Edward L. Thorndike's educational psychology was the beginning of an American behavioristic tradition that sought efficient, scientific solutions to educational, moral, and social problems. Thorndike used empirical methodology to explain behavior, intellect, and character. After rejecting developmentalism, he combined laws of learning derived from his experiments on animals with quantitative measurement of individual differences in humans to construct a psychology of education. He applied this educational psychology commercially and developed many widely used tests and texts. Thorndike then proposed a science of values that he hoped might be used as a guide for moral assessment and social policy.

In the first sentence of the expanded 1911 edition of Animal Intelligence Edward L. Thorndike listed “intelect” and “character” (Thorndike, 1911, p. 1) as the two topics of behavioristic psychology. Thorndike researched and reworked these themes throughout the successive phases of his long career. Following his path-breaking animal experiments, he found employment in teacher education. He briefly explored G. Stanley Hall’s child study, but rejected developmentalism on intellectual, methodological, and moral grounds and began measuring individual differences. In the years before World War I, Thorndike combined learning theory, psychometrics, and applied research on school-related subjects to form a psychology of education. In the 1920s, he helped turn educational psychology into a mass-market industry and produced numerous commercially successful tests and textbooks. In the final phase of his career in the 1930s, Thorndike proposed a science of values and developed quantitative indices of moral and social goodness.

Thorndike’s positing of intellect and character as the dual themes of behavioristic psychology reflected the unified view of truth and morality characteristic of nineteenth-century educational philosophy. Character education was one of the main goals of public schooling (Tyack & Hansot, 1982). Religious and intellectual knowledge were linked in higher education as well (Reuben, 1996). Darwin’s theory of evolution threatened this unity of knowledge and morality, though Darwin was also interested in explaining altruism (see Curti, 1980; Fancher, 1996; Richards, 1987; Ross, 1991; Sulloway, 1998). The construction of an empirical science of psychology posed a particular challenge to traditional religious explanations of human thought and action. Despite these intellectual and cultural tensions, most turn-of-the-century psychologists continued to do research on both intellect and character and to see them as interrelated topics.

Psychologists in the Progressive Era were confronted with enormously difficult, contentious social issues. Rapid industrialization, urbanization, immigration, poverty, violent labor disputes, changing relations both between the sexes and within the family, and growing global unrest caused great dislocations and instability. Psychology was pulled out of philosophy to help explain, contain, cure, and control these social ills, especially in education (Danziger, 1990). Educators looked to psychologists for assistance in categorizing, socializing, and instructing the flood of immigrant and poor children entering urban schools (Brown, 1992; Chapman, 1988). Educational psychology arose in response to these practical educational needs, and as a means of professionalizing education and expanding the profession of psychology.

Thorndike’s project of creating a science of education was not new. Earlier nineteenth-century attempts had included deriving pedagogy from classroom practice; from psychological philosophy, especially that of Herbert Spencer and Alexander Bain; and from European pedagogical theories such as those of Pestalozzi, Froebel, and Herbart (Roberts, 1968). G. Stanley Hall amassed survey data that he claimed constituted a scientific approach to the study of children and education (Ross, 1972; White, 1990; Zenderland, 1990). Psychological methods were also being used by educators outside of academia. But some psychologists, such as William James, were skeptical as to whether education could become a science (James, 1899; and see Beatty, 1996; Brown, 1992; Cahan, 1992; Cuban, 1993; Danziger, 1990; Kliebard, 1986; O’Donnell, 1985; White, 1991).

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However different psychologists in the Progressive Era conceived of the relationship of science, education, and morality, most equated science and efficiency. They believed their research would aid in the creation of a more rational, orderly, beneficent society (see Callahan, 1963; Kloppenburg, 1986; Wiebe, 1967). G. Stanley Hall used developmentalism to guide educational, moral, and social decision making (Ross, 1972). John Dewey was also concerned with preventing waste and building intellect and character and attempted to merge education, morality, and society through metaphors of organic growth and democratic community (Cahan, 1992; Ryan, 1995).

