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EMPLOYEE ATTITUDE TESTING IN AMERICAN INDUSTRY: A HISTORICAL PERSPECTIVE ON BEHAVIORAL SCIENCE AND INDUSTRIAL RELATIONS

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Union leaders and their supporters have long been suspicious of behavioral scientists. As researchers, behavioral scientists have been criticized for their unitary premises and consequent disregard of unions. As practitioners, they have been characterized as "servants of power" and "cow sociologists" because they purportedly help employers to suppress unions and control their employees. In the past, however, little evidence was offered to sustain this latter claim. Most critics of the human relations movement directed their fire at the writings of prominent researchers like Elton Mayo but rarely considered how these writings were translated into industrial practice (Landsberger, 1958).

Recently, however, a growing body of research has verified the important role played by applied behavioral science in the post-1960 growth of industry's nonunion sector. According to this research, the nonunion sector was at one time primarily reactive, borrowing personnel innovations (e.g., fringe benefits and seniority rules) from the more dynamic unionized sector of the economy. But over the last twenty five years, nonunion firms have become proactive, leading the way in the application of behavioral science "technology" to the workplace (Foulkes, 1980; Verma, 1983; Verma & Kochan, 1985). Unfortunately, the reasons for this transformation are not clear. One explanation, proposed by Kochan and Capelli (1984), is that a set of "psychology-based, individual-oriented personnel policies" became available after 1960 and that nonunion firms were the first to adopt these policies and to demonstrate their labor relations potential. Yet much of this behavioral science technology --including personnel counseling, participative management, and group dynamics -- was available before the 1960s.

One technique with a particularly long history in both the union and the nonunion sectors is employee atttitude testing: the use of surveys and other methods to assess employee attitudes toward management and its policies.

Attitude testing began in the 1920s and remains popular to this day, after suffering something of a decline in the late 1950s and experiencing a renaissance in the late 1960s, for reasons discussed later. This paper focuses chiefly on industry's use of attitude testing prior to the 1960s, a period which researchers have not adequately examined.

While relatively easy to carry out, employee attitude testing is based on a complex mix of scientific methods and concepts: attitude constructs, scaling theory, interview methodology, and statistical methods like sampling and factor analysis. Indeed, one could argue that attitude research constitutes the intellectual core of the behavioral sciences. Thus, the history of employee attitude testing provides a paradigm of how behavioral science has been applied by management as a problem-solving tool.

Development of Attitude Surveys

Thomas and Znaniecki's The Polish Peasant in Europe and America (1918) was the first modern social science study to apply the term attitude to a purely mental state, as opposed to its original meaning of bodily position or posture, the sense in which it was used by 19th-century biologists and physiologists seeking a scientific explanation for human behavior (Fleming, 1967). The Polish Peasant was followed by numerous studies during the 1920s and 1930s that applied the term to both individual and group behavior. Although precise definitions varied (Allport, 1935), attitudes were generally viewed as orientations toward action. More than just feelings, they had cognitive and normative content, and they could be measured (Converse, 1985).

There was some disagreement, however, over how best to assess attitudes. One group, made up of sociologists (e.g, the "Chicago School"; see Madge, 1962) and anthropologists (e.g., Radcliffe-Browne, 1922), thought of attitudes as deep-seated or unconscious beliefs that had to be ferreted out by unstructured interviews, case studies, and field work. Another group, consisting largely of psychologists, was more inclined to accept self-stated opinions as valid measures of attitudes and relied on quantitative questionnaire data to document those opinions (Converse, 1987; Kiesler, Collins, and Miller, 1969). Hence the development of attitude scaling methods by Thurstone (1928), Likert (1932), and others constituted a major breakthrough for this latter approach. But members of both groups recognized the value of a syncretic methodology. Sociologists acknowledged the importance of validating interviews with quantitative data (Bogardus, 1924; Bulmer, 1981), while psychometricians like Thurstone (1935) developed techniques--notably factor analysis--for sifting through questionnaire responses to uncover latent attitude clusters.

The first significant commercial application of attitude surveys occurred in the area of market research. In the 1920s, manufacturers and advertising agencies conducted surveys of consumer attitudes toward particular products and advertising media (Haring, 1936; Lockley, 1950). By the early 1930s, several organizations -- A.C. Nielsen, Market Research Corporation of America, and Psychological Corporation, a consortium of academic psychologists -- offered market research services to industry. Most market research during this period was rather unsophisticated, consisting chiefly of informal interviews and "objective" (e.g., multiple-choice) questionnaires (Converse, 1987; White, 1931). A notable exception was Paul F. Lazarsfeld's work, which emphasized careful item construction, causal analysis of consumer motives, and the use of qualitative methods to probe for underlying attitudes (Lazarsfeld, 1934, 1935, 1937).

It was but a short methodological step from surveying consumer attitudes to surveying voters on political and social issues. Gallup, Crossley, and Roper, now well known as public opinion pollsters, began their careers in market research, establishing their reputations in the political arena when they correctly predicted Roosevelt's landslide in the 1936 presidential election (Converse, 1987; Jensen, 1980). After this, polling became a standard feature of the American political landscape, and research began to explore such topics as opinion formation and mass communication (Lazarsfeld, 1940; Murphy & Likert, 1938).

The Early Years: Employee Surveys Through 1941

Another area closely tied to market research was employee attitude testing. Here the pioneering practitioner was J. David Houser of Houser Associates. After training as an educational psychologist, Houser began his career in the early 1920s conducting consumer attitude studies for large public utilities (Houser, 1924). Among the marketing studies then being done, his work was notable for going beyond mere description and was praised for its careful causal analysis and its reliance on sampling theory (Houser, 1924, 1932, 1938a; Strong, 1938; Wheeler, 1935).

Houser's studies of employee attitudes were similarly sophisticated. Others had published journalistic accounts of worker attitudes (Williams, 1920), but Houser was the first to take a quantitative approach and to demonstrate its utility to employers. Prior to World War I, most American managers were more concerned with their employees' actions and behavior than with their attitudes and inner states (Bendix, 1956). But wartime strikes and labor shortages forced companies to adopt more systematic and scientific forms of personnel administration. According to economist Sumner Slichter (1929, p. 401) this new emphasis reflected "a growing realization by managers of the close relationship between industrial morale and efficiency." It also created an environment favorable to studying employee attitudes for knowledge as well as for profit.

While a Wertheim Fellow at Harvard in 1924-25, Houser interviewed a number of top executives and discovered that few of them had accurate information on their employees' morale and attitudes toward management. This ignorance was unfortunate, said Houser (1927, p. 164), since low morale caused employees to "express resentment through sabotage, 'soldiering' in their work, wage demands, and strikes." To gauge employee morale, Houser had interviewers ask employees a set of standardized questions about various factors in the work environment. Responses were then coded on a scale from 1 to 5, ranging from enthusiasm through indifference to hostility. In this way, Houser was able to compute an overall "morale score": a single number that, when averaged over all employees in a unit, allowed for comparisons across departments or firms.

The publication of Houser's book, What the Employer Thinks in 1927, was followed by a steadily growing number of academic studies that analyzed employee morale and job satisfaction. Some studies, concerned with broad social issues like occupational maladjustment, sampled employees from throughout a given community (Cole, 1940; Hoppock, 1935; Lazarsfeld, 1931; Watson, 1940). But most focused on the employees of single organizations and were conducted under employer auspices. They were marked by what was to become a characteristic feature of academic research on employee attitudes: the blending of theoretical concerns with practical suggestions for managers.

The industrial and social psychologists who conducted much of this early research relied heavily on standardized questionnaires and morale scales {1}. But they were more inclined to supplement these sources with interviews than were psychologists conducting research on other kinds of attitudes. There were several reasons for this proclivity. First, industrial psychology had its roots in vocational guidance, a field with a tradition of educational counseling (Bingham & Moore, 1931; Edgerton, 1926). Second, surveying employees in the workplace posed special difficulties. Workers were often suspicious of attitude surveys, fearing that they might suffer unpleasant consequences if their replies were too negative. Interviews added a personal touch that eased these anxieties and allowed for "free and frank expression, with no fears of reprisals and no doubts that personal confidences will be absolutely respected" (Kornhauser & Sharp, 1932, p. 395). The final factor was the considerable influence of the Hawthorne studies, which began at Western Electric in 1927.

Between 1928 and 1931, the Hawthorne researchers conducted over 21,000 interviews with employees. Originally intended to provide material for supervisory training programs, these interviews soon became an end in themselves because of their cathartic effect on employees. Workers enjoyed this form of "participating jointly with the company in its endeavor to improve supervision and working conditions"; they got "a lift" from "expressing freely their feelings and emotions" (Roethlisberger and Dickson, 1939, p. 227; see also Putnam, 1930). The interview technique used at Hawthorne was nondirective: The employee was allowed to choose the topics and speak without any substantive interference from the interviewer. Like the projective techniques developed in later years (Campbell, 1950), nondirective interviewing was somewhat manipulative in that it penetrated a person's conscious barriers and brought out latent or unconscious "sentiments." As Roethlisberger and Dickson acknowledged (1939, p. 272), their interview method owed much to the depth orientation of the sociological and anthropological strand in attitude research, as well as to the free association techniques widely used by psychiatrists (Jelliffe, 1918; Lasswell, 1930) {2}.

