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In Defense of Empiricism

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In the context of current debate concerning modes of inquiry, this paper addresses the role of empiricism in nursing science. The author argues that, while not the only valid perspective, empiricism should remain a dominant perspective in nursing research because many of the questions we need to study are consistent with this view. This stance does not invalidate important philosophic and methodologic challenges facing empiricism or the unique contributions of other perspectives. Instead, the challenge to researchers in the empiricist tradition is to refine methodologic and analytic skills in order to increase the ability to capture the objective reality that is assumed to be measurable even in the social and behavioral sciences. Nursing research efforts have tended not to exploit the full range of empiric investigation. Until such programs of research have been conducted, it is premature to make judgments about how well empiricism has served nursing.

Father Serra came walking up from Mexico 200 years ago and founded a chain of missions, each one with a school. How did Father Serra know at that time where to locate those missions so that they would end up along the major highways and within the largest cities of California 200 years later?

As my husband and I were laughing about this example, our 12-year-old daughter said, “You guys are just as bad as Chrissie on Three’s Company (the TV show). She was reading the obituary column in the newspaper and said, ‘Oh, my God, it’s happening again! People are dying in alphabetical order.’” You can guess that Chrissie and her roommates began to think about changing their names to something that begins with the letter “Z.”

The human propensity to assign causality to contiguous events is adaptive in many instances. If a young boy hears a loud “crack” sound and soon gets hit on the head with a baseball, we know that the next time he hears the sound he will get out of the way.

But assigning causality to contiguous events leads many times to erroneous conclusions. There are no more delightful accounts of prelogical reasoning than Piaget’s (1926, 1929, 1930) descriptions of the preoperational child’s view of the world. Such reasoning also accounts for such phenomena as witchhunts, racial prejudices and superstitions in adults.

One of the reasons that the pairing of observations leads to such erroneous conclusions has to do with the shutter speed of the observations. When we can stand back for a long enough view, other variables that account for what seems to be related between two events can be observed. We are no longer able to imagine isolated, pastoral missions and the teeming cities of San Francisco or Los Angeles without think-
education. Public acceptance of these findings has resulted in definitions of child abuse that include behavior formerly sanctioned by individuals and the state.

The Place of Empiricism in Nursing Research

Current discussions in nursing on modes of inquiry (e.g., Silva & Rothbart, 1984; Suppe & Jacob, 1985; Thompson, 1985) serve a very important purpose in advancing nursing science. By clarifying fundamental distinctions among different modes of inquiry we are able to question, for example, whether or not the empiricist perspective is appropriate in an area—for example, ethics—that deals primarily with values rather than with observable facts (Carper, 1978). In other areas of research, interpretative approaches that preserve contextual meanings are advocated (Benner, 1985). Yet there are many questions in nursing science that are ideally suited to empiricism.

A second outcome of many current discussions on modes of inquiry has been to imply, directly or indirectly, that nursing science has not been well served by empiricism. When perspectives that challenge the mainstream view are first presented, either-or thinking is sometimes an unintended result. When we make room for new perspectives, we must be careful not to throw away what is still useful from previous perspectives. Although there are serious problems arising from positivism; aside from noting that not all varieties of empiricism are positivistic (Phillips, 1983), epistemologic issues are not the focus of this paper.

The empiricist perspective is not the only valid perspective. However, it should be a dominant perspective in nursing research because many of the questions that we need to study are consistent with this view. When we plan care for groups of patients, assess the acuity of a unit in the hospital, develop predictive models for at-risk groups or search for causal explanations, we rely on systematically gathered, objective data drawn from relatively large numbers of individuals.

An early challenge to empiricism originated out of the distinction between the objects that are knowable in the physical as opposed to the social and behavioral sciences. The inanimate objects in the physical world can be measured, melted down, fractionated and recomposed in predictable and repeatable ways. In contrast, human behavior is difficult to measure, multideterminant and highly variable. But such difficulties do not necessarily imply that human behavior defies objective observation.

One of the central challenges to the empiricist view, however, is that objective observation of human behavior, stripped from contextual meanings, is a violation of the truth. Although there are broader ways in which this is true, much of the current work in the empiricist tradition attempts to take into account the contextual meanings that individuals hold regarding variables of interest. For example, in social support research, the typical measurement strategy is not to measure minutes of interaction, number of interpersonal contacts or counts of other commodities that transpire between people but to measure the individuals' perceptions of their social support. This measurement approach is based on the assumption that phenomena, like social support, are experienced and interpreted by individuals through their own meanings and past experiences. The measurement of stress arising from life events has also moved from using normative weights applied equally to every person who has experienced the event to methods that allow individuals to assess the impact of each event on their lives. These approaches acknowledge that both social support and stress are not real unless perceived as such by the individual.

As an empiricist, I subscribe to the notion that there are observables "out there" that can be measured. Because of the difficulties in studying complex human beings, however, we often fall short of fully capturing the "actual object" in our crude observations. Nonetheless, there are impressive instances of success in the social and behavioral sciences, and the work in the example below illustrates many features in the contributions of empiricism to advancing the understanding of human behavior.

An Example

During my doctoral training I studied nonverbal behavior with Paul Ekman. Dr. Ekman had embarked on an area of research that had already been closed. Previous work had documented that there was no consistent information depicted in facial expressions. The human smile, for example, is seen during happy events, but it is also seen at funerals in some societies. The smile is displayed in aggressive situations by the less dominant person, apparently to appease the aggressor, and through many other expressions it can be seen that there is no consistent meaning to the human smile.

