AN INVESTIGATION OF THE EFFECT OF NORMATIVE SYSTEMS ON AN EMPIRICAL VARIABLE

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This investigation is concerned with the problem of the normative constraints upon scientific research within the broad theoretical framework of the sociology of knowledge, i.e., the contention that knowledge is functionally related to the social system. The concepts "knowledge" and "Social system" are open to wide interpretation; however, in this study knowledge refers to an empirically verifiable variable and the social system is synonomous with the normative system.

An epidemiological study of cervical cancer was selected to examine the relationship between knowledge and the social system. Epidemiology in the area of cervical cancer has shown this cancer to be variable with respect to racial and ethnic groups, socio-economic class, and geographic region of residence. However, recent investigation has indicated an important positive association between cervical cancer and several coital variables. The variable of greatest discrimination with respect to increased cervical cancer risk is early age at first coitus. This association was suggested in 1842 by an Italian physician who noted

the low incidence of cervical cancer among nuns and single women and suggested that their unmarried status explained the low incidences. Subsequent studies relied upon age at first marriage to indicate age at first coitus. The first data on age at first coitus was published in 1954 and another study using similar data was published in 1960. Since the latter study several investigations have published data on age at first coitus and cancer risk.

The fact that age at first coitus was studied directly for the first time in 1954, over a hundred years after the etiological significance of coitus was suggested, indicates a reluctance by investigators to ask questions of a sexual nature. This reluctance reflects cultural norms which define the discussion of human sexuality as a taboo area and, consequently, are repressive to scientific research in this area. The research question may be posed: To what extent has the normative system impeded scientific research.

The empirical variables, age at first marriage and age at first coitus, were selected to investigate this question. The hypothesis that age at first marriage is an accurate indicator of age at first coitus was not supported by the statistical analysis of data collected at a gynecology clinic. Therefore, the normative system impeded scientific research in the sense that epidemiological studies relied upon marriage as an indicator of coitus and prevented direct study of coital factors.

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

THE SOCIAL STRUCTURE AND KNOWLEDGE AND THE RELATIONSHIP TO EPIDEMIOLOGY

The Sociology of Knowledge

Introduction

The sociology of knowledge is a special field of sociological inquiry which proceeds from the premise that relations exist between knowledge and existential social factors. The term "knowledge" includes a wide range of cognitive cultural phenomena such as ideas, ideologies, juristic and ethical beliefs, philosophy, religion, science, and technology.[1] The sociologist explores the possibility of functional relationships in which the social structure and social experience to some extent determine the nature and limit the categories of knowledge.[2]

Although systematic development of the sociology of knowledge originated in nineteenth century European thought, there were philosophic precedents in the works of Bacon, Condorcet, and Comte. The most important works establishing

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[1] Robert K. Merton, Social Theory and Social Structure (New York, 1957), p. 456.

[2] Lewis A. Coser, "The Sociology of Knowledge," Sociological Theory: A Book of Readings, edited by Lewis A. Coser and Bernard Rosenberg (New York, 1964), p. 667.

the sociology of knowledge as a viable sub-discipline are credited to the Marxian tradition in Germany and the Durkheimian tradition in France.[3]

Marx

Karl Marx, a critic of capitalist economics, analyzed the dependence of ideas on the social position of groups. As an economic determinist, Marx proposed that the economic factor was the basic determinant of the structure and development of society.[4] The relation of individuals to the economic factor or infrastructure (the technological means of production) produced a class structure consisting of an oppressed class and a ruling class. Since the nature of this class structure, the oppressed and the oppressor, was fundamentally antagonistic, history can be seen as characterized by a continuous class struggle.[5]

The dominant ideas or the superstructure of a society (ways of thinking, ideologies, philosophies, etc.), Marx maintained, were a reflection of the interests of the

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[3]Lewis A. Coser, "The Sociology of Knowledge," International Encyclopedia of the Social Sciences, Vol. VIII (New York, 1968), p. 428.

[4]Nicholas S. Timasheff, Sociological Theory (New York, 1967), p. 49.

[5]Raymond Aron, Main Currents in Sociological Thought, Vol. I, translated by R. Howard and H. Weaver (New York, 1968), p. 150.

dominant economic class, and were used by those in power to maintain and justify their position to those who were exploited.[6]

In addition to the identification of the superstructure and the infrastructure Marx refuted the autonomous status ascribed to the development of consciousness by classical philosophy. His proposition that consciousness was epiphenomenal constituted an attack on the Hegelian concept of "Spirit."[7] According to Marx, men's consciousness does not determine reality; it is social reality which determines the consciousness of men. Therefore, ways of thinking must be explained in terms of the socio-economic relations typical of a particular society.[8]

The more mature writing of Marx and to an even greater extent the writings of Engels qualified the somewhat simplistic explanation of rigid economic determinism found in their earlier work. They conceded a degree of autonomy in the development of certain aspects of the superstructure. The more flexible interpretation allowed for legal, political, religious, literary, artistic, and scientific ideas to interact with the economic structure instead of remaining

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[6] Ibid, p. 156.

[7] Timasheff, p. 48.

[8] Aron, p. 138.

passive to the infrastructure. They still maintained, however, that the economic base would ultimately assert itself.[9]

The importanct of Marx's work to the present investigation is limited to his explication of the interpretation of thought and social structure which has since come to be called the sociology of knowledge. Although he was the first to propose the dependence of thought upon the social structure, it remained for later scholars to expand the rigid Marxist model and provide a more flexible and useful theoretic tool for analysis.

Durkheim

Emile Durkheim's contributions to the sociology of knowledge were largely a result of his effort to establish the social origins of morals and religion.[10] He was primarily concerned with the rejection of theories which interpreted religion as fantasy without empirical reference. On the contrary, Durkheim proposed that group life generated religious behavior, and the idea of the sacred (things set apart by man, including religious rites, beliefs, deities) in fact symbolized the social group.[11]

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[9]Coser, Sociological Theory, p. 669.