By the end of the 1930s, the issues that would inform employee attitude research for the next 20 years or so had become clear. Among them were human relations concerns such as the importance of supervision and the relative unimportance of pecuniary factors as determinants of employee morale (Houser, 1938b; Kornhauser & Sharp, 1932; Likert & Willits, 1940; Roethlisberger & Dickson, 1939); the consequences of high morale, particularly individual productivity (Hersey, 1932; Kornhauser 1933); and the development of conceptually refined and psychometrically sensible measures of morale (Chant, 1932; Child, 1940; Kolstad, 1938).

Despite this growing body of research, employee attitude surveys were not widely used by industry prior to World War II. A handful of progressive firms adopted the technique during the late 1930s when private consultants like Houser Associates, Stech Associates, and Opinion Research Corporation began to promote attitude testing as a tool for avoiding unionization or for mitigating the impact of recently organized unions. Sounding a common theme, Houser (1938b, p. 1) warned that "the gates are open wide to a flood of unionization" because of management's "dangerous and costly misconceptions and oversimplifications concerning the motives of men in their work." More specifically, he and others believed that managers overestimated the importance of pay and promotion in determining morale and underestimated the importance of such nonpecuniary factors as participation in management decisions, fair supervision, and interesting work (Bergen, 1942; Employee Relations Bureau, 1939; Mayo, 1933; Moore, 1941). With attitude surveys, said Houser (1938b, p. 20), business could get "a true picture of workers' motives and desires", thereby avoiding "the dangers inherent in complete unionization." These arguments were bound to appeal to employers, for they suggested, first, that union demands for wage increases did not reflect employees' true desires, and second, that less expensive and more effective ways of deterring unions could be found.

Of course, managers had other reasons for conducting attitude surveys. Imitating Western Electric, firms such as Westinghouse, one of Houser's clients, used survey results in their foreman training classes (Burke, 1939). In addition, many managers now took it as an article of faith that productivity could be raised by improving employee morale. Nevertheless, their dominant motive was the desire for a solution to the complex labor relations problem that confronted them.

In unionized firms, attitude surveys allowed managers to bypass the union as a source of information on worker attitudes and thus stay one step ahead in the competition for employee loyalty (Review, 1938). Moreover, they gave management a negotiating advantage during collective bargaining, since the company could safely reject any union demand which employees did not support or did not care about deeply (Bergen, 1942). Finally, they could function as a subtle form of communication. For instance, in a questionnaire booklet distributed in 1938 and again in 1940, Armstrong Cork (which was partially unionized) reminded employees of the company's largesse by asking them detailed questions about its various welfare programs (Evans, 1941).

Attitude surveys were also a useful device for firms seeking to avoid unionization (Bergen, 1939; Brown, 1941; Hersey, 1937; Smith, 1942). By identifying issues, departments, or employee groups that were potential "fuel for the fire of revolt" (Moore, 1941, p. 363), they enabled management to improve its policies and programs. They allowed large firms with many unorganized facilities to monitor the success of local managers in maintaining employee loyalty to, and satisfaction with, the company. The largest prewar survey program was run by Sears, Roebuck and Company, which hired Houser Associates to conduct attitude surveys at its predominantly nonunion stores and warehouses. Between 1939 and 1942, Houser surveyed over 37,000 Sears employees by means of a questionnaire that asked for opinions on specific workplace practices. The questionnaire also contained a 10-item scale that measured the employee's overall attitude toward the company, producing an employee's "morale score." After a local unit had been surveyed, the findings were discussed with the unit's manager, who was then expected to devise a written plan for remedying the problems uncovered (Hull, 1939; Hull & Kolstad, 1942; Jones, 1961).

Wartime Developments

Although the outbreak of World War II brought a temporary halt to the Sears survey program, elsewhere --notably in aircraft manufacturing, shipbuilding, and other defense industries--experimentation with attitude surveys increased. With labor scarce and with wages frozen by the War Labor Board, firms in these rapidly growing industries had to be especially attentive to worker complaints; attitude surveys aided in this endeavor (Factory Management, 1942, 1943). These firms also hired employee counselors to help defense workers with the many housing, child care, and other problems they faced. As at Western Electric, which started a model counseling program in 1936 (Dickson & Roethlisberger, 1966; Wilensky & Wilensky, 1951), wartime counselors were expected to raise morale by listening sympathetically to complaints, thus giving workers an opportunity to "let off steam"; these complaints were then summarized (with care taken to preserve anonymity) and reported to management (Baker, 1944; Cantor, 1945; Fuller, 1944; Tead, 1943).

Corporate survey activity was overshadowed by that of the federal government, which commissioned numerous polls and surveys during the war. Gallup and Roper worked for the government, as did a large number of behavioral and social scientists, including over a fifth of the nation's psychologists (Viteles, 1945) {3}. With their help, the War Department's Morale Services Division conducted over 250 surveys of soldier attitudes and these led to studies of topics that had obvious relevance for industry, such as the relationship between combat performance and troop morale (Elinson, 1949, Katz, 1951; Stouffer et al., 1949).

Because of the importance attached to winning the war on the home front, government researchers directed much of their attention to the civilian population. To assess civilian morale, the Office of War Information (OWI) employed public opinion pollsters like Gallup as well as a more academic group of social psychologists headed by Rensis Likert, who was then based in the Department of Agriculture (Harding, 1944; Marquis, 1944; Likert, 1947; Skott, 1943) {4}. The OWI was especially interested in the morale of the nation's defense workers and its relationship to productivity and absenteeism, issues that Likert's group studied by surveying workers in shipyards and other defense plants (Katz & Hyman, 1947a, 1947b).

The Postwar Boom, 1945-1955

Employee attitude surveys jumped in popularity toward the end of the war and spread throughout industry during the following decade. Each year after 1944 saw a steady increase in the number of firms using surveys and by 1954, when the growth curve began to flatten out, about two in five large firms had conducted at least one survey (Table 1). The most common users were large firms and firms that had previous experience either with consumer surveys or with psychological selection testing; hence, the prevalence of surveying in nonmanufacturing industries like retailing and public utilities {5}.

What accounts for this surge in popularity? First, because of their contributions to the war effort, the behavioral and social sciences enjoyed great prestige outside the university. Employers were more eager than ever before to hire technical personnel specialists to design training, selection, and compensation programs, as well as to conduct attitude surveys. One psychologist said that employers had become "psychologically minded" (Canter, 1948), ready to embrace the notion that "the whole question of efficiency and productivity boils down to one thing: understanding the MOTIVATIONS of your employees and taking steps to SATISFY them" (Research Institute of America, 1949). By 1948, 30 percent of large corporations had a psychologist on staff, while others employed sociologists, psychiatrists, and anthropologists (Baritz, 1960; Bennett, 1948; Gordon, 1952; Tiffin, 1958). A related development was the rapid growth of corporate personnel departments during and after the war. To justify their larger budgets, these departments needed some quantitative measure that would prove their effectiveness, and surveys of employee morale levels provided one such indicator (BNA, 1954; Stock & Lubin, 1946).

Second, labor relations concerns fueled the interest in attitude surveys, just as in the late 1930s. But now, more confident than before, managements were ready to launch a well-financed offensive against organized labor. Although unions had grown in size and stature during the war, a wave of strikes in 1945 and 1946 damaged their public image. Perceiving "a window of opportunity", employers set about the task of reclaiming their authority in national affairs. On the legislative front they pushed for passage of the Taft-Hartley Act, at the same time embarking on a campaign to convince the public of the virtues inherent in the free enterprise system, an effort that continued even after the act was passed (Harris, 1982; Whyte, 1950). To guide this campaign, companies relied heavily on surveys of public opinion, just as the government had relied on polls to shape its wartime propaganda. Opinion Research Corporation (ORC), for example, conducted polls for industry on topics such as "Collectivist Ideology in America" and "Collectivist Ideology and Economic Ignorance" (Viteles, 1953).

The workplace itself was the vital center and chief target of this public relations campaign. Both unionized and nonunion firms bombarded their employees with films, magazines, pamphlets, and personal letters, all designed to convince them that management was a generous, friendly, and trustworthy guardian of their interests. Attitude surveys played a crucial role in this effort, since they provided the data necessary to plan "downward" communications and to gauge employee reactions to them. Consultants like ORC and Psychological Corporation did a brisk business, conducting attitude surveys to evaluate communications programs at companies like Alcoa, Pittsburgh Plate and Glass, and General Electric, whose communications program was designed by Lemuel Boulware, a former GE marketing vice president (Boulware, 1948; Business Week, 1953a). Often the survey itself became an instrument of propaganda, as when workers received glossy postsurvey brochures announcing that "97 percent of employees think this is an above-average plant" (Factory Management, 1948, p. 90; Hurst, 1948). Moreover, by giving employees "an outlet for their dissatisfactions," surveys were widely acknowledged to be a direct and relatively inexpensive way for companies not only to measure but to raise employee morale. For this reason, four out of five companies surveyed all the employees in a given unit, rather than selecting a representative sample (Campbell, 1948; McMurry, 1946, p. 215; Raube, 1951).

Attitude surveys also had more specific labor relations functions, just as before the war. Those firms that had managed to remain nonunion were well aware that, as one manager put it, "Unions would have far less control and influence in this country if industry had been listening, and once having developed the art of listening, reacted as it should have to what it heard" (BNA, 1951, p. 12). One prominent nonunion company, Thompson Products (later TRW) fended off several organizing drives during the 1940s by combining a pugnacious communications program with periodic employee opinion polls that were used to debunk claims made by union organizers (Iron Age, 1944; Factory Management, 1946).