Thorndike used connectionist learning theory to operationalize the relationship of education, morality, and society. How did Thorndike deal with intangible issues in morality and social policy? How did Thorndike attempt to maximize both efficiency and morality? How did Thorndike evolve from thinking science was separate from human ideals to believing that science should help set moral and social goals?

**Studying Children and Rejecting Developmentalism**

Thorndike was initially drawn from animal psychology into education for professional reasons. Like other young psychologists who received doctorates around the turn of the century, he encountered a dearth of academic positions in psychology (Jončić, 1968). Psychology enrollments grew more rapidly in the 1890s than did the demand for psychologists. As Hugo Münsterberg wrote in 1898 to James McKeen Cattell, “my elementary psychology course . . . has 360 students—what will this country do with all these psychologists?” (quoted in Brown, 1992, p. 65). The answer was that many of them, like Thorndike, would find jobs in child study and teacher education programs (Dewsbury, 1992; O’Donnell, 1985).

Thorndike’s early publications, after *Animal Intelligence*, showed the influence of William James and G. Stanley Hall, two older psychologists who had written about education and morality. James’s well-known interest in spirituality was evident in Thorndike’s book *The Human Nature Club*, first published in 1900, which Thorndike hoped would sell as well as James’s very successful *Talks to Teachers* (1899). Intended for a popular audience of high-school and teacher-education students and adults interested in self-education, *The Human Nature Club* was written in the form of a fictional dialogue among members of a study group. After conversations on Jamesian themes of sensation, attention, memory, emotions, and so on, the club turns to “deeper questions” of free will and immortality. A minister joins the group and expresses what Thorndike may have wished his own deeply religious, Methodist minister father might have said—that though the Bible taken “as a piece of history” provided “evidence for continuance of mental life apart from the body,” the psychological ideas the group was discussing did not (Thorndike, 1901a, pp. 201–202). One of the characters paraphrases James’s *Human Immortality*, saying that “nerve cells might be just the means for transmitting . . . thought and feelings, which might exist apart, but as light penetrates through transparent substances, so might they appear in connection with . . . human brains” (Thorndike, 1901a, p. 210). The debate concludes with the passage from Plato’s *Apologia* in which Socrates goes to his death saying that whether or not there is an afterlife one must act on the basis of conscience (Thorndike, 1901b, pp. 212–213).

G. Stanley Hall’s child study methodology was the topic of Thorndike’s next major publication, and of some of his courses at Teachers College, where he was hired in 1899 as an instructor in genetic psychology. *Notes on Child Study*, which appeared in 1901, contained criticisms of Hall but sounded some typically Hallian moral and social themes. Thorndike recommended the morally beneficial effects of fresh air, exercise, and healthy companions. But he advocated athletic “games and social clubs . . . for girls as well as boys” (Thorndike, 1901b, p. 127), unlike Hall, who was notoriously anxious about preserving masculinity. Thorndike was particularly critical of Hall’s untrammeled developmentalism. For Thorndike, the interesting aspect of studying children was not how they were developmentally the same, but how they were individually different. General statements about children “must be false,” Thorndike wrote, “for no two children are alike mentally” (Thorndike, 1901b, p. 14). All statements about children were probabilities, Thorndike asserted, probabilities which could be stated with a level of statistical accuracy.

Thorndike knew that children were different from adults and included in his work a chart of children’s developmental stages (Thorndike, 1901b, p. 13), but he thought these differences were incremental. Even reasoning, which Charles Judd championed as a qualitatively different kind of higher order process, was essentially incremental for Thorndike. Thorndike asserted that all the rudiments of rational thought were present by the time a child entered school “and in fact long before then” (Thorndike, 1901b, p. 86). The great importance of schooling was that it was one of the main ways children honed their reasoning. Step by step, “little by little,” Thorndike wrote, “through constant correction and revision,” children gradually learned academic skills and knowledge, until they acquired “the usage of science or literature of educated people” (Thorndike, 1901b, p. 87). And step by step, Thorndike honed his own views on education, society, and morality.