[10]Ibid., p. 673.

[11]Timasheff, p. 115.

Following his analysis of religion Durkheim extended a similar explanation to all the fundamental categories of thought. He selected non-literate tribes, studied through secondary sources, to illustrate that the concepts of space and time were not only perpetuated by society but were also the creations of social life. The organization of social groups was instrumental to the development of logical thought, he maintained, because men had modeled their concepts after the organization of their groups.[12] For example, certain tribes conceived of space in the form of a circle because their camps were circular in form. Correspondingly, the concept of time referred to the recurrence of rituals and ceremonies. The calendar was an expression of rhythmic collective activities and also assured their regularity.[13]

The validity of Durkheim's assertions concerning the origin of concepts and thought has been questioned. Critics have pointed out that the influence of factors other than the social group were neglected. For example, an argument may be made for the influence of the rhythmic action of natural phenomena (day and night, seasonal variation) on the concept of time. Another criticism concerns Durkheim's failure to explain the genesis of symbolic thought which is necessary for the existence of society.[14]

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[12]Coser, p. 673.

[13]Ibid., p. 674.

[14]Ibid., p. 674.

Nonetheless, two aspects of Durkheim's work constituted important contributions to the sociology of knowledge. First, he supported sociological theory with empirical evidence; and second, the analysis of variations in systems of concepts to variations in social organization provided a frame of reference for later studies.[15]

Mannheim

A consideration of Karl Mannheim's theoretical elaboration of the Marxist interpretation is appropriate for the particular focus of this thesis. Basically the Marxist position constituted a political device designed to discredit rival points of view. Mannheim's aim was to generalize this position by eliminating its polemical and propagandistic elements in favor of a theory applicable to a wider range of problems.[16]

Mannheim arrived at certain conclusions pertinent to the development of the sociology of knowledge from an analysis of the concept "ideology." He stated that there were two distinct and separate meanings of the term--the "particular" and the "total" conception. The particular conception of ideology refers to the conscious attempt by a politico to disguise or misrepresent the real nature of a situation. This is done because a true representation

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[15] Ibid., p. 675.

[16] Ibid., p. 670.

of the situation would not be in accord with his interests.[17] The total conception is concerned with the intellectual characteristics and composition of the "total structure of the mind of an epoch or a group."[18] An attempt is made to understand thought as an outgrowth of the collective life of which it partakes. Thought is conceived of as completely bound up with the concrete situation.[19]

Mannheim then made a further distinction between a "special formulation" and a "general formulation" of the concept of ideology. The special formulation regards only the thought of the political adversary as completely a function of the social situation, while the general formulation conceives of the thought of all groups existing in such a relationship.[20] "With the emergence of the general formulation of the total conception of ideology, the simple theory of ideology develops into the sociology of knowledge."[21]

The sociology of knowledge, then, was defined by Mannheim as a theory of the social or existential determination of modes of thinking. All knowledge, all ideas, were in an

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[17]Merton, p. 492.

[18]Ibid., p. 493.

[19]Ibid., p. 493.

[20]Karl Mannheim, Ideology and Utopia, translated by L. Wirth and E. Shils (London, 1948), p. 67.

[21]Ibid., p. 69.

inextricable relationship with the social process. The task of the new discipline was to explore and posit empirical correlations between knowledge and socio-historical variables. Mannheim did not propose that such investigation could reflect upon the validity or truth or a particular idea, however, he did contend that inquiry pursued by the sociology of knowledge did permit an understanding of a system of ideas within the context of the related social situation.[22]

The Normative Structure and Scientific Research

The foregoing discussion of the sociology of knowledge provides the general orientation for the empirical study conducted in this thesis. An attempt will be made to apply the broad theoretic framework proposed by Mannheim, specifically that knowledge is a function of the social situation, to the analysis of a concrete situation. The problem, to be discussed in detail later, is concerned with the constraints imposed upon the accumulation of knowledge by the social system. More specifically the investigation will examine the relationship between a variable taken as an indicator of an empirical fact and the normative structure of society.

Norms define behavior in terms of conventional expectations and constitute ideal patterns for behavior based upon moral judgements or definitions of right and wrong.

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[22]Coser, p. 671.

The concept "normative structure" refers to an interrelated complex of social norms functioning to guide the behavior of individuals.[23] Related to the normative structures in a more limited sense are social institutions which have been defined as norms clustered together for the achievement of some specific goal.[24] Science is an institution for it is a set of methods and mores organized to pursue the goal of knowledge, certified by empiricism and logically consistent predictions. However, the institution of science is not always well integrated with other institutions of the same larger social structure.[25]

In a discussion of the ethos of modern science Merton includes the institutional imperative of "organized skepticism."

> It is both a methodologic and an institutional mandate. The suspension of judgement until 'the facts are at hand' and the detached scrutiny of beliefs in terms of empirical and logical criteria have periodically involved science in conflict with other institutions.[26]

Science employs the criteria of objectivity in the consideration of all questions of fact. When the scientific norm of objectivity conflicts with other institutional norms and is

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[23]David Dressler, Sociology: The Study of Human Interaction (Englewood Cliffs, 1969), p. 93.

[24]John Biesanz and Mavis Biesanz, Introduction to Sociology (New York, 1969), p. 62.

[25]Merton, p. 552.

[26]Ibid., p. 560.

interpreted as a threat, resistance and opposition to further scientific investigation forms. Notably, this reaction occurred with regard to early scientific inquiry and the church. For example, the Copernican cosmological theory was vigorously opposed by the church as a threat to traditional dogma.