At Sears, which renewed its survey program in 1946, attitude testing became the critical element in a "firefighting" strategy whereby units thought to be especially vulnerable to union organizing efforts -- because of poor local management, employee complaints, or location in a heavily unionized community --

were targeted for surveys. Those in charge of the program claimed it could accurately forecast union activity in a particular department or division. According to Burleigh B. Gardner, an anthropologist who served as a consultant to Sears, "You could see it coming clear as day ... [and could] predict trouble in six months unless you acted." In these surveys, employees at the store completed a questionnaire designed by Gardner and David G. Moore; then, selected employees were followed up with nondirective interviewing {6}. Managers of units whose average "morale score" fell below 35 (the questionnaire scale ran to 100) were advised to "start looking where your trouble is and start figuring out how to do something about it" (Gardner, 1985) {7}.

Although some managers argued that attitude surveys were unnecessary at heavily unionized firms (BNA, 1954), this was a minority point of view. In the postwar period, managements of heavily unionized firms made determined efforts to contain union inroads on their prerogatives while at the same time aggressively competing for the rank and file's trust and loyalty. According to several contemporary studies of what was called the "dual loyalty" issue, even in situations where union solidarity was high, workers could have very positive attitudes toward management, though a conflict of values existed (Katz, 1949; Gottlieb & Kerr, 1950; Rose, 1952; Stagner et al., 1954). Among other things, this suggested that the proper managerial response to a popular union was not fatalistic quiescence but instead the kind of sophisticated aggressiveness displayed by firms like General Motors, General Electric, Ford, and Monsanto, each of which made attitude surveys part of its labor relations strategy. Surveys provided a legal means to undercut the union's role as the workers' exclusive representative, thus making it possible for managers to "give" before the union "demanded and won," and to "separate a demand by a union business agent from a request by the majority of workers" (Irwin, 1945,p.42; see also <u>Business Week</u>, 1953b; <u>Fortune</u>, 1943). Three prominent psychologists summarized the logic behind this approach: "In the competition between employers and unions motivations involved to that extent improves its ability to accomplish its own purposes" (French, Kornhauser, & Marrow, 1946, p.10).

Exceptionally effective in this regard was General Motors, the first of the Big Three companies to develop a coherent labor relations strategy. GM's approach was Janus-like: The unions were faced with a tough adversary in bargaining and contract administration, while the employees saw a more human visage as the company sought to establish direct and personal ties with them. To carry out the latter objective, GM established an Employee Relations Department in 1945. Its director, Harry B. Coen, was an ardent opponent of the UAW who once said, "I do not believe in making the union contact the only one between our employees and ourselves ... I am hopeful that ... we as a staff can deal with it in such a manner that the union aspect will be only one little segment, or whatever segment it cares to be" (quoted in Bendix, 1956, p. 329). Coen picked L.N. Laseau, formerly with GM's Customer Research staff, to head the department's employee research section, and over the next two years Laseau developed an attitude survey program for GM {8}.

In 1947, the company announced a giant contest in which employees were to write essays on "My Job and Why I Like It." Prominent persons like Peter Drucker and George W. Taylor were hired to judge the essays, and more than $150,000 in prizes -- including 40 new cars and 65 refrigerators-- was set aside. The contest had two objectives. The first was to raise morale directly by encouraging employees to reflect on the company's positive attributes and by creating the impression that GM was a fun place to work. To promote the contest, Laseau distributed banners, flyers, and pamphlets to all GM plants, some of which also sponsored parades and parties with hired orchestras. The second objective was to ascertain employees' attitudes toward the company, information that would be useful in dealing with the union and in modifying company policies so as to improve morale. Laseau's staff prepared special manuals to code the content of the essays and was thus able to identify 58 major themes. Divisions were given the results and asked to prepare action plans to correct problems. GM also asked university researchers to analyze the contest data. This request spurred a variety of projects, including the compilation of an industrial workers' word list to be used as a guide in corporate communications, as well as several studies by Paul F. Lazarsfeld, who used the data to test his method of latent structure analysis, a variant of factor analysis. In addition, GM hired ORC to find out what employees thought of the contest. Although the contest itself was never repeated, ORC in subsequent years conducted periodic attitude surveys at GM plants around the country (Evans & Laseau, 1950; Business Week, 1949).

The United Automobile Workers (UAW), which represented most of GM's workers, was quick to condemn both the contest and some of the company's other surveys. Its president, Walter Reuther, called the contest "an attempt to conduct a one-sided opinion poll" (Mill & Factory, 1948), and most local union newspapers also criticized it. In some plants, contest posters were torn down, and handbills were distributed saying that the contest was part of an effort to destroy the union. The most publicized union attack on GM's survey program occurred in 1955, after ORC conducted structured interviews with workers at the company's Flint plant, during which it asked several questions on the topic of the guaranteed annual wage (GAW). Since the union was planning to demand a GAW in its upcoming bargaining sessions with GM, Reuther claimed that these questions were biased or "designed to elicit answers that could be damaging to the union." Reuther added that he was not opposed to atitude surveys per se, so long as they were "properly and honestly applied" (Business Week, 1955). Indeed, in at least one instance the UAW cooperated with the management of a small Illinois auto parts firm in conducting a survey (Business Week, 1956; Mason, 1949).

Such cooperative endeavors were, however, the exception rather than the rule. While 85 percent of a group of union leaders favored the joint survey approach (Raube, 1951), managements usually rejected it. In fact, nearly half of all the companies studied by the Conference Board did not even inform the union beforehand about their plans to conduct a survey, and 60 percent did not share survey findings with union officers (Raube, 1951; McMurry, 1946). One manager said he did not involve the union in his company's survey program because he feared that the union would "attempt to control the views of the membership and thus defeat the true purpose of such a survey" (BNA, 1951, p.4). Some university-based consultants (e.g., Michigan's Institute for Social Research) refused to conduct a survey that did not have union approval. But most consultants did not share this inhibition (Kornhauser, 1961) {9}.

Hence it is not surprising that union leaders were suspicious both of attitude surveys and of the people conducting them: industrial and social psychologists and professional pollsters (Kornhauser, 1947; Raube, 1951; Habbe, 1961). Although this suspicion did not always erupt into outspoken opposition, there was nevertheless the underlying fear that, as one union spokesman said, attitude surveys would undermine the most fundamental aspects of unionism by "stealing the prestige for the solution of problems [from the grievance and bargaining mechanisms] and arrogating it completely to a management-controlled device" (Barkin, 1952, p.82). The unions themselves made little use of the survey technique to study their own members: Neither the AFL nor the CIO knew of any such studies conducted prior to 1950, and only a handful were done during the 1950s (Davis & St. Germain, 1952; Rosen & Rosen, 1955; Kirchner & Uphoff, 1955) {10}. The reasons for this lack are not clear, but it is likely that union leaders thought of the attitude survey as a tainted, rather than a neutral, device and viewed survey consultants in a similarly unfavorable way (Barkin, 1961; Katz, 1949) {10}.

Practical and Professional Problems

Despite its popularity, surveying was fraught with problems attributable to the inexperience of corporate surveyers and the expedient nature of their surveys, which were often little more than a "potpourri of items thrown together by harried personnel workers" (Thompson, 1959). Attitude surveys purported to be measuring something termed "employee morale" or "job satisfaction," yet this key concept was neither carefully defined nor operationalized, and as a result the term took on a plethora of meanings (Child, 1940; McNemar, 1946; Guion, 1958). To the extent a central tendency could be observed, however, the assumption seems to have been that morale was a unidimensional continuum reflecting an employee's attitude toward the company and his identification with its management (Brayfield & Crockett, 1955; Kornhauser, 1944; Gordon, 1955).

Another problem was that those conducting the surveys were naive about what Viteles (1953) termed the "bias of the auspices": the fact that employees were less likely to speak truthfully to their employer or to someone representing him than to a more impartial and less threatening person (Dunnette & Heneman, 1956). While many employers took steps to encourage a sense of anonymity --including locked "ballot boxes" and the omission of coding numbers on questionnaires--such efforts were not always enough to overcome suspicion and bias. (Benge, 1946; McMurry, 1946). To cite one egregious example: At Westinghouse in the late 1930s, some employees signed their questionnaires even though they were told not to. But far from elicting skepticism about response validity, the manager in charge boasted that this behavior proved that the employees "felt sure that the questionnaire would not be misused" (Burke, 1939, p. 27).

The questionnaires themselves were often poorly constructed, used leading questions and emotionally toned words, and encouraged a rigid patterning of responses. Few were designed to systematically measure relationships between variables or to assess causal relationships. Although some of the more sophisticated surveys collected demographic and other factual data, most failed to take account of the age, occupation, and other salient characteristics of the surveyed employee groups (Katz, 1950; Viteles, 1953). Moreover, because the questionnaires were customized instruments containing firm-specific rather than standardized questions, survey results were rarely comparable across firms. The lack of external norms meant that companies had no idea of how their employees stacked up against those in similar firms.

One consequence of these problems was that employee attitude surveys contributed little to scientific research. Given the absence of careful controls and of systematic research designs, it is not surprising that behavioral scientists tended to ignore the literally tons of data collected by corporate survey programs. To serious researchers, the typical survey represented little more than a mere "counting procedure" (Katz, 1950, p. 212).

To the extent that these problems led to trivial or biased results, they reinforced management's doubts about the practical value of the surveys. Almost a fifth of all firms questioned by the Conference Board admitted that they learned little or nothing about their employees from attitude surveys (Raube, 1951), while another study found a significant minority who faulted attitude surveys because of poor design and because employees systematically lied on them (BNA, 1954). Of course, employers had other reasons for their dissatisfaction. Some feared that surveys might give the union ammunition with which to attack the company, while others felt that they would awaken "sleeping dogs" by suggesting complaints and misgivings to employees (McMurry, 1946). As a result, companies were often wary of reporting survey results to their workers, and survey follow-ups were poorly done {11}. For all of these reasons, then, attitude surveys were less widespread than other psychological techniques like selection tests {12} and were usually one-shot affairs rather than part of a continuing program, as at Sears or Monsanto.