Additional evidence for the lack of meaning in facial expressions of emotion came from the results of studies in which persons could not recognize accurately which emotions were depicted in pictures. Ekman challenged these findings on methodologic grounds: none of the studies had used actual photographs of spontaneous emotion. Some had used cartoon drawings; others had used posed depictions of emotions. In both cases, the actual visual stimuli that had been used either were anatomically incorrect or they presented blended versions of emotions that could not be judged accurately (Ekman, Friesen, & Ellsworth, 1972). Thus the previous studies were invalid tests of the question.

Early work in Ekman's laboratory consisted of developing, a valid and reliable set of photographs for each of the primary emotions portrayed by several male and female stimulus persons. This work involved normative judgment studies by large groups of subjects to validate that each photograph depicted only one emotion and that it could be recognized at a high rate by judges. As you might guess, many photographs did not pass this test because they either depicted blended emotions such as both surprise and fear or they were ambiguous in other ways. The final set of high-agreement photographs was used in a series of studies designed to answer the question of whether or not facial expressions of emotion are universal.

Again, the weight of prior work argued that facial expressions of human emotion were completely culture bound. Witness the stoicism of Asians in contrast to the transparent, open faces of Americans. Using the validated photographs, judges from different cultures were compared on their accuracy in identifying facial expressions of emotion. The high agreement across these cultural groups including both Western and Eastern countries provided evidence for universality in facial expressions of primary emotions. However, a rival hypothesis was that through magazines, cinema and television the judges from other countries had merely applied what they had learned about American faces from the media.

To address this challenge, Ekman (1972) selected two preliterate cultures in New Guinea that had never seen any Caucasian persons or the Western media. These groups also recognized the facial expressions of emotions at high levels.
accuracy. Thus strong evidence existed for the universality of six primary emotions examined in this series of studies.

Further work contributed to a unified theory that supported the universality of facial expressions of emotion while accounting for cultural variations in whether or not to display an emotion in a particular context. Pivotal studies involved secretly videotaping subjects from different cultures while they watched stressful movies. When subjects were in the viewing room alone, American and Japanese subjects displayed similar facial responses to the scenes in the movies; however, when another person was in the viewing room, the Japanese subjects no longer displayed negative facial emotions. These findings support the culturally determined "display rules" postulated by Ekman. This work completed the studies on the universality of facial expressions of emotion, and Ekman has gone on to study nonverbal components of deception and physiologic correlates of facial expressions of emotion.

The research of Ekman and his colleagues is an important example for nursing because it illustrates both the observability of human behavior and the results of a program of research.

Empiricists' Awareness of Limitations

Although empiricism was developed to enhance the objective and systematic quality of observations, this does not imply that empiricists believe that they have truly captured reality in their observations. In fact, most empiricists have no illusions about the absolute correspondence between their observations and the real world. Even measurement as straightforward as that done in inches or centimeters with a ruler is open to question, especially when the object of measurement is a wiggly infant. The skepticism among empiricists about what they have really measured can sometimes be overwhelming. But some researchers have examined quite directly some of the sources of their skepticism.

We are familiar with the results referred to as the Hawthorne effect (Roethlisberger & Dickson, 1939) that challenged the external validity of field studies. There have also been systematic attempts to examine other sources of bias or inaccuracy in human research. Orne's (1962) work in the early 1960s described the "demand" features of the psychologic experiment that could overpower the actual effect under study. Similarly, Rosenthal's (1966) work on experimenter bias challenged the validity of results from psychologic experiments. Although much of the work on the Hawthorne effect and on experimenter bias has since been questioned, the importance remains of examining these serious questions about the effects of artificial manipulation on substantive findings. The use of unobtrusive measures, control groups and intricate design features such as counterbalancing experimental conditions are examples of methodologic attempts to correct for some of the shortcomings inherent in attempts to observe objectively.

The challenge to researchers in the empiricist tradition is to refine our methodologies and our analytic skills in order to increase our sophistication in capturing the objective reality that we believe to be "out there." In the human sciences we realize that measures are imprecise and that formulations account for only a portion of the variance of the phenomena we study. But the fact that we can state the degree to which results explain the dependent variable under study is also a real strength. The statistical methods that allow us to state what portion of the dependent or outcome variable is explainable by the independent or predictive variables also provides a means to answer questions about the potential clinical significance of our findings. We can also mark progress in refining predictive models over the course of several studies when we demonstrate increases in the amount of variance explained.

Conclusion

Negative judgments about what nursing has harvested from empiricism have failed to take into account the limitations in scope that characterize much of nursing research. Rather than pursuing a program of research that moves from one aspect of the overall question to the next, as illustrated in Ekman's work, most published nursing research consists of one-shot studies. This unfortunate assessment has been repeated over and over again by the authors represented in the Annual Review of Nursing Research series since its inception in 1983. In addition, these various authors noted that, in the content areas under their review, the studies tended to be limited in design to exploratory or descriptive studies. Thus the full range of empiric investigation has seldom been tapped in nursing research. An important exception is the work on patient teaching that has frequently used experimental and quasi-experimental designs.

My call is for researchers in nursing to pursue the full range of empiric investigation, which includes (a) studies designed to identify and describe variables of interest, (b) studies designed to establish relationships among variables and control for competing hypotheses, (c) studies designed to test and refine causal models and (d) clinical trials designed to test applications of theory or previous findings. When we have succeeded in actualizing this progression, then we can evaluate the contribution that empiricism can make to nursing.

References