Whenever scientific investigation delves into sensitive areas that are traditionally designated taboo, if the emotional reaction is sufficient, knowledge will be signigicantly limited. A situation occurs where existential conditions restrict and limit knowledge. This is illustrated by recent epidemiologic studies of cervical cancer. At this point the research question may be posed: To what extent has the normative structure impeded scientific study?

Epidemiology as an Investigative Technique

Method

Epidemiology, broadly defined, is concerned with measurement of the circumstances under which diseases occur and those where they do not flourish. Concern with the differential distribution of disease throughout a population was originally limited to the study of contagious disease, however today all types of diseases are studied epidemiologically. The variables investigated are social and psychological as well as biological and physical.[27]

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[27]Edward A. Suchman, "Epidemiology," International Encyclopedia of the Social Sciences, Vol. V(New York, 1968).

When variation of disease incidence is noted among several defined groups the goal of epidemiology is the isolation and identification of some aspect of behavior, type of exposure, or personal attribute which will explain the variation and help narrow the search for causes of the disease. Groups with low incidence rates are as significant for study as groups with higher rates. In the first case research concentrates on factors which prevent occurrence of the disease; in the second case researchers focus on patterns which promote disease.[28] Rigorously stated the epidemiologic researcher develops and tests hypotheses concerning factors suspected of association with the distribution of disease in a specific population.[29]

Social epidemiology, a sub-division of epidemiology, concentrates on social variables as opposed to physical or biological factors. Disease incidence distribution is identified among national, religious, racial, class, occupational, and other social groups.[30] Identification of high risk groups accomplishes at least one other purpose in addition to that previously mentioned. Given a condition of limited medical facilities it is important to have knowledge

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[28]Saxon Graham, "New Clues to the Causes of Cancer," Transaction, V (January, 1968), 43.

[29]Suchman, "Epidemiology," p. 99.

[30]Graham, p. 43.

of groups at high risk in order to concentrate screening programs among those populations to facilitate disease detection and treatment.[31]

Historical Studies

The history of epidemiology may be traced to its beginings in seventeenth century England when John Graunt developed the first mortality tables. It was not until the nineteenth century that these statistics were utilized to isolate etiological factors of diseases occurring in epidemic form.[32] Epidemiologic research has since been expanded to include the study of all diseases. Among the applications of epidemiology have been investigations to confirm the existence of occupational hazards by revealing high concentrations of a particular type of disease among specific groups of workers.[33] An early example was the isolation of soot as a carcinogenic agent among chimney sweeps afflicted with scrotal cancer.[34]

A more recent application of the epidemiologic method was studies which demonstrated an association between smoking

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[31]William M. Christopherson and James E. Parker, "Relation of Cervical Cancer to Early Marriage and Childbearing," The New England Journal of Medicine, CCLXXIII (July, 1965), 235. David C. Figge and James L. Bennington, "A Study of the Epidemiology of Cervical Cancer," American Journal of Obstetrics and Gynecology, XCIX (June, 1967), 516.

[32]Suchman, "Epidemiology," p. 98.

[33]Abraham M. Lilienfeld and others, Cancer Epidemiology: Methods of Study (Baltimore, 1967), p. 7.

[34]Graham, p. 44.

and lung cancer. The association was initially suggested by demographic comparisons showing a much higher incidence of lung cancer among men than women. Further investigation revealed a correlation between smoking and the occurrence of the disease. Finally, studies involving the follow up of groups of smokers and nonsmokers showed higher incidences of this cancer among smokers.[35] Although the actual physiological cause of lung cancer is not understood, epidemiological studies indicate that smoking and lung cancer are strongly associated. It follows that a reduction of incidence rates could be realized if the behavior pattern of tobacco smoking were eliminated.[36]

Epidemiological Studies of Factors Associated with Cervical Cancer

Introduction.--Similar epidemiologic studies have been conducted on cancer of the uterine cervix. Several characteristics of cervical cancer render it particularly suitable for epidemiologic inquiry. These characteristics include the variability of the disease among various social groups, the fact that the development of the disease is relatively accessible to clinical observation, and the fact that the site of the disease is subject to a variety of influences several of which are socially determined.[37]

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[35]Suchman, "Epidemiology," p. 100. [36]Graham, p. 43.

[37]Clyde E. Martin, "Marital and Coital Factors in Cervical Cancer" unpublished dissertation, The Johns Hopkins University, Baltimore, Maryland, 1966, p.2.

Cancer of the uterine cervix is one of the most common female neoplasms. Rotkin contends that it is the most frequent female cancer for all races combined.[38] Incidence rates, estimated from the populations of ten metropolitan areas in 1947 rank cervical cancer second to cancer of the breast.[39]

In 1930 cervical carcinoma was the single most important neoplastic cause of mortality.[40] The introduction of the "Pap smear" in the screening for this cancer has had the effect of significantly reducing mortality rates since the prognosis with early detection and appropriate treatment is excellent.[41] The diagnostic usefulness of the Pap smear is demonstrated by the fact that by 1960 cervical cancer ranked third as a cause for mortality for white women. However, for non-white women, despite a decline in mortality, rates for cervical cancer have been higher than those for whites, and the decline has been less for non-whites than for whites. The result is that cervical cancer remains the main neoplastic cause of death for non-white women.[42]

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[38] I. D. Rotkin, "Relation of Adolescent Coitus to Cervical Cancer Risk," Journal of the American Medical Association, CLXXIX (February, 1962), 486.

[39] H. F. Dorn and S. J. Cutler, Morbidity from Cancer in the United States (Washington, 1959), p. 30.

[40] Jeremiah Stamler and others, "Epidemiology of Cancer of the Cervix," American Journal of Public Health, LVII (May, 1967), 793.