A Military-Industrial Complex

At the same time that attitude testing was catching on in the corporate world, research on employee attitudes was burgeoning among behavioral and social scientists in the universities. Three times as many studies relating job factors to employee attitudes were published between 1950 and 1954 as had appeared between 1940 and 1944 (Herzberg et al., 1957). The military--through agencies like the Office of Naval Research --heavily supported research in this area, including the Ohio State leadership studies and the employee morale studies done at the University of Michigan {13}. Private companies also funded many of these studies by hiring university researchers to survey their employees and by contributing funds for the development of new survey instruments. These ties between government, universities, and corporate personnel departments were not unprecedented: Similar research nexuses had developed during and immediately after World War I (Noble, 1977). What was new was the large volume of subsidized research and the extent to which behavioral scientists became dependent upon it.

The relationship between industry and academia was symbiotic: Both sides profited from it. For behavioral scientists interested in employee attitudes, industry provided research issues, research sites, and support for themselves and for the new industrial relations institutes established after the war. To take advantage of these opportunities, academics had to learn a whole new etiquette for establishing cooperative research relationships with business clients (Likert & Lippitt, 1953). For industry, linking up with the universities had two advantages. First, it conferred legitimacy on attitude testing and other personnel techniques, casting them in a neutral, scientific light and allaying the suspicions of workers and union leaders. Thus, when Pitney-Bowes hired researchers from Dartmouth's Tuck School to conduct an attitude survey, the employees were given a brochure describing the Tuck staff and containing photographs of the school, of sealed questionnaire cartons being loaded into a car headed for Dartmouth, and of the Tuck researchers tabulating the survey data (Raube, 1951). The second and more important benefit of the academic connection was technical assistance in solving the various problems that beset employee surveys. The contribution made by academe can best be understood by examining the activities of several key university groups involved in employee attitude research.

The Industrial Relations Center (IRC) at the University of Chicago was headed by Robert K. Burns and supported by a number of local companies, including Sears, Roebuck. In the late 1940s, Sears became dissatisfied with its existing survey instrument because, like other questionnaires then in use, it was difficult to administer, lacked psychometric rigor, and provided no basis for external comparisons. Sears turned to the IRC for help, and in 1950 a group of Chicago faculty members including Burns, L.L. Thurstone, and David G. Moore, a former Sears manager, joined forces under the aegis of the IRC to develop an employee attitude questionnaire that Sears as well as other companies could use. By applying item analysis, factor analysis, and other statistical techniques, the Chicago group developed a sophisticated, self-administering instrument known as the Employee Inventory (EI). Science Research Associates (SRA), a testing outfit founded by Burns, published the EI and sold it, along with scoring and analysis services, to firms wishing to survey their employees (Baehr, 1953; Burns, 1952; Moore, 1985). Easy to use and bearing good academic credentials, the inventory soon became industry's most popular employee attitude questionnaire (BNA, 1954). Because so many firms purchased the EI, SRA was able to develop national norms for the inventory, thus allowing firms like Sears to compare their EI scores to those of other users (Burns, 1954; Minaker, 1953; Moore & Burns, 1956). A similarly sophisticated questionnaire, the Triple Audit, was developed in 1948 at the University of Minnesota's Industrial Relations Center, but it was more frequently used for research purposes and had less commercial success than the Chicago instrument (England, Korman & Stein, 1961; Hamel & Reif, 1952; Yoder, Heneman, and Cheit, 1951).

Also more research-oriented than the Chicago IRC was the Institute for Social Research (ISR) at the University of Michigan, which conducted a series of landmark studies examining the relationship between morale, supervision, and performance. Using questionnaires and structured interviews, the Michigan researchers studied workers at a number of major companies, including Caterpillar Tractor, Studebaker, Detroit Edison, Prudential Life Insurance, and the Chesapeake and Ohio Railroad. Not only did the ISR group contribute significantly to an understanding of the determinants of employee morale, but it also blazed a methodological trail by demonstrating that employee attitude surveys could be designed to yield valuable generalizations for the behavioral sciences and at the same time to produce useful results for the companies sponsoring the research (Likert & Katz, 1948; Likert, 1953; Kahn, 1956)

While conducting surveys for Detroit Edison in the late 1940s, the ISR group also developed the technique known as "survey feedback", an interesting blend of theory and practice (Mann and Likert, 1952; Schwab, 1953; Mann 1957). On the surface, feedback appeared to be no more than a modest device for improving survey follow-ups and for ensuring the widespread dissemination of survey findings, both weak spots in survey practice. But in actuality, it turned the survey into a powerful tool for <u>changing</u>, as well as monitoring, employee attitudes. At Detroit Edison, for instance, survey findings were presented to employees through an interlocking chain of group meetings that took place over a two-year period following the survey. First the company's top executives discussed the findings and planned remedial actions, and then they held similar meetings with their subordinates. The process was repeated down the managerial ranks to the first-line supervisors and their work groups. According to the ISR researchers, this consultative approach had a number of positive effects on employees: It deepened their interest in the survey, helped them to identify more closely with it, and made them readier to accept and support corrective measures introduced as a result of its findings. (One might add that these group meetings had great symbolic value, allowing management to demonstrate its concern for the employees and their opinions.) This procedure was consistent with the human relations tenets of Kurt Lewin and his students, who emphasized the change processes associated with employee participation and small groups (Lewin, 1948; Coch & French, 1948).

The ISR studies were also among the first to employ factor analysis as a method for more precisely defining employee morale. Rather than being a single factor, morale was found to comprise four dimensions: intrinsic job satisfaction, satisfaction with the company, satisfaction with supervision, and financial and job status satisfaction (Katz et al., 1951; Katz & Kahn, 1952). Other university researchers also experimented with factor analytic definitions of employee morale. Some, such as the Chicago group working on the Employee Inventory, received support from private sources (Baehr, 1954), while others were funded by the Air Force, which became interested in factor analysis after the war (Smith & Westen, 1951; Gordon, 1955). Even though this research helped to refine the definition of morale statistically, it left plenty of room for disagreement over how to apply and interpret factor analyses of employee surveys (Wherry, 1954; Katzell, 1958,). Moreover, critics contended that researchers and managers still used "high employee morale" as a euphemism to describe workers who were "happy, contented, but typically docile" (Wilensky, 1957, p.39).

While the "fit" between industry and academia was generally good, each partner had its own agenda and did not always provide what the other side wanted. Employers were dismayed by researchers who insisted that the union be involved in any survey, and researchers had to deal with clients who were indifferent to, and ignorant of, a survey's contributions to the theoretical literature. Thus, ever though numerous studies failed to confirm any direct causal link between morale and performance, 86 percent of managers polled in 1957 asserted that such a relationship existed (BNA, 1957) {14}.

Surveying Since the Mid-1950s: An Overview

After more than a decade of rapid growth, the number of new users of attitude surveys began to taper off after the mid-1950s as indicated in Table 1: Between 1954 and 1963, the proportion of firms conducting surveys of their hourly or salaried employees changed very little; while surveying became more common among medium-sized firms over this period, the proportion of large firms using the techniques remained constant. These trends failed to register in academia: The number of research studies dealing with employee attitudes did not decline noticeably, but fewer articles on surveying appeared in management-oriented magazines and journals {15}.

These trends may be illusory, the result of faulty data. But a more plausible explanation for the appearance of stasis is that, by the late 1950s and early 1960s, managements were feeling more secure of their standing with the public, the unions, and their employees than at any time during the previous three decades. In the realm of public relations, business had regained much of the prestige eroded by the Great Depression. In politics, it bested the unions in the battle over Taft-Hartley and won a smaller, though still significant, victory with the passage of the Landrum-Griffin Act in 1959. Confident of their ability to control industrial relations problems, managers of unionized firms adopted a "mature" view by finally accepting unions as a permanent feature of the environment and by concentrating their energies on stabilizing labor-management relations. In the unorganized sector, unions posed less of a threat because they had lost their organizing momentum: After the mid-1950s, they represented a declining proportion of the labor force. Thus, employers throughout industry felt less pressure to experiment with esoteric techniques like attitude surveys.

This is not to say that companies with existing survey programs disbanded them. They did not. In fact, in the late 1950s a number of firms began to include managerial and professional employees in their programs (Dunham & Smith, 1979; Habbe, 1961; Laitin, 1961). In addition, the introduction of high-speed computers led to a variety of innovations in survey technology. Using machine-readable survey forms, Sears was able to survey all 200,000 of its employees in 1959, while AT&T in 1960 conducted factor analyses of thousands of employee questionnaires (Clarke & Grant, 1961; Smith, 1985). But those companies that had never previously utilized attitude surveys were now less willing to adopt them than in the immediate postwar years.

The situation changed again starting in the late 1960s and early 1970s: The proportion of manufacturing firms conducting employee attitude surveys rose from 21 percent in 1964 to 45 percent in 1981 (Table 1), with most of these programs being adopted after 1972 (New York Stock Exchange, 1982; see also BNA, 1964, 1975). One driving force behind this change was industry's growing reliance on behavioral science tools to solve workplace problems (Rush, 1969). These tools included the innovations in work organization associated with the "quality of work life (QWL)" rubric as well as a variety of organization development (OD) techniques such as participative problem solving, task forces, team building, and employee involvement programs. While the precise mix of techniques has varied from company to company, once a firm uses some of them, it is more likely to adopt others, including attitude surveys. Thus, according to one study which distinguished between companies that were heavy and light users of OD techniques, the OD group was more than twice as likely as the non-OD group to have survey programs and made more extensive use of participatory mechanisms like survey feedback in conducting these programs (Rush, 1973; see also Nadler, 1977).