Thorndike was vehemently opposed to Hall’s notion that the school curriculum should follow nature and recapitulate the stages of human cultural development. Not only was Hall’s developmentalism intellectually uninteresting and methodologically inexact, Thorndike thought it was immoral and potentially dangerous. Schooling should improve upon nature. Not everything in nature was good; there were base instincts as well as good ones. Educators should use the impulses of nature only if they “further the aims of education . . . when they work toward moral ideals” (Thorndike, 1901b, p. 136). “What development is can never teach what it ought to be.”

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Thorndike stated, condemning Hall for committing the naturalistic fallacy. "No word perhaps is a poorer synonym for 'the good' than 'the natural" (Thorndike, 1901b, p. 136).

**Measuring Individual Differences and Constructing Educational Psychology**

Although Thorndike rejected Hall's developmentalism and genetic psychology, he did not reject the genetic component of individual differences. For Hall, genetic psychology meant the history of the development of the human race; for Thorndike, genetic psychology meant biologically inherited characteristics in individuals. Thorndike spent the next decade and a half constructing an empirical psychology of education based on connectionist learning theory, statistical analyses of inherited and acquired individual differences, and other school-related research. The broad range of topics in his research course, Psychology 13, reflected Thorndike's changing interests. The syllabus for the 1900–1901 academic year included "mental life of the primates," "verbal discrimination in young children," the "correlations between the mental functions involved in school subjects," and the value of spelling and Latin as formal disciplines (Thorndike, 1901c, p. 10).

Some of this new research resulted in the publication of a study on transfer of training which was as influential as Thorndike's earlier work on animal intelligence. In association with his Columbia University colleague Robert S. Woodworth, Thorndike collected and correlated data from experiments on adults' ability to recognize misspelled words, ascertain accurate weights, add numbers, and associate word opposites. After only a few months, Thorndike and Woodworth reported that there was relatively little transfer of training from one of these disparate mental skills to another. This finding, which appeared in *The Psychological Review* in 1901, provided what was seen as one of the first empirical refutations of the concept of mental discipline, the prevailing theory in which the mental effort of learning subjects such as Greek or Latin was thought to improve the powers of the mind generally and to aid in learning other subjects (Thorndike & Woodworth, 1901).

Thorndike and Woodworth's (1901) findings spurred the growth of educational psychology by pointing to the need for new studies on the learning of specific academic skills and subjects. As Thorndike and Woodworth concluded, the next steps in the study of the interdependence of mental functions would seem to be the exact analysis of the influence of one on the other where such is present and the discovery of its amount and nature in cases of practical importance, for instance, in the case of the training given in school subjects. (Thorndike & Woodworth, 1901, p. 563)

Although Thorndike remained personally ambivalent about doing school-based research and relied heavily on data gathered by his graduate students and other researchers, his work with Woodworth convinced him of the need for more experimental studies of school learning, and he did some research in schools during the early years of his career (Jončič, 1968, p. 231).

Thorndike infused this school-related work with theories derived from his research on animals and statistical analyses of individual differences in humans. Here again his intellectual program, research agenda, and publications were influenced by the demands of his teaching responsibilities and desire for professional advancement. By 1902 he was teaching Education 3, "Applications of Psychology in Teaching," a required elementary education course with large enrollments, which he had petitioned dean James Russell that he be given to teach. He changed its title to "Educational Psychology" and added a graduate level course, Education 3, "Application of Psychological and Statistical Methods to Education" (Jončič, 1968; Thorndike, 1901c).

As Thorndike focused more on statistical methodology, his work became increasingly filled with graphs, curves, and charts. This wealth of quantitative information was intended to help teachers and educational administrators deal with practical educational problems. For example, Thorndike studied the question of whether boys and girls should be educated differently, an issue about which G. Stanley Hall, Dr. Edward Clarke, and others had made a great deal of noise, even though coeducation had proceeded quietly in most American public schools (Tyack & Hansot, 1990). After analyzing empirical data, Thorndike stated that the "differences in ability" were "not of sufficient amount to be important in arguments concerning differentiation of the curriculum or of methods of teaching in conformity with sex differences" (Thorndike, 1903, p. 118).