[41] Figge and others, p. 516. [42] Stamler and others, p. 793.

The variability of cervical carcinoma, as has been stated, is of particular epidemiologic interest. Data indicate variation of incidence rates among women classified by race, geographic region of residence, socio-economic status, and marital history.[43]

Racial variation.--Incidence rates of cervical cancer for the United States as a whole are not available.[44] Estimates of incidence rates have been calculated on the basis of several limited regional population surveys. One of the earliest attempts to establish variation by racial classification included ten metropolitan areas, and subsequent estimates were based on the 1930 U. S. population. The results indicate a rate of 39.1 per 100,000 women for whites and a rate of 78.8 for non-whites.[45]

A later study of Memphis and Shelby County, Tennessee revealed rates of 37.6 for whites and 64.1 for non-whites.[46] A three year morbidity study covering Louisville and Jefferson County, Kentucky was completed in 1955. Incidence rates were 30.7 for whites and 54.3 for non-whites.[47] (Rates for the last two surveys were age-corrected to the 1950 U. S. population per 100,000 females.)

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[43]Martin, p. 2. [44]Stamler, p. 793.

[45]Dorn and Cutler, p. 33.

[46]John E. Dunn, "Preliminary Findings of the Memphis-Shelby County Study," American Journal of Public Health, XXXVIII(July, 1958), [illegible] 872.

[47]Stamler, p. 797.

Haenszel and Hillhouse have reported on a survey of cervical cancer morbidity in New York City (1953-54). The investigation concentrated on four racial and ethnic groups and the incidence rates per 100,000 women were as follows: Jewish--4.7, non-Jewish whites--17.1, Puerto Rican--109.8, and Negro--53.6.[48] The authors admit the possibility of an overstated rate for Puerto Ricans influenced by a rapid rate of migration into New York during 1951-52, (the population used for computations was taken from the 1950 census).[49]

These data indicate that non-white women comprise the highest risk group in the United States. The only group with a higher incidence were the Puerto Ricans in New York City; however, the accuracy of those data is questionable. The incidence rates previously quoted show non-white women to consistently rank higher than white and Jewish women.

Ethnic variation.--An interesting feature of the New York City data is the inordinately low incidence rate of cervical cancer for Jewish women. These findings are supported by the results of a survey conducted with Jewish women in Israel. The Israeli study revealed a rate of 4.63 per 100,000 women, a figure almost identical to the

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[48]William Haenszel and Margaret Hillhouse, "Uterine Cancer Morbidity in New York City and Its Relation to the Pattern of Regional Variation Within the United States," Journal of the National Cancer Institute, XXII(June, 1959), 1163.

[49]Ibid., p. 1158.

rate of 4.7 for the New York City Jewish women.[50] The data from these two studies indicate Jewish women constitute a group at extremely low risk of cervical cancer. A widely accepted explanation for the low incidence rates for Jews suggests that some genetic factor is involved which acts as a protection against the disease.[51]

There are no accurate statistics which describe rates of cervical cancer for other ethnic minorities. However, there are data taken from surveys of various hospital populations concerning Mexican-Americans and American Indians. The existing literature suggests that rates are moderately high for both groups.

A cytologic survey of 2,161 women in Tijuana, Mexico revealed 51 cervical carcinomas, an incidence of 2.36 percent. The incidence rate for the Tijuana population was almost four times as great as that for the United States average.[52] Since the representativeness of this group is not known, no generalizations can be made about the total population with any measurable degree of accuracy. In another nation-wide survey of 160,000 women in Mexico

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[50]J. Casper, "Rates of Uterine Cancers in Jewish Women in Israel and New York City," Acta; Unio Internationalis Contra Cancrum, XVI (August, 1960), 1686.

[51]Saxon Graham, p. 45.

[52]Leonard A. Schonberg and others, "Cancer of the Cervix in a Mexican Population," Journal of the American Medical Association, CIXC (January, 1965), 84.

an incidence rate of 1.02 percent was discovered.[53] The implications of these data indicate that Mexican women as a group are at a very high risk to cervical cancer, and, without evidence to the contrary, it is not unrealistic to expect further research to confirm these findings.

Data on American Indians are also insufficient for accurate descriptive purposes. An investigation of the ethnic distribution of cervical carcinoma in the Seattle area, which has a transient Indian population, indicated a greater number of Indians among cancer patients than among corresponding controls.[54] In another study the prevalence of cervical cancer was found to be low for those on reservations and high for those removed from their native environment.[55] Although research has been lacking, indications from existing data suggest a significantly high incidence rate of cervical carcinoma for American Indians who reside in or near urban areas.

Regional variation.--There is evidence of regional variation of incidence rates for whites in Southern cities fifty to sixty percent higher than those in the North. The authors arrived at this conclusion from a comparison of

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[53] Ibid., p. 97.

[54] Abraham I. Schweid, "Ethnic Distribution of Cervical Carcinoma in a Cytologic Screening Program," Acta Cytologica, XIII(March, 1969), 141.

[55] John B. Graham and others, Carcinoma of the Cervix (Philadelphia, 1962), p. 25.

rates for ten metropolitan areas, Memphis, Iowa urban areas, New York State (exclusive of New York City), Connecticut, and New York City.[56] Only two studies refute the differential North-South incidence rates. Rates for Iowa urban areas are higher than those for the Northern studies. And a study of Louisville and Jefferson County, Kentucky indicated a rate (30.5)[57] only slightly higher than Connecticut (26.1) and New York State (26.5), and lower than the rate for four Northern cities of the ten city survey (31.5).[58] In spite of the data for Iowa and Louisville, the evidence predominately supports higher rates for Southern white women. This position is generally accepted.[59]

The difference in North-South rates for non-white women is not as great as that for whites. A possible explanation may be a consideration of the heavy migration of Southern Negroes to the North.[60]

Socio-economic variation.--In addition to the variables already discussed, emphasis has been placed on the social and economic factors involved with cervical cancer. The literature indicates that an inverse relationship exists

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[56] Haenszel and Hillhouse, p. 1157.