But the proliferation of attitude surveys and other practices based on behavioral science stemmed from deeper and more significant developments in the labor relations arena. Not only did union organization amongst private firms decline steadily during the 1960s and 1970s, but at the same time there emerged a dynamic nonunion sector comprising both unorganized firms like those in "high tech" industry and new, nonunion divisions within older, unionized companies (Verma & Kochan, 1985). These firms employed large numbers of white-collar technical and professional workers, a highly educated group with special needs. Managing these employees required personnel policies that promoted communication and group decision making -- precisely the outcomes that could be achieved through the use of attitude surveys and survey feedback, as well as other personnel techniques grounded in behavioral science. Today, managers of some nonunion firms remain wary of surveying because they regard it as too group-oriented (like unionism), but this is a minority view. Modern managers tend to be more educated and even more "psychologically minded" than their predecessors. Hence they are less reluctant to interact with behavioral scientists. They also understand that attitude surveys can function as a "voice" substitute for unionism, keeping an organization responsive to employee problems which, if ignored, could provide an opening wedge for unionization (Sherman, 1969). As the vice president of one large nonunion company said, "Management is convinced the survey is an effective tool of remaining nonunion. It allows us to keep our finger on the pulse, and we don't have to justify the budget request for the survey" (Foulkes, 1980, p. 263).

These developments were not limited to the nonunion sector. During the past 15 years, as the union-nonunion wage gap has widened and as unions have declined in popularity, the managers of unionized firms have adopted a more aggresive posture and have shifted their priorities from maintaining stability in union-management relations to confronting weak unions, and, where possible, undermining or even eliminating them. Today's managers are less likely to accept the inevitability of unions and are less skeptical of behavioral science techniques than were their predecessors of the 1940s and 1950s (Kochan & Capelli, 1984). Management's greater reliance on attitude surveys in unionized firms has weakened the union's position as the employees' representative. In 1964, 96 percent of the managers in unionized firms reported that they depended on union representatives to supply them with information on employee concerns; by 1975 this figure had fallen to 56 percent (BNA, 1964, 1975).

Conclusions

One important conclusion to be drawn from the history of employee attitude testing is that industry's reliance on behavioral science is neither a recent (i.e., post-1960) phenomenon nor one that has developed in a linear fashion, gradually becoming more prevalent over time. Rather, the diffusion of behavioral science throughout industry has followed a rational pattern not unlike that of capital-embodied innovations, in which the rate at which an innovation spreads throughout industry is positively related to its perceived profitability and inversely related to the size of the initial investment required to implement the technology (Mansfield, 1961).

In the case of employee attitude testing, which can be used to repel or to weaken unions, managerial perceptions of profitability have been influenced by shifts in the expense of dislodging or deterring unions relative to the benefits of operating without them, including lower relative wage and strike costs. Thus, managers in organized firms perceived the technique to be most profitable during periods when unions were regarded as vincible (e.g., the late 1930s), costly (e.g., the immediate postwar years), or both (e.g.,the recent period that started sometime in the early 1970s). During the 1950s and 1960s --the heyday of mature collective bargaining -- managers in unionized firms were able to absorb or pass along the costs of unionization; they also realized that their bargaining partners could not easily be dislodged and reluctantly accepted them as part of the status quo. In the nonunion sector, managers perceived attitude testing to be most profitable when the threat of organization was high (i.e., during the 1930s and 1940s when the labor movement was expanding) or when the cost of unionization was high (i.e., during the recent period when the union-nonunion wage differential began to widen, a factor that also affects the union sector). Other factors that account for the recent shift to attitude testing in both the union and the nonunion sectors include the rising education levels of managers --*ceteris paribus*, this enhances perceived profitability --and the declining cost of implementing the technology, as a result of machine-readable questionnaires and the scale economies associated with the growing use of other behavioral science techniques.

These conclusions are buttressed when we look at the situation in countries like Canada and Great Britain. Although these two nations have industrial relations systems similar to that of the United States, their employers are more likely to see unions as inevitable and their union-nonunion wage gaps are narrower. As a result, attitude testing and other behavioral science techniques are far less prevalent than in the United States (Xishan et al., 1983; Thomson & Warner, 1981). Although precise evidence is lacking, the United States may also have a more extensive social infrastructure linking academia, government, and business, a nexus that serves to reduce the private cost of implementing applied behavioral science technologies.

In appraising employee attitude testing, one must ask whether it is simply a neutral technology or instead a form of communication that is inherently less democratic than other available channels such as those provided by union representation and similar participatory mechanisms. In an illuminating essay on the history of attitude research, Donald Fleming (1967) argues that the development of the modern concept of attitude over the last 70 or 80 years coincides -- not by accident -- with the incorporation of the masses into public affairs: "Their preferences, their response to public issues, became of crucial importance, if only to...manipulate them from above." Although Fleming does not say so, this period saw the rise not only of mass political democracy but also of industrial democracy, as a workforce increasingly insistent of its rights forced organizations to become more sensitive to the thoughts and desires of their employees. Attitude testing represents one response of industrial elites to this development. Although the technique benefits employees by bringing their problems to the attention of management, it tends to do so in a fashion that encourages employee passivity and enhances top-down, expert-led solutions. The history of attitude testing demonstrates that applied behavioral science is a double-edged sword, one that management uses to solve employee problems but also wields as a weapon in the struggle for control of the workplace.

Table 1.

Industrial Use of Attitude Surveys, 1947-1982
(percentage of firms that had conducted at least one survey)

	1947	1954	1963	1981	1982
All firms	7	-	-	-	45
Type of firm					
Manufacturing	6	-	21	45	-
Nonmanufacturing	11	-	-	-	47
Employees surveyed					
Hourly	-	15	17	44	-
Nonexempt salaried	-	21	18	45	-
Number of employees in firm					
500-1,000	-	-	21	-	33
1,000-4,999	11	15	21	-	42
Over 5,000	19	38	38	-	67

Note. The 1954 data on size refer to hourly employees, 92 percent of whom were employed in manufacturing. All of the 1963 data are for manufacturing employees.

Sources: 1947: "Personnel Activities in American Business", National Industrial Conference Board (NICB), Studies in Personnel Policy (SPP) no. 86 (1947), p.32; 1954: "Personnel Practices in Factory and Office", Fifth ed., NICB, SPP no. 145 (1954), pp. 55, 109; 1963: "Personnel Practices in Factory and Office-Manufacturing", NICB, SPP no. 194 (1964), pp.55-56; 1981: Harriet Gorlin, "Personnel Practices III: Employee Services, Work Rules", Conference Board Information Bulletin no. 95 (1981), pp. 24-25; 1982: New York Stock Exchange, Office of Economic Research, People and Productivity: A Challenge to Corporate America (1982), pp. 25, 44-47.

Notes

1. See, for example, the research done by Uhrbrock (1934) for Procter and Gamble, a firm that also pioneered in the use of psychological selection tests.

2. The Hawthorne experiments -- though more extensive than anything done previously -- were not the first industrial application of these techniques. Earlier, White (1924) had used "free interviewing" to assess employee attitudes, while R.H. Macy & Co. in the mid-1920s hired psychiatrists and social workers to run an interviewing and counseling program for its employees (Anderson, 1929).

3. Of course, many of these social scientists worked in areas other than attitude research, such as the armed forces' personnel selection and classification program.

4. For a fascinating analysis of a wartime methodenstreit between these two groups, see Converse (1984). After the war, Likert's group became the core of the new Institute for Social Research at the University of Michigan.

5. In 1947, nonmanufacturing firms were twice as likely as manufacturing firms to use attitude surveys (11 percent vs. 6 percent) and selection tests (32 percent vs. 15 percent). Within the manufacturing sector, attitude surveys were most prevalent in the aircraft, instruments, oil, glass, and paint industries, all of which (with the exception of paint) were also heavy users of selection tests (Raube, 1947).

6. After the war a growing number of companies besides Sears supplemented their written questionnaires with nondirective, "depth," or "open-ended" interviewing, including clients of ORC and of Michigan's Institute for Social Research (Business Week, 1953a; Likert & Katz, 1948). A few companies also experimented with projective interviewing techniques such as incomplete sentences (Kornhauser, 1949; Friesen, 1952). Proponents argued that this kind of interviewing helped to reveal the deep feelings and meaning behind an employee's questionnaire responses; critics charged that it was expensive and unreliable (Katz, 1950; Carey et al., 1951; Weddell & Smith, 1951). Similar debate occurred in other branches of survey research, and continues to this day (Seltiz et al., 1959; Webb et al., 1966).

7. Recent research done by Sears bears out these claims: a correlation of .57 was found between a unit's scores on certain survey items and subsequent unionization attempts (Hamner & Smith, 1978). The survey's ability to predict union activity is not surprising, given that Sears identified high-morale employees as those who made "positive and willing adjustments to the demands of the organization" and had "ideological sentiments" akin to management's (Moore & Gardner, 1946).

8. In 1946 Ford followed GM's lead -- as usual --by replacing its notorious Service Department with a new Industrial Relations department, which immediately established a "human engineering program" and inaugurated a survey of the company's employees. In later years Elmo Roper conducted regular employee opinion polls for Ford (Business Week, 1948; Factory Maintenance, 1947; Baird, 1952).