Although Thorndike did not think there were significant sex differences in intellectual ability, he thought there was a strong genetic component to individual variation, including variation in morality. He published studies on heredity and on twins in 1903 and 1905, quoted Galton frequently, and thought intellect had such a high, fixed genetic component that, to be efficient, schools should group children into different classes and programs by ability. Thorndike's hard-nosed position on genetic limitations on human potential and the inefficiency of providing equal education to all children was to become one of the main, longstanding criticisms of his work (see Jončič, 1962, 21–22). "It is wasteful," he wrote in the 1903 version of his *Educational Psychology*, "to attempt to create and folly to pretend to create capacities and interests which are assumed or denied to an individual before he is born" (p. 44). Thorndike also thought there was a genetic component to morality. But in contrast to his views on intelligence, at this early stage in his career he felt that environmental influences had a greater impact on character than on intellect, a position he would later modify. "The important moral traits seem to be matters of the direction of capacities and the creation of desires and aversions by environment to a much greater extent than are the important qualities of intellect and efficiency" (Thorndike, 1903, p. 45).
Using empirical data to make specific educational decisions was the raison d’être of Thorndike’s educational psychology. He did not think there was, or ever could be, a grand, overarching theory of education. Nor was he interested in creating one. His goal was to measure individual and group differences and the myriad particularities of human learning. As he wrote in his 1903 *Educational Psychology*, “there is no chance for any simple general theory”; the “true general theory must be the helpless one that there can be no general theory” (p. 163). What educational psychology could do was more modest. It could provide educators with lots of detailed information. “Multiply the number of different changes desired by the number of different original natures to be changed and the resulting number of concrete problems will measure the number of separate concrete precepts which the art of education must include,” he concluded, with a specificity that would carry over to his views on moral education and later attempts to measure morality (Thorndike, 1903, p. 163).

In the years before World War I Thorndike wrote about instructional methods and assessment and established educational psychology as an academic discipline. In his first pedagogical work, *The Principles of Teaching*, published in 1906, he applied his learning theory to classroom teaching. Designed as a text for Education A, the largest course at Teachers College, this widely used book combined summaries of basic psychology with practical exercises for student teachers. Thorndike emphasized throughout that there were no shortcuts to learning. “Each special task adds its mite to the general store.” “Intellect and character” were strengthened “not by any subtle and easy metamorphosis, but the establishment of particular ideas and acts under the law of habit” (Thorndike, 1906, p. 247). In the chapter on moral training he included a long, convoluted quotation on the “good and efficient character” from his *Elements of Psychology*, which stated that character was in part dependent on “the presence of worthy ideals” (Thorndike, 1906, p. 179). He laboriously explained each step in the process of character formation and stated that although moral training in the school was more difficult than in the home, because of limitations of time, class size, and other curricular subjects, school education had “high moral value.” Schools helped teach the everyday virtues, the small “ordinary moral acts” that Thorndike valued as much or more than dramatic moral choices (Thorndike, 1906, pp. 106, 192).

In the final chapter of *Principles of Teaching*, Thorndike stated the scientific creed of his educational psychology. The “scientific study of teaching,” he said, rested on testing for results. “Testing the results of teaching and study is for the teacher what verification of theories is to the scientist,—the *sine qua non* of sure progress” (Thorndike, 1906, p. 264). “A true educational science . . . must be made up from the study of the particular facts in answer to thousands of different questions,” Thorndike stated, and “must rest upon direct observations of and experiments on the influence of educational institutions and methods made and reported with quantitative precision” (Thorndike, 1906, p. 163). Without such meticulous testing, theories of education were mere speculation.