[57] Stamler, p. 797.

[58] Haenszel and Hillhouse, p. 1168.

[59] Ibid., p. 1160.

[60] Ibid., p. 1168.

between this carcinoma and socio-economic status; however, there is little agreement in publications as to specific factors which may identify the low socio-economic groups.[61] Dorn and Cutler, using census tracts containing approximately the same number of people with median incomes and rentals as criteria for classification, found incidence rates for the lowest socio-economic class to be about twice that for the highest class.[62] A study of socio-economic areas of residence in Louisville and Jefferson County, Kentucky provided similar results.[63] Data on five boroughs in New York City revealed the highest rate of cervical carcinoma for the borough identified by the researchers as most influenced by the lower socio-economic classes.[64] In studies involving hospital populations, Jones, et al. have noted that estimates of economic background showed lower standards of living among cancer patients compared to non-cancerous patients.[65] Similarly, cervical cancer has been noted to occur more frequently among "charity" hospital patients than among private hospital populations.[66]

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[61] Figge and Bennington, p. 524.

[62] Haenszel and Hillhouse, p. 1173 [63] Stamler, p. 801.

[64] Haenszel and Hillhouse, p. 1165.

[65] Edward G. Jones, and others, "A Study of Epidemiologic Factors in Carcinoma of the Uterine Cervix," American Journal of Obstetrics and Gynecology, LXXVI(July, 1958), 6.

[66] Figge and Bennington, p. 524.

The operation of some genetic factor has been suggested to explain the low incidence of cervical cancer among Jews;[67] however, this explanation cannot be extended to account for variation among groups classified by other variables. As previously stated, research findings indicate higher incidence rates of cervical cancer for Negroes than for whites. At first glance these findings might be interpreted to suggest a racial determinant; however, research which controlled for socio-economic status has shown the relative frequency of cervical cancer to be almost the same for black and white members of the same socio-economic class.[68] The implication is that apparent racial differences result from other underlying factors.

Since the social epidemiological approach concentrates on social and cultural variables, it is useful to treat lower socio-economic groups as sub-cultural groups within the larger culture of the middle and upper classes. These groups form sub-cultures in that they adhere to values and norms which are not shared by members of the larger culture. The values and norms of the lower socio-economic groups are either unknown to, looked down upon, or thought of as

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[67] Saxon Graham, p. 45.

[68] William M. Christopherson and James E. Parker, "A Study of the Relative Frequency of Carcinoma of the Cervix in the Negro," Cancer, XIII (June, 1960), 712.

separating forces by members of the upper socio-economic classes.[69] Proceeding from the sub-cultural construct, the task of epidemiological research is to identify some aspect of behavior resulting from the dominant values and norms of one sub-culture (absent in another culture) which may explain the variation of disease incidence.

Coital factors.--The site of the uterine cervix is subject to several influences. Sexual, reproductive, contraceptive, and douching practives directly affect the environment of the cervix. Cultural values and social relationships are also relevant, as individuals are influenced to abstain, participate, or otherwise modify behavior pertaining to these practices.[70]

Recent epidemiologic research has investigated the possible carcinogenic effect of some aspect of the reproductive experience. A study by Gagnon of approximately 13,000 women living in religious seclusion failed to reveal a single case of cervical cancer.[71] Towne conducted a similar survey of hospital records and convent medical

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[69] Edward A. Suchman, "Socio-economic Variation Among Ethnic Groups," American Journal of Sociology, LXX(November, 1964), 319-323.

[70] Martin, p. 71.

[71] Fabein Gagnon, "Contributions to the Study of the Etiology and Prevention of Cancer of the Cervix of the Uterus," American Journal of Obstetrics and Gynecology, LX (May, 1950), 521.

charts. Six cases of cervical carcinoma were reported out of 13,083 nuns studied.[72] These findings indicate that, while it is erroneous to contend that celibate women never develop cervical cancer, no other group has been found to be at such low risk of this particular cancer.[73]

In sharp contrast to the near absence of cervical cancer among nuns, prostitutes have a very high prevalence of the neoplasm. Rojel found 3.8 percent of 1,262 women with cervical cancer to have police records for prostitution as compared to .8 percent of 1,392 controls.[74] An investigation into the occurrence of cervical carcinoma among incarcerated prostitutes yielded similar results. One hundred ninety women were examined and nineteen cases were positive (10.0 percent).[75]

In addition to findings for nuns and prostitutes, several studies have revealed incidence rates to be consistently higher (nearly twice as high) for married women than for single women.[76] Assuming that virginity is responsible

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[72]Janet E. Towne, "Carcinoma of the Cervix in Nulliparous and Celibate Women," American Journal of Obstetrics and Gynecology, LXIX(March, 1955), 612.

[73]Martin, p. 8. [74]Martin, p. 56.

[75]Elizabeth Keighley, "Carcinoma of the Cervix Among Prostitutes in a Women's Prison," British Journal of Venereal Disease, XXXXIV(March, 1968), 255.