9. In the early 1950s, two-thirds of all surveys were conducted by outside consultants; this figure held steady through the early 1960s and has only recently begun to decline (Raube, 1951; NICB, 1964; Gorlin, 1981).

10. A number of postwar studies found that union leaders were no better able than managers to predict employee responses to attitude surveys: both groups overemphasized pecuniary factors as determinants of employee morale. Researchers said that this resulted from a lack of "empathy" between leaders and workers and that it demonstrated the need for more attitude surveys and human relations training on both sides (Raube, 1951; Arthur, 1950; Herzberg et al., 1957).

11. Of the companies conducting attitude surveys, only a fifth shared all findings with their employees, usually in the form of a special report or booklet; 42 percent did not report any of this information to their nonsupervisory employees (Raube, 1951; Day 1949).

12. See note 5.

13. On their own, the armed forces also conducted attitude surveys of their enlisted and civilian employees, as had been done during World War II (England, 1952; Elinson, 1949; Holdredge, 1949).

14. Overzealous consultants were partly to blame for some of these misunderstandings. For example, in its advertisements for the Employee Inventory, SRA made the unsubstantiated claim that "high morale almost invariably means: high productivity, low absenteeism and turnover, confidence in management, [and] a harmonious and creative atmosphere" (Taylor, 1959, p. 930).

15. Publishing trends were ascertained by counting citations in the Business Periodicals Index and the Psychological Abstracts Index.

REFERENCES

Gordon W. Allport. "Attitudes" in Carl Murchison (ed.), A Handbook of Social Psychology. Worcester: Clark University Press, 1935.

V.V. Anderson. Psychiatry in Industry. New York: Harper and Bros., 1929.

Guy B. Arthur, Jr. "Employee Opinion Surveys that Help Management", Personnel Journal, 29 (December 1950), 261-65.

Melanie E. Baehr. "A Simplified Procedure for the Measurement of Employee Attitudes", Journal of Applied Psychology, 37 (June 1953), 163-167.

______________. "A Factorial Study of the SRA Employee Inventory", Personnel Psychology, 7 (Autumn 1954), 319-336.

D.G. Baird. "What Ford Gets From Its Employee Opinion Surveys", Mill & Factory, 50 (January 1952), 141-143.

Helen Baker. Employee Counseling: A Survey of a New Development in Personnel Relations. Princeton: Industrial Relations Section, Princeton University, 1944.

Loren Baritz. The Servants Of Power: A History of the Use of Social Science in American Industry. Middletown: Wesleyan University Press, 1960.

Solomon Barkin. "Discussion", Proceedings of the Fourth Annual Meeting of the Industrial Relations Research Association, Boston, December 1948. Champaign: IRRA, 1952.

___________. "Psychology as Seen by a Trade Unionist", Personnel Psychology, 14 (Autumn 1961), 259-270.

Reinhard Bendix. Work and Authority in Industry. New York: John Wiley and Sons, 1956.

Eugene J. Benge. "Morale Survey Improves Management-Employee Relations", Paper Industry and Paper World, 28 (November 1946), 1141-1143.

George K. Bennett. " A New Era in Business and Industrial Psychology", Personnel Psychology, 1 (Winter 1948), 473-77.

Harold B. Bergen. "Measuring Attitudes and Morale in Wartime", Management Record, 4 (April 1942), 101-104.

_______________. "Finding Out What Employees Are Thinking", Management Record, 1 (April 1939), 53-58.

Walter V. Bingham and Bruce V. Moore. How to Interview. New York: Macmillan, 1931.

BNA (Bureau of National Affairs). "Is Management Listening?", Personnel Policies Forum No. 3, May 1951.

____________________________. "Evaluating a P-IR Program", Personnel Policies Forum No. 23, February 1954.

____________________________. "Employee Job Satisfaction", Personnel Policies

Forum No. 43, September 1957.

____________________________. "Upward Communications", Personnel Policies Forum No. 76, December 1964.

____________________________. "Employee Communications", Personnel Policies Forum No. 110, July 1975.

Emory S. Bogardus. "Personal Experiences and Social Research", <u>Journal of Applied Sociology</u>, 8 (May 1924), 294-303.

L.R. Boulware. "How G.E. is Trying to Sell Employees on Giving Full Skill, Care, and Effort at Work", <u>Printers' Ink</u>, 225 (10 December 1948), 76-77.

Arthur H. Brayfield and Walter H. Crockett. "Employee Attitudes and Employee Performance", <u>Psychological Bulletin</u>, 52 (September 1955), 396-424. Gerald Brown. "Job Attitudes: Store Employees", <u>Personnel Journal</u>, 20 (September 1941), 98-104.

Martin Bulmer. "Quantification and Chicago Social Science in the 1920s: A Neglected Tradition", <u>Journal of the History of the Behavioral Sciences</u>, 17 (July 1981), 312-331.

J.T. Burke. "Sensing Employee Attitudes" in <u>Addresses on Industrial Relations: 1939</u>. Ann Arbor: Bureau of Industrial Relations,University of Michigan, 1939.

Robert K. Burns. "Employee Morale: Its Meaning and Measurement", <u>Proceedings of the Fourth Annual Meeting of the Industrial Relations Research Association, Boston, December 1951</u>. Champaign: IRRA, 1952.

____________. "Attitude Surveys and the Diagnosis of Organization Needs", Personnel Series No. 157. New York: American Management Association, 1954.

<u>Business Week</u>. "Human Engineering Program Pays Off for Ford", 30 October 1948, 88-95.

______________. "How Do You Feel? GM Asks Its Workers", 31 December 1949, 48-50.

______________. "Inside a Worker"s Head", 31 January 1953a, 81-82.

______________. "Asking for Labor Criticism", 7 November 1953b, 167.

______________. "The Worker's Poll that Kicked Up a Fuss", 19 February 1955, 30-31.

______________. "Joining in Attitude Survey Proves a Move Toward Peace", 14 April 1956, 57-60.

Donald T. Campbell. "The Indirect Assessment of Social Attitudes", <u>Psychological Bulletin</u>, 47 (1950), 15-38.

James W. Campbell. "An Attitude Survey in a Typical Manufacturing Firm", <u>Personnel Psychology</u>, 1 (Spring 1948), 31-39.

Ralph R. Canter, Jr. "Psychologists in Industry", <u>Personnel Psychology</u>, 1 (Summer 1948), 145-161.

Nathaniel Cantor. Employee Counseling: A New Viewpoint in Industrial Psychology. New York: McGraw-Hill, 1945.

James F. Carey, Jr. et al. "Reliability of Ratings of Employee Satisfaction Based on Written Interview Methods", Journal of Applied Psychology, 35 (August 1951), 252-55.

S.N.F. Chant. "Measuring the Factors that Make a Job Interesting." Personnel Journal, 11 (June 1932), 1-4. Irvin L. Child. "Morale: A Bibliographical Review", Psychological Bulletin, 38 (June 1941), 393-420.

Ann V. Clarke and Donald L. Grant. "Application of a Factorial Method in Selecting Questions from Employee Attitude Surveys", Personnel Psychology, 14 (Summer 1961), 131-139.

L. Coch and J.R.P. French. "Overcoming Resistance to Change", Human Relations, 1 (August 1948), 512-532.

Remsen J. Cole. "A Survey of Employee Attitudes", Public Opinion Quarterly, 4 (September 1940), 487-506.

Jean M. Converse. "Attitude Measurement in Psychology and Sociology: The Early Years" in Charles F. Turner and Elizabeth Martin (eds.), Surveying Subjective Phenomena, vol. 1 (New York: Russell Sage Press, 1985).

________________. "Strong Arguments and Weak Evidence: The Open/Closed Questioning Controversy of the 1940s", Public Opinion Quarterly, 48 (Spring 1984), 267-282.

______________. Survey Research in the United States: Roots and Emergence, 1890-1960. Berkeley: University of California Press, forthcoming, 1987.

Keith Davis and Edward E. St. Germain. "An Opinion Survey of a Regional Union Group", Journal of Applied Psychology, 35 (December 1951), 392-400.

O.H. Day. "What Do Utility Employees Think of the Company?", Public Utilities Fortnightly, 43 (26 May 1949), 683-689.

William J. Dickson and F.J. Roethlisberger. Counseling in an Organization: A Sequel to the Hawthorne Researches. Boston: Harvard Graduate School of Business Administration, 1966.

Randall B. Dunham and Frank J. Smith. Organizational Surveys: An Internal Assessment of Organizational Health. Glenview, IL: Scott, Foresman, 1979.

Marvin Dunnette and H.G. Heneman, Jr. "Influence of Scale Administrator on Employee Attitude Responses", Journal of Applied Psychology, 40 (February 1956), 73-78.

A.H. Edgerton. Vocational Guidance and Counselling. New York: Macmillan, 1926.

Jack Elinson. "Attitude Research in the Army", Journal of Applied Psychology, 33 (February 1949), 1-5.

Employee Relations Bureau, National Retail Dry Goods Association. "Your Employee Wants You to Know Him", Personnel Journal, 17 (April 1939), 357-363.

Arthur O. England. "How We Survey Attitudes Periodically", Personnel Journal, 31 (November 1952), 202-208.

George England, Abraham K. Korman, and Carroll I. Stein. "Overcoming Contradictions in Attitude Surveys", Personnel Administration, 24 (May 1961), 36-40.

Chester E. Evans and La Verne N. Laseau. My Job Contest. Washington, D.C.: Personnel Psychology, 1950.

