BEHAVIORAL AND SOCIAL FACTS IN LEGAL DECISION MAKING passim* (2005) (discussing examples of behavioral and social facts used in legal decision making); JOHN MONAHAN & LAURENS WALKER, *SOCIAL SCIENCE IN LAW: CASES AND MATERIALS passim* (7th ed. 2010) [hereinafter MONAHAN & WALKER, *SOCIAL SCIENCE IN LAW*]; John Monahan & Laurens Walker, *Twenty-Five Years of Social Science in Law*, LAW & HUM. BEHAV. (Jan. 27, 2010), <http://www.springerlink.com/content/ar866870r9h08525/fulltext.pdf> [hereinafter Monahan & Walker, *Twenty-Five Years*].

59. JOHN HENRY SCHLEGEL, *AMERICAN LEGAL REALISM AND EMPIRICAL SOCIAL SCIENCE* 1-2 (1995) (providing a history of legal realism and its relation to social science in the United States).

60. Monahan & Walker, *Twenty-Five Years*, *supra* note 58.

61. See generally John Henry Schlegel, *American Legal Realism and Empirical Social Science: From the Yale Experience*, 28 BUFF. L. REV. 459 *passim* (1979); LAURA KALMEN, *LEGAL REALISM AT YALE: 1927-1969 passim* (1986).

62. See *AALS 2006 Annual Meeting*, ASS’N AM. L. SCHS., <http://www.aals.org/am2006/index.html> (last visited Nov. 18, 2010).

have peer-reviewed journals like the *Journal of Empirical Legal Studies* (and associated yearly conference) and *Psychology, Public Policy and Law*, both of which germinated in the legal academy.⁶³

Thus, Professor Taylor is to be commended for his effort to empirically study a novel and important question about legal education. His study evinces much more scientific and statistical sophistication than one typically finds among lawyers and law professors, many of whom know little about such matters. (Studies reveal that judges, for example, typically have little or no background in science and often fail to understand basic statistical and methodological concepts.)⁶⁴ Unfortunately, the results of Professor Taylor's study are unreliable due to its methodological shortcomings. Professor Taylor's study therefore serves as one of many cautionary tales about empiricism in the legal academy.

How can law professors, most of whom are untrained in empirical research methods and statistics, ensure that their empirical research is designed and executed in a way that is scientifically sound? The remedy for misguided research is relatively straightforward. Unless they have substantial training in research methods and statistics, law professors should not embark upon empirical research without first consulting with a social scientist and/or statistician. Professors should then remain in contact with the social scientist throughout the life of the research project. Better still would be to *collaborate* with such experts from the outset, resulting in co-authored publications.⁶⁵

As a foundational matter, we need greater scientific literacy among lawyers, and particularly among law professors and judges. Continuing legal and judicial education programs on science and statistics, as well as publications like the Federal Judicial Center's

63. See *Journal of Empirical Legal Studies: Aim and Scope*, BLACKWELL PUBLISHING, <http://www.blackwellpublishing.com/aims.asp?ref=1740-1453&site=1> (last visited Nov. 18, 2010); *Psychology, Public Policy, and Law*, AM. PSYCHOL. ASS'N, <http://www.apa.org/pubs/journals/law/> (last visited Nov. 18, 2010).

64. See Richard E. Redding & Daniel C. Murrie, *Judicial Decision Making about Forensic Mental Health Evidence*, in FORENSIC PSYCHOLOGY: EMERGING TOPICS AND EXPANDING ROLES 683, 689 (Alan M. Goldstein ed., 2007) (reviewing studies).

65. Law professors need to become more accustomed to, and accepting of, co-authored publication, something that is *de rigueur* in most other departments and schools in the academy.

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*Reference Manual on Scientific Evidence*⁶⁶ and the treatise *Modern Scientific Evidence*,⁶⁷ are valuable in making statistics and research methodology accessible and understandable for lawyers and judges; however, they are not enough. Given the degree to which today's legal policy questions and litigated cases involve scientific issues, it behooves law schools to ensure that their students have basic literacy in statistical concepts and scientific methods. To accomplish this, law schools should include in their curriculum a required course in law and science or social science in law⁶⁸ and a required course in statistics for lawyers.⁶⁹

CONCLUSION

Professor Taylor's study of the relationship between spirituality and academic performance among law students at a Catholic law school—the first and only study of its kind—is laudable in its attempt to bring empirical analysis to bear on a novel question about legal education that is particularly important for religiously affiliated law schools. Unfortunately, the study results are unreliable due to the faulty methodology and statistical analyses employed.

To be sure, the legal academy needs to make greater use of empirical methods to inform scholarship, legal reform efforts, and legal education. Efforts to do so have grown in recent years. But law professors must undertake empirical studies in ways that will ensure

66. FED. JUDICIAL CTR., REFERENCE MANUAL ON SCIENTIFIC EVIDENCE (2d ed. 2000), available at [http://www.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf/\\$file/sciman00.pdf](http://www.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf/$file/sciman00.pdf).

67. DAVID L. FAIGMAN ET AL., MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY (2009).

68. Cf. MONAHAN & WALKER, SOCIAL SCIENCE IN LAW, *supra* note 58. In the 1920s and 1930s, Yale and Columbia law schools were the first to make a concerted effort to hire social scientists on their faculties and to integrate social science perspectives into the curriculum. See Schlegel, *supra* note 61, at 474-78. For a relatively recent survey of science related courses offered in law schools see Marlo Merlino et al., *Science in the Law School Curriculum: A Snapshot of the Legal Landscape*, 58 J. LEGAL EDUC. 190, 192-93 (2008).

69. In addition, it is possible to integrate training in statistics throughout the law school curriculum. See Mike Townsend & Thomas Richardson, *Probability and Statistics in the Legal Curriculum: A Case Study in Disciplinary Aspects of Interdisciplinarity*, 40 DUQ. L. REV. 447, 455 (2002).

their scientific validity and reliability. Law professors should, unless they have substantial training in research methods, collaborate or (at the very least) extensively consult with trained social scientists to remedy what otherwise might be misguided research.

More fundamentally, in “the dawn of law’s scientific age,”⁷⁰ law schools need to ensure that their graduates have basic literacy in statistics and scientific methods. Such courses will not make future law professors into researchers, nor should they misperceive that it does (a little knowledge is quite a dangerous thing!), but it will give them a foundation for going forward. It will help them to know what questions to ask about empirical research, how to critically evaluate research, and how to appreciate their own limitations when conducting, evaluating, or using empirical research. As our cautionary tale illustrates, that is the first and most important step.

70. David L. Faigman & John Monahan, *Psychological Evidence at the Dawn of Law’s Scientific Age*, 56 ANN. REV. PSYCHOL. 631, 631 (2005).