[76]Ernest L. Wynder and others, "A Study of Environmental Factors in Carcinoma of the Cervix," American Journal of Obstetrics and Gynecology, LXVIII(October, 1954), 1024. Milton Terris and others, "The Relationship of Coitus to Carcinoma of the Cervix," American Journal of Public Health, LVII(May, 1967), 842.

for the near absence of cervical cancer among nuns and low rates for single women, it logically follows that coital experience is a prerequisite for the later development of the neoplasm. The consensus of the literature supports the hypothesis that some participation in coitus is a necessary though insufficient condition for the appearance of this cancer form.[77]

Several factors have been investigated for possible association with risk of cervical cancer. The findings for the most part are inconsistent and are characterized by failure to isolate a specific factor closely related to coital relations or the reproductive experience.[78]

No significant differences have been found between groups of cancer patients and controls for variables such as douching practices,[79] gravidity,[80] and parity.[81] A

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[77] Martin, p. 10.
I. D. Rotkin, "Adolescent Coitus and Cervical Cancer: Associations of Related Events with Increased Risk," Cancer Research, XXVII(April, 1967), 612.

[78] Martin, p. 75.

[79] Wynder and others, p. 1034.
Jones and others, p. 4.

[80] Rotkin, "Adolescent Coitus and Cervical Cancer," p. 611. Christopherson and Parker, "Relation of Cervical Cancer to Early Marriage and Childbearing," p. 237.

[81] Rotkin, "Adolescent Coitus and Cervical Cancer," p. 611.
I. D. Rotkin and R. W. King, "Environmental Variables Related to Cervical Cancer," American Journal of Obstetrics and Gynecology, LXXXIII(March, 1962), 725.

diversity of opinion exists concerning the magnitude of cancer risk and frequency of coitus, number of coital partner, use of contraceptives, and circumcision status of coital partners.

Jones, et al.[82] and Terris, et al.[83] are in agreement that no significant differences exist between patients and controls in frequency of coitus. A report by Terris and Oalmann found an association of cervical cancer with frequent coitus.[84] Terris, et al.[85] and Jones, et al.[86] report no association of cervical cancer with the number of coital partners; however, Rotkin[87] states that many more patients than controls have coitus with two or more different men. Findings by Terris and Oalmann of less frequent contraceptive use among patients than controls[88] conflict with other findings which found no relationship between cervical cancer and the use of contraceptives.[89]

Studies of the carcinogenic effects of human smegma on laboratory animals suggest that coitus with the uncircumcised

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[82]Jones and others, p. 5. [83]Terris and others, p. 844.

[84]Milton Terris and Margaret Oalmann, "Carcinoma of the Cervix," Journal of the American Medical Association, CLXXIV (December, 1960), 1850.

[85]Terris and others, p. 884. [86]Jones and others, p. 10.

[87]Rotkin, "Adolescent Coitus and Cervical Cancer," p. 609.

[88]Terris and Oalmann, p. 1849.

[89]Rotkin and King, p. 728. Wynder and others, p. 1035.

male may be related to cervical cancer. Such a relationship would also explain the low incidence rates among Jewish women, a result of the social practice of ritual circumcision among Jewish men. However, empirical evidence to support this position remains inconclusive.[90]

In contrast to the conflicting findings presented above, research has produced empirical evidence of a strong relationship between cervical cancer and the following variables: early marriage and early age at first coital experience. A number of studies have confirmed the association of cancer of the cervix and early marriage.[91] As early as 1954 Wynder [92] investigated cancer risk and age at first coitus. He found cervical cancer patients, both black and white, reported first coitus at an earlier age than controls. Terris and Oalmann[93] in 1960 published the results of a study which confirmed Wynder's findings. Since 1960 several investigators obtained results supporting the association of cervical cancer and early age at first coitus.[94]

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[90]Martin, p. 103. Saxon Graham, p. 44.

[91]Haenszel and Hillhouse, p. 1171. Jones and others, p. 6. Terris and others, p. 84.

[92]Wynder and others, p. 1025.

[93]Terris and Oalmann, p. 158.

[94]I. D. Rotkin and W. E. Taylor, "Ethnic Comparability of the Relation Between Early Coital Trends and Cervical Cancer," Cancer, XXVII(February, 1969), 459.

A sociological study found age of marriage to be directly related to the socio-economic class.[95] A nation-wide study of socio-economic groups by Christopherson and Parker found the lowest socio-economic group married an average of two years earlier and was pregnant an average of four years earlier than the highest socio-economic group. The age-adjusted cervical cancer rates of incidence for the two groups were 25.2 and 62.5 per 100,000 women, respectively.[96] Several other researchers have published findings consistent with these data.[97] The behavior pattern of early sexual maturation, characteristic of the lower socio-economic sub-culture, occurs more consistently for women who develop cervical cancer than for women free from this disease.[98] The suggestion is that early sexual activity along with other factors associated with poverty may account for the variability of incidence rates on a socio-economic basis. The apparent racial difference between blacks and whites, considering the proportion of blacks in lower socio-economic

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[95] F. W. Notestein, "Differential Age at Marriage According to Social Class," American Journal of Sociology, XXXVII(July, 1931), 48.

[96] Christopherson and Parker, "Relation of Cervical Cancer to Early Marriage and Childbearing," p. 239.

[97] Schonberg, p. 86. Haenszel and Hillhouse, p. 1173.

[98] Jones and others, p. 10.

classification may also be a result of group norms which are consistent with early initiation in the sexual and reproductive experience.[99]

There are several ways in which carcinoma of the uterine cervix and coitus may be related. Consequently, there are a number of hypotheses competing for general acceptance. To date none has satisfactorily related all known facts about the occurrence of cervical cancer into a fruitful explanatory model. The difficulty involved in realizing this goal includes the inconsistency of the data obtained from the various studies[100] and the inability of medical science to identify and understand the exact carcinogenic process.[101] A hypothesis proposed by Rotkin[102] is not intrinsically superior to other speculations; however, the variables involved illustrate the social determinants of scientific knowledge.

Rotkin suggests that the adolescent cervix is susceptible to the action of an unidentified carcinogenic agent introduced by the male during coitus.[103] There is evidence of a

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[99] Haenszel and Hillhouse, p. 1171.