J.J. Evans, Jr. "Interchanging Ideas Between Management and Employees", Personnel Series No. 46. New York: American Management Association, 1941, 8-19.

Fleming, Donald. "Attitude: The History of a Concept", Perspectives in American History 1 (1967), 287-365.

Factory Management and Maintenance. "Invited Workers to 'Let Down Their Hair' -and They Did", 100 (November 1942), 110-111.

________________________________."Poll of Employees Reveals Confidence in Management", 101 (October 1943), 252-256.

______________________________. "Two Way Information Flow Pays Off", 104 (May 1946), 108-112.

______________________________. "Employee Opinion Survey Aids Ford in Policy Making", 105 (June 1947), 132-33.

______________________________. "How to Find Out What Your Workers Think of You", 106 (August 1948), 81-91.

Fortune. "Polling the Employees", 27 (February 1943), 72-80.

Fred K. Foulkes. Personnel Policies in Large Nonunion Companies. Englewood Cliffs: Prentice-Hall, 1980.

J.R.P. French, Jr., A. Kornhauser, and A. Marrow (eds.). "Conflict and Cooperation in Industry", Journal of Social Issues, 2 (Feb. 1946), 1-56.

Edward P. Friesen. "The Incomplete Sentence Technique as a Measure of Employee Attitudes", Personnel Psychology, 5 (Winter 1952), 329-345.

S.E. Fuller. "Goodyear Aircraft Employee Counseling", Personnel Journal, 23 (October 1944), 145-153 and 23 (November 1944), 176-184.

Burleigh B. Gardner. Personal interview, 23 March 1985.

Gerald Gordon. "Industrial Psychiatry: Five Year Plant Experience", Industrial Medicine and Surgery, 21 (December 1952), 585-88.

Oakley J. Gordon. "A Factor Analysis of Human Needs and Industrial Morale", Personnel Psychology, 8 (Spring 1955), 1-18.

Harriet Gorlin. "Personnel Practices III: Employee Services, Work Rules", Conference Board Information Bulletin No. 95 (1981).

Bertram Gottlieb and Willard A. Kerr. "An Experiment in Industrial Harmony", Personnel Psychology, 3 (Winter 1950), 445-53.

Robert M. Guion. "The Problem of Terminology", Personnel Psychology, 11 (Spring 1958), 59-64.

Stephen Habbe. "Following Up Attitude Survey Findings", Studies in Personnel Policy no. 181. New York: National Industrial Conference Board, 1961.

La Verne Hamel and Hans G. Reif. "Should Attitude Questionnaires Be Signed?", Personnel Psychology, 5 (Spring 1952), 35-40.

W. Clay Hamner and Frank J. Smith. "Work Attitudes as Predictors of Unionization Activity", Journal of Applied Psychology, 63 (August 1978), 415-421.

Albert Haring. "The Evolution of Marketing Research Technique", National Marketing Review, 1 (Winter 1936), 268-272.

J. Harding. "The Measurement of Civilian Morale" in Hadley Cantril (ed.), Gauging Public Opinion. Princeton: Princeton University Press, 1944.

Howell John Harris. The Right to Manage: Industrial Relations Policies of American Business in the 1940s. Madison: University of Wisconsin Press, 1982.

Rexford B. Hersey. Workers' Emotions in Shop and Home. Philadelphia: University of Pennsylvania Press, 1932.

______________. "Employees Rate Plant Policies", Personnel Journal, 16 (September 1937), 71-80.

Frederick Herzberg et al. Job Attitudes: Review of Research and Opinion. Pittsburgh: Psychological Service of Pittsburgh, 1957.

Fred E. Holdredge, Jr. "Implementing an Employee Opinion Survey", Journal of Applied Psychology, 33 (October 1949), 428-35.

Robert Hoppock, Job Satisfaction. New York: Harper and Bros., 1935.

J. David Houser to F.W. Taussig, 6 September 1924, Wertheim Fellowship Papers, Harvard University Archives.

______________. What the Employer Thinks: Executives' Attitudes Toward Employees. Cambridge: Harvard University Press, 1927.

______________. "Measuring Consumer Attitudes", Bulletin of the Taylor Society, 17 (April 1932), 50-52.

______________. ""Measurement of the Vital Products of Business", Journal of Marketing, 2 (January 1938a), 181-189.

______________. What People Want From Business. New York: McGraw-Hill, 1938b.

Richard L. Hull. "Measuring Employee Attitudes: A Proving Ground for Personnel Policy and Practices", Management Record, 1 (November 1939), 165-172.

______________ and Arthur Kolstad. "Morale on the Job" in Goodwin Watson (ed.), Civilian Morale. Boston: Houghton Mifflin, 1942.

Peter F. Hurst. "This Small Plant Made a Morale Survey", Factory Management and Maintenance, 106 (May 1948), 78-79.

Iron Age. "Thompson Employee Survey Points Toward Better Labor Relations", 154 (9 November 1944), 108.

James W. Irwin. "Sampling Workers' Opinions", Dun's Review, 53 (November 1945), 32-42.

S.E. Jelliffe. The Technique of Psychoanalysis. New York: Mental and Nervous Disease Publshing Co., 1918.

Richard Jensen. "Democracy by the Numbers", Public Opinion, 3 (March 1980), 53-59.

Virginia Jones. "History of the Employee Morale Survey Program". Chicago: Sears, Roebuck National Personnel Department, 1961.

Robert L. Kahn. "The Prediction of Productivity", Journal of Social Issues, 12 (1956), 41-49.

Daniel Katz. "Employee Groups: What Motivates Them and How They Perform", Advanced Management, 14 (September 1949), 119-124.

__________. "The Attitude Survey Approach" in A.W. Kornhauser (ed.), Psychology of Labor-Management Relations. Champaign: IRRA, 1949.

__________. "Good and Bad Practices in Attitude Surveys in Industrial Relations", Second Annual Proceedings of the Industrial Relations Research Association, New York, 1949. Champaign: IRRA, 1950.

__________. "Studies in Social Psychology In World War II", Psychological Bulletin, 48 (November 1951), 512-519.

__________ et al. Productivity, Supervision, and Morale Among Railroad Workers. Ann Arbor: Institute for Social Research, University of Michigan, 1951.

__________ and Herbert Hyman. "Industrial Morale and Public Opinion Methods", International Journal of Opinion and Attitude Research, 1 (September 1947a), 13-30.

______________________________. "Morale in War Industry" in Theodore Newcomb and Eugene L. Hartley (eds.), Readings in Social Psychology. New York: Henry Holt, 1947b.

__________ and Robert L. Kahn. Some Recent Findings in Human Relations Research. Ann Arbor: University of Michigan, Survey Research Center, 1952.

Raymond Katzell, "Measurment of Morale", Personnel Psychology, 11 (Spring 1958), 71-78.

Kiesler, C.A., Collins, B.E. and N. Miller. Attitude Change: A Critical Analysis of Theoretical Approaches. New York: John Wiley, 1969.

Wayne K. Kirchner and Walter Uphoff. "The Effect of Grouping Scale Items in Union-Attitude Measurement", Journal of Applied Psychology, 39 (June 1955), 182-83.

Thomas A. Kochan and Peter Capelli. "The Transformation of the Industrial Relations and Personnel Function" in Paul Osterman (ed.), Internal Labor Markets. Cambridge: MIT Press, 1984.

Arthur Kolstad. "Employee Attitudes in a Department Store", Journal of Applied Psychology, 22 (October 1938), 470-479.

Arthur W. Kornhauser. "The Technique of Measuring Employee Attitudes", Personnel, 9 (May 1933), 99-107.

____________________. "Psychological Studies of Employee Attitudes", Journal of Consulting Psychology, 8 (May 1944), 127-143.

____________________. "Are Public Opinion Polls Fair to Organized Labor?", Public Opinion Quarterly, 10 (Winter 1947), 484-500.

____________________. "The Contribution of Psychology to Industrial Relations Research", First Proceedings of the Industrial Relations Research Association, Cleveland, 1948. Champaign: IRRA, 1949.

_________________. "Observations on the Psychological Study of Labor-Management Relations", Personnel Psychology, 14 (Autumn 1961), 241-249.

_________________ and Agnes A. Sharp. "Employee Attitudes: Suggestions from a Study in a Factory", Personnel Journal, 10 (April 1932), 393-404.

Yale J. Laitin. "How to Make Employee Attitude Surveys Pay Off", Personnel, 38 (July 1961), 23-33.

Henry A. Landsberger. Hawthorne Revisited. Ithaca: Cornell University Press, 1958.

Harold D. Lasswell. Psychopathology and Politics. New York: Viking Press, 1930.

Paul F. Lazarsfeld (ed.). Jugend und Beruf: Kritik und Material. Jena: G. Fischer, 1931.

__________________. "The Psychological Aspect of Market Research", Harvard Business Review, 13 (October 1934), 54-71.

____________. "The Art of Asking Why in Marketing Research", National Marketing Review, 1 (Summer 1935), 26-38.

____________. "The Use of Detailed Interviews in Market Research", Journal of Marketing, 2 (July 1937), 3-8.

___________. Radio and the Printed Page. New York: Duell, Sloan, and Pearce, 1940.

Kurt Lewin. Resolving Social Conflicts. New York: Harper, 1948.

Rensis A. Likert. "A Technique for the Measurement of Attitudes", Archives of Psychology, 22 (1932), 1-55.

____________. "The Effects of Strategic Bombing On German Morale", Morale Division, U.S. Strategic Bombing Survey. Washington, D.C.: Government Printing Office, May 1947.