Thorndike knew the science of education was in its infancy and worried that its complexity and laboriousness might put many psychologists off. But he was firmly convinced that education could be made into a science and proceeded to do the organizational and professional work necessary to do so. In the lead article of the first issue of *The Journal of Educational Psychology*, which Thorndike founded in 1910, he presented an agenda for how psychology could contribute to education and vice versa. Psychology could make the goals of education clearer and more exact, could measure the probability that these goals were attainable, and could enlarge and refine the aims of education. It could also contribute to understanding the content and means of education and to improving of methods of teaching (Thorndike, 1910, pp. 5–7). Thorndike also thought that education could in turn help psychology. “The science of education can and will itself contribute abundantly to psychology” (Thorndike, 1910, p. 12). Psychology laboratories were not the only places where valid scientific research could be done. “School-room life itself is a vast laboratory in which are made thousands of experiments of the utmost interest to ‘pure’ psychology” (Thorndike, 1910, p. 12).

In *Education*, his book on educational philosophy, which was published in 1912, Thorndike set forth his utilitarian views on education, morality, and the behavioral approach to moral education. In “the broad sense” morality was “simply such thought and action as promote the improvement and satisfaction of human wants.” The “‘right’ thing to do,” Thorndike said, was that “which a man who could foresee all the consequences of all acts, and who considered fairly the welfare of all men, would in that case choose.” The “aims of education as a whole” were thus “identical with those of morality” (Thorndike, 1912, p. 29). Thorndike admonished teachers to model positive moral behavior, rather than talk about it. Using bullying as an example, he gave practical advice on what today would be called behavior modification techniques, in which undesirable behavior could be inhibited by being ignored, followed by “discomfort,” or substituted with positive behavior (Thorndike, 1912, p. 200). With characteristic concern for efficiency, Thorndike advised that positive reinforcement was more effective than punishment. Associating “good responses” with “satisfaction is in general preferable to the elimination of bad responses by pain or deprivation.” In situations where there were many possible responses punishment could be “very wasteful” (Thorndike, 1912, p. 201). Finding the right mixture of “incentives and deterrents” depended on the particular case and was “an intricate problem” (Thorndike, 1912, p. 202).

In his 1913–1914 magnum opus, *Educational Psychology*, Thorndike moved closer to a biological view of morality in which ideals were a product of evolution. Dedicated to the memory of William James, the three
volumes dealt exhaustively with "man's original mental equipment—the inherited foundations of intellect, morals, and skill," "the laws of learning," and individual differences (Thorndike, 1913–1914, p. vii). Thorndike formalized his research on learning into his three famous laws, "the laws of Readiness, Exercise and Effect" (Thorndike, 1913–1914, p. 1). He now stated that although there was "warfare of man's ideals with his original tendencies," "ideas themselves came at some time from original yearnings in man" (1913–1914, VI, p. 311). In his 1903 version of Educational Psychology Thorndike had still thought there were some intangible questions that could not be usefully addressed by facts. Answers to the question of the aim of education, for instance, of what "people ought to be," would come from "conceptions of ultimate values" and would be "judged not by facts but by ideals." (Thorndike, 1903, p. 163). A decade later, Thorndike's views on ideals were more genetic. And as his career progressed, there would be fewer reservations about questions which facts could not helpfully address or answer.

**Publishing Tests and Texts and Commercializing Educational Psychology**

World War I provided confirmation of the usefulness Thorndike's educational psychology and served as a catalyst for him to apply his research on a larger scale. The disappointing results of recruits' performance on the Army intelligence tests, which Thorndike had helped design and analyze, gave further impetus to the movement to develop widely available psychological products. Educational psychology boomed as a mass-market industry in the 1920s. In the years after the war, Thorndike produced a number of commercially successful school materials. In addition to the rating scales for handwriting, English composition, and drawing he had developed earlier, he created a word frequency book for teachers, dictionaries, and tests to measure oral and silent reading, geography, spelling, and other academic skills.

Thorndike became involved in commercial ventures that extended the influence of his work. Along with Cattell and Woodworth, he founded the Psychological Corporation in 1921 and standardized and copyrighted numerous educational and psychological tests. His most influential piece of curriculum "psychologizing" was his Thorndike Arithmetics series, published by Rand McNally, (Thorndike, 1917, 1922) which sold extremely well and augmented his academic salary handsomely (Jončić, 1968). These tests and texts were used throughout the United States and probably had more direct, lasting impact on children and schools than anything else Thorndike did.