[100] Terris and others, p. 845. [101] Martin, p. 1.

[102] Rotkin, "Relation of Adolescent Coitus to Cervical Cancer Risk," p. 490.

[103] I. D. Rotkin, "Sexual Characteristics of a Cervical Cancer Population," American Journal of Public Health, LVII (May, 1967), 828.

mean latency period of about thirty years from onset of coitus to detection of the neoplastic growth.[104]

His suspicion of coitus as an etiologic factor resulted from a review of published findings which indicated celibate women to be relatively free from cervical cancer and demonstrated an association between early marriage and the disease.[105] Rotkin states that

> the marriage license obviously is not an etiologic agent; therefore, the necessary conclusion is that some influence or event associated with marriage must be implicated. . . .the most tangible source of contribution to onset would reside in a beginning of sexual experience. Marriage initiates a full sexual routine.[106]

Marriage as an indicator of coitus.--The relation of marriage and cervical cancer was the subject of speculation in 1842 when Rigoni-Stern proposed this association might be responsible for the absence of cervical cancer among nuns.[107] Consequently, age at marriage was frequently investigated as an etiologic variable until Wynder, in 1954, suggested that age of first coitus might be a more crucial variable than age at first marriage and obtained actual data on age at first coitus.[108] Since research indicates

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[104] Rotkin, "Adolescent Coitus and Cervical Cancer," p. 615.

[105] Rotkin, "Relation of Adolescent Coitus to Cervical Cancer Risk," p. 486.

[106] Ibid., p. 490.

[107] Ibid., p. 486.

[108] Wynder and others, p. 1025.

that nearly fifty percent of the American female population experience pre-marital coitus,[109] age at first marriage is not necessarily a good indicator of age at first coitus.

Although coitus has been suspect as an etiological factor since 1842, data on the age at first coitus were not available until 1954, a period of over a hundred years in which research avoided the topic. Again, from 1954 until Terris and Oalmann published findings concerning this variable in 1960, age at first marriage continued to be used. Despite a clear indication of a possible association between age at first coitus and cervical cancer, exploration of this relationship was ignored. Speculation on a reason for the absence of these data in the literature on cervical cancer suggests the reluctance of researchers to include questions concerning sexual intercourse on interview schedules, and reflects a Puritan attitude toward sex.

Kinsey discusses the difficulty of scientific research in conflict with Puritan sexual mores.

> Because of the limitations which are usually imposed on any consideration of sex, the scientist has been hesitant to investigate in this area. . . .the information which we have tried to secure has concerned aspects of human behavior which most persons consider confidential and ordinarily do not discuss with any except their most intimate friends. More than that, our openly expressed mores and the statute law (the overt culture) are so remote from the actual behavior (the covert culture) of the average citizen that there

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[109] Alfred C. Kinsey and others, Sexual Behavior in the Human Female (Philadelphia, 1965), p. 286.

> are few persons who can openly discuss their histories without risking social or legal difficulties.[110]

Similarly, Terris, et al. have noted some embarrassment on the part of individuals when asked questions of a coital nature. They call attention to the danger that questions regarding such sensitive areas may elicit responses which the individual feels are acceptable to the interviewer.[111] Even Kotkin feels that only a medical doctor could obtain these data accurately and without embarrassment to the interviewer and interviewee.

Substantive Hypothesis

The preceeding discussion is a description of a situation in which there has been a social determination of knowledge. The mores and norms which constitute an institutional attitude toward sex are an integral part of the larger regulatory social structure. In the recent past the strength of these mores has been sufficient to prevent scientific investigation in the area of sex and the relationship of sexual practices to disease. The research question remains: to what extent has this hampered investigation of the etiology of cancer of the cervix? The following hypothesis is proposed to test this question: the normative system has significantly impeded research of factors suspected of association with cervical cancer.

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[110] Ibid., p. 5. Ibid., p. 7.

[111] Terris and others, p. 845.

CHAPTER II

METHODOLOGY

Collection of Data

The data for the present study were collected between March 15 and July 15, 1968.[1] A registered nurse who had been given special training in interviewing conducted the interviews and occupied an office adjacent to the gynecology clinic of a large metropolitan city-county hospital. Every woman who came through the clinic on the inclusive dates was interviewed. On non-clinic days additional interviews were obtained from women seeking consultation at the Planned Parenthood Clinic. No one refused to answer the questions and in the judgment of the interviewer answers were honest and not embarrassing to most respondents.

Population and Sample

The 795 women interviewed comprise an availability or accidental sample of a much larger population. According to strict statistical interpretation, if probability sampling is absent, as in the present study, the investigator has no idea of the population which the sample may represent.[2]

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[1] Data were collected as part of a larger project, United States Public Health Services Grant to Dr. Alice Smith, Department of Pathology, Southwestern Medical School, Dallas, Texas.

[2] Linton C. Freeman, Elementary Applied Statistics (New York, 1965), p. 144.

However, the assumption can be made that the 795 cases which actually had no systematic sampling plan constitute a sample that is representative of a universe of similar hospital populations. The data may then be subjected to further statistical analysis and the results may be generalized to that hypothetical universe.

In other words, similar hospital populations may be regarded as a "hypothetical universe" defined as a generalization from a sample or complete survey of a limited universe. "It is the universe of all possible samples (which may be limited universes) which could have been produced under similar conditions of time, place, culture, and other relevant factors."[3] It follows that the data collected at this city-county hospital is representative of a hypothetical universe which includes similar hospitals in other metropolitan areas. Subsequently, generalizations from these data can be made.