____________. "Motivation: The Core of Management", American Management Association, Personnel Series No. 155 (1953), 3-21.

____________ and Daniel Katz. "Supervisory Practices and Organization Structures as They Affect Employee Productivity and Morale", American Management Association, Personnel Series No. 120 (1948), 14-24.

____________ and Ronald Lippitt. "The Utilization of Social Science" in Leon Festinger and Daniel Katz (eds.), Research Methods in the Behavioral Sciences. New York: Dryden Press, 1953.

____________ and Joseph M. Willits. Morale and Agency Management. 4 vols. Hartford: Life Insurance Sales Research Bureau, 1940.

Lawrence C. Lockley. "Notes on the History of Marketing Research", Journal of Marketing, 14 (April 1950), 733-736.

John Madge. The Origins of Scientific Sociology. New York: The Free Press, 1962.

Floyd C. Mann. "Studying and Creating Change: A Means to Understanding Social Organization" in C.M. Arensberg (ed.), Research in Industrial Human Relations. New York: Harper, 1957.

__________ and Rensis Likert. "The Need for Research on the Communication of Research Results", Human Organization, 11 (Winter 1952), 15-19.

Edwin Mansfield. "Technical Change and the Rate of Imitation", Econometrica (October 1961), 741-766.

Donald G. Marquis. "Social Psychologists in National War Agencies", Psychological Bulletin, 41 (February 1944), 115-126.

Ralph L. Mason. "Experiences With Employee Opinion Surveys", Advanced Management, 14 (September 1949), 98-100.

Elton Mayo. The Human Problems of an Industrial Civilization. New York: Macmillan, 1933.

Robert N. McMurry. "Management's Reaction to Employee Opinion Polls", Journal of Applied Psychology, 30 (April 1946), 212-219.

Quinn McNemar. "Opinion-Attitude Methodology", Psychological Bulletin, 43 (July 1946), 289-374.

Mill & Factory. "Employees Tell Why They Like Their Jobs", 42 (February 1948), 102-104.

F.C. Minaker. "How Employee Opinion Poll Aids Company Communications", American Business, 23 (October 1953), 26-30.

David G. Moore. Letter to author, 25 April 1985.

____________ and Robert K. Burns. "How Good is Good Morale?", Factory Management and Maintenance, 114 (February 1956), 130-136.

____________ and Burleigh B. Gardner. "Factors Related to Morale" (1946) reprinted in Virginia Jones, "History of the Employee Morale Survey Program". Chicago: Sears, Roebuck National Personnel Department, 1961.

Herbert Moore. "Employee Attitude Surveys", Personnel Journal, 19 (April 1941), 360-363.

Gardner Murphy and Rensis Likert. Public Opinion and the Individual. New York: Harper and Bros., 1938.

David A. Nadler. Feedback and Organization Development: Using Data-Based Methods. Reading, MA: Addison-Wesley, 1977.

New York Stock Exchange, Office of Economic Research. People and Productivity: A Challenge to Corporate America. New York: NYSE, 1982.

NICB (National Industrial Conference Board). "Personnel Practices in Factory and Office - Manufacturing", Studies in Personnel Policy No. 194, 1964.

David F. Noble. America By Design: Science, Technology, and the Rise of Corporate Capitalism. New York: Knopf, 1977.

M.L. Putnam. "Imnproving Employee Relations: A Plan Which Uses Data Obtained from Employees", Personnel Journal, 8 (February 1930), 314-325.

A.R. Radcliffe-Brown. The Andaman Islanders. Cambridge: Cambridge University Press, 1922.

S. Avery Raube. "Personnel Activities in American Business", Studies in Personnel Policy No. 86. New York: National Industrial Conference Board, 1947.

____________. "Experience with Employee Attitude Surveys", Studies in Personnel Policy No. 115. New York: National Industrial Conference Board, 1951.

Research Institute of America. Employee Motivation. New York: RIA, 1949.

"A Review of How to Learn Worker Attitudes", Personnel Journal, 16 (January 1938), 258-264.

F.J. Roethlisberger and William J. Dickson. Management and the Worker. Cambridge: Harvard University Press, 1939.

A.M. Rose. Union Solidarity. Minneapolis: University of Minnesota Press, 1952.

R.A. Hudson Rosen and Hjalmar Rosen. "A Suggested Modification in Job

Satisfaction Surveys", Personnel Psychology, 8 (Autumn 1955), 303-314.

Harold M.F. Rush. Behavioral Science: Concepts and Applications. New York: The Conference Board, 1969.

______________. Organization Development: A Reconnaissance. New York: The Conference Board, 1973.

Robert E. Schwab. "Motivation and Human Relations Principles", American Management Associaton, Personnel Series no. 155 (1953), 30-39.

Claire Seltiz et al. Research Methods in Social Relations. New York: Holt, 1959.

V. Clayton Sherman. "Unionism and the Nonunion Company", Personnel Journal, 48 (June 1969), 413-422.

Hans Skott. "Attitude Research in the Department of Agriculture", Public Opinion Quarterly, 7 (Summer 1943), 280-292.

Sumner H. Slichter. "The Current Labor Policies of American Industries", Quarterly Journal of Economics, XLIII (May 1929), 393-435.

Frank J. Smith. Personal interview, 20 March 1985.

McGregor Smith. "Mending Our Weakest Links", Advanced Management, 7 (April 1942), 77-83.

R.G. Smith and R.J. Westen. Studies of Morale Methodology and Criteria. Research Bulletin 51-29. San Antonio: U.S. Air Force Air Training Command, Human Resources Research Center, 1951.

Ross Stagner et al. "Dual Allegiance to Union and Management: A Symposium", Personnel Psychology, 7 (Spring 1954), 41-80.

J. Stevens Stock and Harriet Lubin. "Indices of Personnel Management", Personnel, 23 (July 1946), 6-16.

Samuel A. Stouffer and Leland C. DeVinney. The American Soldier. 2 vols. Princeton: Princeton University Press, 1949.

Edward K. Strong, Jr. Psychological Aspects of Business. New York: McGraw-Hill, 1938.

Edwin K. Taylor. "SRA Employee Inventory" in Oscar K. Buros (ed.), The Fifth Mental Measurement Yearbook. Highland Park: Gryphon Press, 1959.

Ordway Tead. "Employee Counseling: A New Personnel Assignment-Its Status and Its Standards", Advanced Management, 8 (July 1943), 97-103.

William I. Thomas and Florian Znaniecki. The Polish Peasant in Europe and America, 2 vols. Chicago: University of Chicago Press, 1918.

Andrew Thomson and Malcolm Warner. The Behavioral Sciences and Industrial Relations. Aldershot: Gower, 1981.

Thurstone, L.L. "Attitudes Can Be Measured", American Journal of Sociology, 33 (January 1928), 529-554.

_________. Vectors of Mind: Multiple Factor Analysis for the Isolation of Primary Traits. Chicago: University of Chicago Press, 1935.

Joseph Tiffin. "How Psychologists Serve Industry", Personnel Journal, 36 (March 1958), 372-376.

Richard S. Uhrbrock. "Attitudes of 4430 Employees", Journal of Social Psychology, 5 (August 1934), 365-377.

Anil Verma. "Union and Nonunion Industrial Relations Systems at the Plant Level". Ph.D. dissertation, MIT, 1983.

_________ and Thomas A. Kochan. "The Growth and Nature of the Nonunion Sector within a Firm" in Kochan (ed.), Challenges and Choices Facing American Labor. Cambridge: MIT Press, 1985.

Morris S. Viteles. "Wartime Applications of Psychology: Their Value to Industry", American Management Association, Personnel Series No.93 (1945), 3-12.

_______________. Motivation and Morale in Industry. New York: W.W. Norton, 1953.

Goodwin Watson, "Work Satisfaction" in George W. Hartmann and Theodore Newcomb (eds.), Industrial Conflict: A Psychological Interpretation. New York: Cordon, 1940.

Eugene Webb et al. Unobtrusive Measures: Nonreactive Research in the Social Sciences. Chicago: Rand-McNally, 1966.

Carl Weddell and Karl U. Smith. "Consistency of Interview Methods in Appraisal of Attitudes", Journal of Applied Psychology, 35 (December 1951), 392-400.

Ferdinand C. Wheeler. "New Methods and Results in Market Research", American Marketing Journal, 2 (April 1935), 35-39.

Robert J. Wherry. "An Orthogonal Rerotation of the Baehr and Ash Studies of the SRA Employee Inventory", Personnel Psychology, 7 (Autumn 1954), 365-380.

Leonard D. White. "Methods Used in a Study of Morale in the Municipal Employment of Chicago", Journal of Personnel Research, 4 (June 1924), 215-221.

Percival White. Marketing Research Technique. New York: Harper & Bros., 1931.

William H. Whyte, Jr. Is Anybody Listening? New York: Simon & Schuster, 1952.

Harold L. Wilensky. "Human Relations in the Workplace: An Appraisal of Some Recent Research" in C.M. Arensberg (ed.), Research in Industrial Human Relations. New York: Harper, 1957.

Jeanne L. Wilensky and Harold L. Wilensky. "Personnel Counseling: The Hawthorne Case", American Journal of Sociology, 57 (November 1951), 265-280.

Yang Xishan et al. "Behavioral Science Applications in Vancouver Based Firms". Relations Industrielles, 38 (1983), 120-139.

Dale Yoder, Herbert G. Heneman, Jr. and Earl F. Cheit. Triple Audit of Industrial Relations. Minneapolis: University of Minnesota Industrial Relations Center, Bulletin 11, 1951.