Thorndike's educational products were successful in part because they were based on empirical research and appeared to be scientific. He claimed that the messiness of classroom teaching and learning could be transformed into a science; the mystique of science and his wealth of charts, curves, and statistics made his claims seem credible. Thorndike's products were also successful because they met educators' practical needs. His arithmetic books were easy for teachers to use and fit well with existing curricula and methods. His tests provided administrators with information on student achievement in a format that was useful and convincing for reporting purposes. And the standardized results of his assessments provided arguably fairer rationales for the selection functions society demanded of schools than did teachers' subjective ratings and grades.

True to his early rejection of developmentalism, Thorndike did not try to alter subject matter but accepted the traditional curriculum. His goals of making school curricula more rational and efficient and eliminating waste and redundancy were ideas that American teachers and parents could understand and accept. This public acceptance and commercial success, combined with the scientific "look" and usefulness of educational psychology, explains much about why Thorndike's methods won out over those of John Dewey (see Lagemann, 1989) and other more socially radical and child-centered educational philosophers and psychologists.

**Measuring Morality and Proposing a Science of Values**

In the last phase of his career, Thorndike applied some of the methods of educational psychology to broad societal issues. Supported by a large grant from the Carnegie Corporation and by the staff and facilities of Columbia's Institute for Educational Research, he now had the time, resources, and inclination to focus on the social and moral questions that had been underlying themes throughout his earlier work. Although the Depression had shaken faith in the power of science to solve social problems, Thorndike remained a firm believer. He thought psychology could serve as the basic science for the rest of the social sciences (Jončich, 1968) and began collecting data on industry, crime, labor, management, consumerism, government, law, economics, and all manner of other topics.

In *Your City* (1939), and other of the many studies that resulted from this enormous project, Thorndike went beyond measurement of specific facts to making normative and comparative evaluations of generic goodness. After statistical analyses of "over three hundred items of fact" on cities with populations of over 30,000 in 1930 (Thorndike, 1939, p. 21), he developed a "goodness" index based on 37 supposedly significant variables ranging from mortality rates, crime, home ownership, and teachers' salaries, to "per capita park acreage" and circulation of Better Homes, National Geographic, Good Housekeeping, and Literary Digest (Thorndike, 1939, pp. 29–31). Aside from the almost comical subjectivity and class bias of some of Thorndike's variables, *Your City* shows how hard it was to do social science before the advent of computers and multivariate regression analysis. Thorndike painstakingly calculated correlations among his variables and other statistics and reported his findings in detail. A "high percentage of Negro families," for instance, was "a bad sign" for a city's good-
ness index (Thorndike, 1939, p. 77). Not surprisingly, the cities with the lowest "G Scores" were in the South, although Woonsocket, Rhode Island, fared poorly as well. The highest scoring city was Pasadena, California (Thorndike, 1939, pp. 33-34). Thorndike then showed readers how they could measure their own cities, using a simple "ten-item city yardstick" that involved calculations such as obtaining the annual infant mortality rate, subtracting this number from 120, and multiplying the result by 2 (Thorndike, 1939, p. 153). Simplicistic counting and numerology such as this was characteristic of the 1920s and 1930s, when statistical surveys were the rage in American education (see Lagemann, 1998). Thorndike's work provided the methodology for this kind of quasi-scientific research.

That Thorndike was trying to quantify a measure of goodness beyond a simple urban quality-of-life index was apparent in his last major book, *Human Nature and the Social Order*, which was published in 1940, the same year he resigned from the Teachers College faculty. Thorndike returned to some of the religious and moral questions he had dealt with in a lighter vein 40 years earlier in *The Human Nature Club*. On the question of the existence of life after death Thorndike now stated unequivocally that science was a more powerful explanatory system than religion. Although science could not provide information about the existence of a "supernatural world." Thorndike argued that the value of believing in life after death should be viewed empirically and tested by its consequences. "If men had, during the past hundred years or thousand years, lived in the belief that the death of the body was the end of the person, who can be sure that they would have been less moral?" he asked. And in the future, would people be better off retaining traditional religious beliefs about immortality or by believing "that the fate of all men rested entirely with nature"? (Thorndike, 1940, p. 147). Thorndike thought answers to these and other "hard" questions should be determined by measuring the effects of such beliefs.

