

The Hawthorne Effect

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It's Sunday night and I've missed my column deadline. I've been really busy lately. I had almost decided to take a break from writing in *Dynamic Chiropractic*, but I just read a couple of interesting articles.

There was an interesting study in the *Journal of the Oklahoma State Medical Association*¹ (Seradge et al., 2000). Employees at an Oklahoma meat-packing company had experienced a high incidence of carpal tunnel syndrome (CTS). The company, which employed 286 production workers, learned about a series carpal tunnel decompression exercises. (These exercises are described at <http://www.aaos.org>, the website of the American Academy of Orthopedic Surgeons.) The company implemented the exercises with assistance from a local rehabilitation center. They reported their findings to Oklahoma's Governor's Council on Safety Policy. This exercise program was the only ergonomic change that the company implemented during the year. The study revealed that the company's workers' compensation loss ratio improved from 13.89% to 11.61%, and after comparing injury reduction versus work time lost to exercise, the company reported a net financial gain. Furthermore, the incidence of CTDs, excluding carpal tunnel syndrome, was reduced 37 percent. The incidence of CTS was reduced 45.4 percent. According to the authors of the study, the results of the exercise program were significant enough that the company made the exercise program permanent.

I must admit that I am impressed with such an easy solution to such a difficult problem. I'm really curious to understand how we've missed such an easy fix.

This study got my attention partially because I'm enrolled in an MPH program from Tulane University in New Orleans. It is "distance learning," with an emphasis in occupational health. This term, I'm taking two courses: "Foundations of Management" and "Principles of Occupational Health." While I wasn't too eager to take a management course, I must admit, it's been informative. Recently, in one of the readings for the course, I had an opportunity to refresh my memory on the Hawthorne studies, which have a bearing on the Oklahoma study. I've long been interested in this series of experiments and have often talked about them in my classes.

The Hawthorne Studies

The Hawthorne studies were conducted during the 1920s and '30s, at the Hawthorne plant of Western Electric. The studies led to the human relations view of management, i.e., a behavioral approach that emphasizes concern for the worker. The popular management theory of the day was something called "scientific management." (I really have learned something in my coursework.) The focus of this school of thought was to seek greater efficiency by improving the tools and methods of work through scientific investigation. Accordingly, along with other electric companies, the General Electric Company wanted to sell more light bulbs. Consequently, there was an interest in the relationship between lighting and productivity. In cooperation with the National Research Council, tests were held

at the Hawthorne Works (Chicago) of the Western Electric Company. There were three sets of studies performed.

Series One

The first studies (the "Illumination" studies) took place between 1924 and 1927. Two groups of workers were used: one group experienced a gradual decrease of lighting over time; the second group was used as a control and the lighting was held at a constant level. Interestingly, performance rose steadily in both groups, even though the lighting for the experimental group became so dim that the workers ultimately complained that they could hardly see. At that point, performance in the experimental group finally began to decline. Consequently, the researchers concluded that factors other than lighting were at work, and the project was discontinued. Retrospectively, some have postulated that the two study groups were in contact with each other and may have been competing.

Series Two

Intrigued by the response to the first series of studies, engineers wanted to determine the cause(s) of the increased performance. A second group of studies were conducted between 1927 and 1933. The most famous study involved five women who assembled electrical relays and who were physically separated from the other workers. Prior to beginning the study, the researchers were concerned about any possible negative reactions from the workers who were to be included in the experiments. To reduce any potential resistance, the researchers altered the usual supervisory arrangement in such a way that there would be no official supervisor. Instead, the workers would operate under the direction of the researchers. The workers were also given a number of special privileges. The study was aimed at exploring the best combination of work and rest periods, but a number of other factors were also varied (e.g., pay, length of workday, provisions for free lunches). During the study, productivity increased overall, regardless of how the various factors were manipulated.

It was concluded that the major reason for the increase in productivity was the change in the supervisory arrangement, although this was not part of the study. The physical changes (rest periods, free lunches, shortened hours) were felt to be of lesser importance. This conclusion was reached largely because adverse changes in some of these factors did not seem to decrease performance. One outcome of the study was the identification of the "Hawthorne" effect, which describes how people singled out for a study may improve their performance simply because of the added attention they receive from the researchers, rather than from any specific factors being tested. This effect is the connection with the Oklahoma CTS study.

More recently, it has been suggested that the Hawthorne effect concept is too simplistic to adequately explain these studies. It is now felt that the results obtained at the Hawthorne plant stemmed from the fact that the workers interpreted what was going on around them differently from the researchers. It is argued that the workers most likely viewed the altered supervision as an important positive change in their work environment, even though that was not what the researchers had intended.

Series Three

The third set of Hawthorne studies was built on the findings of the second set. Included in this series was the "Bank Wiring Observation Room" study (1931-1932). This involved a group of male workers who were taught about some aspects of informal social relations within groups and about the use of group norms.

As a result of the Hawthorne studies, the focus of management was significantly altered. In contrast to the impersonal management approach that was popular at the time, these studies pointed to the impact that social aspects of the job had on productivity, particularly the effects of personal attention from supervisors and relationships among group members. The studies have had a lasting impact on the workplace, and have generated intense interest in the social dimensions of human behavior in the workplace.

If one reads the Hawthorne studies and the Oklahoma experience with exercises for carpal tunnel syndrome, one can't help but wonder what the real impact was on the meat packers. It's my feeling that most studies of the impact of exercise, ergonomics, education, etc., should factor in the findings from the Hawthorne experiments.

Reference:

1. Seradge H, Bear C, Bithell D. Preventing carpal tunnel syndrome and cumulative trauma disorder: effect of carpal tunnel decompression exercises: an Oklahoma experience. J Okla State Med Assoc 2000 Apr;93(4):150-3.

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