In *Human Nature and the Social Order*, Thorndike proposed the creation of a science of values that could inform moral and social decision making. He wanted to explore the "possibility and desirability of the existence of a natural science of values" that would "progress and improve upon the best present opinions about what is good and what is bad by studying consequences of various conditions and events for the satisfaction of wants present and future" (Thorndike, 1940, p. 347). He rejected two other approaches to social valuation: religious and democratic methods. Thorndike said these "inferior procedures," trying "to discover what God's will is," and putting "it to a vote of all citizens, each being given equal weight," were problematic because they were not scientific. Science was Thorndike's religion. He did not approve of political or moral systems that did not maximize efficiency and rationality. "The God of science is revealed in reality, and science rebels against counting the votes of imbeciles and ignoramuses, who do not know what is for their own good, much less what is for the good of others" (Thorndike, 1940, p. 351). Unashamedly hereditary and meritocratic, Thorndike thought more traditional, moral, political, and humanitarian views did not give enough weight to individual differences and was determined to find a scientific way to do so. "Ethics, politics and philanthropy have been guilty of neglecting individual differences, partly because doing so simplifies all problems, and partly because of the retention of theological and sentimental prejudices in favor of the similarity and equality of man" (Thorndike, 1940, p. 369).

Using methods similar to those he had used to assess handwriting and cities, Thorndike proposed a detailed, quantitative moral rating scale. This "system of weights" would combine both intellect and character and assign numerical scores for each. As on an intelligence test, an ordinary man would get a score of 100, while "Newton, Pasteur, Darwin, Dante, Milton, Bach, Leonardo da Vinci, and Rembrandt will count as 2000, and a vegetative idiot as about 1" (Thorndike, 1940, p. 372). Points would be added for "unselfishness, benevolence, and cooperativeness," exemplified by "Jane Addams, Madam Curie, Sidney and Beatrice Webb," and subtracted for "meanness and cruelty" (Thorndike, 1940, pp. 372-373). Young children would get extra points depending on their age, because they were "innocent," but no points were to be added for sex, family, wealth, or religious creed (Thorndike, 1940, p. 373). An individual child's score, however, was to be determined in part by those of her parents. Thus, "twenty-five percent of the plus or minus difference of his parents' average weight from 100 is combined with each child's intrinsic value until the age of twenty-five" (Thorndike, 1940, p. 373). If a child's background was unknown, credits or penalties would be added "for being a member of a certain racial stock" (Thorndike, 1940, p. 373).

One of the most troubling aspects of this supposedly scientific moral weighting scale, other than its obvious racial bias and subjectivity, was Thorndike's belief that people who came out with high numbers were, and should be, more powerful. "Effective valuation," was "the total net result of the evaluations of all the persons concerned, each weighted by the person's power" (Thorndike, 1940, p. 388). Thorndike was aware of the unfair, arbitrary, racist, and politically biased implications of disparities in power. He said, for instance, that a "magnate in business, government, the church, or literature" might see himself as "God, or God's special representative," and "grossly overrate the value" of his own wants, "or his family, or his church, or his dogs, or white men, or artistic people, or thirsty people, or members of the Communist party" (Thorndike, 1940, p. 388). However because of his positivistic ideology, and possibly because of his own success in the business world, Thorndike accepted such power differentials as inevitable.

Nor was Thorndike able to resist the tendency to play God himself. His faith in the power of science and valuing of efficiency led him to espouse some highly
undemocratic ideas. Like many other progressives, Thorndike supported eugenics and now proposed giving political power to the genetically more able (see Curti, 1980; Haller, 1984; Kevles, 1986). Thorndike had lectured on eugenics as early as 1913, but had stopped short of wholeheartedly recommending it (Thorndike, 1913). After more than 900 pages, the conclusion of Human Nature and the Social Order was an alarmingly simplistic list of 20 suggestions. Along with "increasing capital goods" and "the elimination of wars between and within nations," Thorndike recommended "better genes," "guidance by science," and a "national council of the able, good, and impartial endowed so as to be utterly their own masters." (Thorndike, 1940, pp. 957–961).

Thorndike said he supported absolute meritocracy because quality "was better than equality" (Thorndike, 1940, p. 962). Despite the unreasonableness of some of these conclusions, his final recommendation was to have "Reasonable expectations" (Thorndike, 1940, p. 963).

Conclusion
When the state of the job market in psychology led Thorndike to shift his attention from animals to education, he maintained the nineteenth-century linkage between intellect and character. In The Human Nature Club, Thorndike questioned traditional religious views but allowed for the possibility of Jamesian spirituality. In Notes on Child Study he rejected Hall's developmentalism as uninteresting, inexact, and immoral and advocated differential rather than genetic psychology. In the first version of Educational Psychology Thorndike maintained that the moral aims of education should be determined by ideals, not facts, and that morality was more influenced by environment than intellect was. In The Principles of Teaching he described morality as a product of learning acquired through numerous specific connections. In the second version of Educational Psychology he stated a genetic view of the origins of ideals. At the end of his career, in Human Nature and the Social Order, he proposed a moral measurement system and advocated selective breeding to enhance individual and social goodness. Incrementally, like the connections in his theory of learning, Thorndike's explanations of morality became more efficiency-oriented, biologically-deterministic, and positivistic.

Most of Thorndike's early positions on education and morality were relatively conservative. Unlike some progressives, he did not challenge traditional assumptions about the content of curricula or the moral and political purposes of education. Thorndike transposed the culture of the laboratory onto the school. He created a seemingly empirical, marketable knowledge base for education that met the needs of psychologists and educators and responded to societal demands for order and efficiency. Thorndike's systematization and transformation of older, quasi-scientific theories of education to fit the emerging intellectual and methodological frameworks of experimentalism made educational psychology understandable and acceptable to academics (White, personal communication, November 11, 1997). Thorndike's regularization and rationalization of educational philosophies and instructional methods made educational psychology compatible with the "grammar of schooling" (Tyack & Cuban, 1995) and useful to schools and teachers. Thorndike's awareness and exploitation of the commercial possibilities of educational psychology established it in the economic sector and provided a profit motive which propelled further expansion of the field. Encouraged by this success and supported by a wealthy private foundation, Thorndike then applied his empirical methodology to a wide range of other social issues and attempted to measure moral worth, just as he had objectified, quantified, and commodified human learning.

It is not surprising that Thorndike's proposal for a science of values was not as successful as his educational psychology. It was subjective, unwieldy, and went against the grain of American religious and political traditions. But Thorndike should not be blamed if the thorniness of morality and politics proved unsuited to scientific analysis, or if traditional moral reasoning and democratic ethics did not diminish his satisfaction with what others might see as the troubling nature of many of his conclusions about moral and social values (Clifford, personal communication, January 14, 1998, p. 3). Most progressives believed unquestioningly in the ability of science to solve societal problems, and many supported eugenics. Few, if any, saw, or could be expected to foresee, the problematic consequences of some of their research and recommendations (see McCormick, 1990). If Thorndike was blinded by the precision of his statistics, so were many other psychologists and social scientists.

Character and intellect were pervasive topics in Thorndike's work and continued to be themes in behavioristic psychology, as the ideas of John Watson and books such as B. F. Skinner's Walden Two (1948) and Beyond Freedom and Dignity (1971), and Richard Herrnstein and Charles Murray's The Bell Curve (1994) attest. Above all, however, Thorndike was a methodologist. He was an educational, moral, and social technician. Thorndike believed in lots of little measurements, not big theories. He excelled at doing exact, exacting analysis of data and reeled in work and findings other psychologists might have thought drudgery or minutia. Eagerness for "facts no matter how uninspiring," Thorndike wrote as the last sentence of Human Nature and the Social Order, would contribute more to "beneficent reforms" than "governments, churches, and social reformers in search of wholesale salvation" (Thorndike, 1940, p. 963).

REFERENCES