An argument has been presented to justify the use of the accidental sample for purposes of statistical inference. However, it is possible to make a further refinement by introducing an aspect of randomness in the process of sample selection. The most serious weakness of the accidental sample (with reference to generalization potentialities) is that its representativeness remains largely unknown. There

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[3]Margaret J. Hagood, "The Notion of a Hypothetical Universe," The Significance Test Controversy, edited by D. E. Morrison and R. E. Henkel (Chicago, 1970), p. 66.

is no assurance that the women interviewed were typical of the women who usually utilized the facilities at this hospital. A large number of uncontrollable forces could have acted to produce a biased population during the inclusive dates of data collection. It is not possible to entirely eliminate the uncertainty, but it can be reduced by the introduction of a factor of randomness into the selection of a sample. The principle of random sample selection provides that every observation has an equal chance of selection. Since the procedure avoids systematic bias and the inclusion of one observation does not influence the inclusion of any other observation, a random sample of the availability sample would provide a more representative sample of the women who utilize the clinic facilities and, therefore, provide a firmer basis for generalization.

The decision was made to take a forty percent random sample of the original data. A table of random numbers was used to determine the selection of 292 cases.[4]

Description of Data

Both the population and the random sample taken from those data were analyzed according to three demographic variables: level of education, racial and ethnic composition, and religious affiliation. The results are presented in

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[4]Sixty-five women had never been married and were removed from the total 795 cases before selection of the random sample.

Table I. As the table indicates, the sample did not differ significantly from the total population on the variables measured.

TABLE I

LEVEL OF EDUCATION, RACIAL AND ETHNIC COMPOSITION, AND RELIGIOUS AFFILIATION OF POPULATION AND RANDOM SAMPLE

Variable	Population No.	Population %	Random Sample No.	Random Sample %
Level of education				
High school	423	57.95	166	56.85
High school	169	23.15	78	26.71
Some college	109	14.93	39	13.36
College graduate	22	3.01	6	2.05
No response	7	.96	3	1.03
Total	730	100.00	262	100.00
Racial and ethnic group				
White	185	25.34	82	28.08
Latin	59	8.08	29	9.94
Black	485	66.44	180	61.64
Indian	1	.14	1	.34
Total	730	100.00	262	100.00
Religious affiliation				
None	7	.96	2	.68
Catholic	54	7.40	25	8.56
Jewish	2	.27	0	0
Methodist	47	6.44	19	6.51
Baptist	448	61.37	185	63.36
Church of Christ	36	4.93	13	4.45
Presbyterian	4	.55	1	.34
Holiness Sect	98	13.42	33	11.30
Other Protestant	18	2.47	7	2.40
Other religion	16	2.19	7	2.40
Total	730	100.00	262	100.00

Definition of Variables

Two variables were selected as empirical indicators for the purpose of testing the substantive hypothesis. The variables are age at first coitus and age at first marriage. They are operationally defined as the first responses of each woman interviewed to the two questions on the interview schedule concerning age at first coitus and age at first marriage. (See questions numbered 7 and 11 on the interview schedule in Appendix A.)

Statistical Procedure

The argument pursued here is that the normative system has limited scientific research. Although coitus was suspect as an etiological factor for more than a hundred years, epidemiological investigation relied upon age at first marriage as an indicator of age at first coitus.

The research hypothesis is that there is less than a perfect correlation between age at first coitus and age at first marriage. Therefore, the variable of age at first marriage is not an accurate measure of age at first coitus, and, as a result, knowledge was limited by the social structure.

Pearson's coefficient of correlation (r) was selected as a measure of association.[5] The requirement for an interval level of measurement is satisfied by the data.

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[5] Freeman, p. 89.

Calculated values of r range from -1 to +1, the algebraic sign indicating the direction of association.

1. H_1: Age at first coitus is positively related to age at first marriage.

2. Null Hypothesis. H_0: Age at first coitus is not significantly related to age at first marriage. In this case it is expected that the data will fail to reject the null hypothesis.

3. Significance Level. Let $\alpha = .05$.

4. Sampling Distribution. Any value of r may be transformed into an equivalent value of the statistic called Z and these Z values are always normally distributed.[6]

5. Rejection Region. Since H_1 is directional, a one tailed test is used. At the .05 level of significance the H_0 will be rejected if the value of Z is between 1.6 and 1.5.

6. Decision. The calculated value of r was .5526 which is the equivalent Z value of .6213. Therefore, at the .05 level of significance a value of $r = .5526$ is not significant and the H_0 cannot be rejected, ($\alpha = .27$).

Findings

The failure to reject the null hypothesis that age at first coitus is not significantly related to age at first marriage supports the substantive hypothesis that the

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[6] Ibid., p. 181.

normative structure has significantly impeded research of factors suspected of association with cervical cancer. Data describing age at first marriage is not adequate for investigation of possible association between early coitus and cervical cancer.

Additionally, means and standard deviations for each variable were calculated. Means for age at first coitus and age at first marriage were 16.49 and 18.31 years of age respectively. These values indicate that on the average first coital experience occurred about two years before first marriage for the women in the sample. The ages at which these events occur are necessarily positively related. Had the means of both variables been identical, the value of r would have been nearly that of perfect association. The values of 16.49 and 18.31 are consistent with the value of r = .5526.

The standard deviations of 2.72 for age at first coitus and 3.22 for age at first marriage show age at first coitus to be a more centrally distributed variable than age at first marriage. Assuming the data are normally distributed, the ages of 16.49 years $\pm$ 2.72 years includes 68.9% of first coitus, as compared to 68.29% of first marriages for the ages of 18.31 years $\pm$ 3.22 years. This analysis indicates that there is less variation for age at first coitus than age at first marriage. An explanation of this configuration of the data may take into account the

physiological aspect of coitus as compared to the social event of marriage. The process of biological development, which includes sexual maturation, is independent of society and occurs about the same age for most members of the population. However, marriage is a social event which may be postponed and, as was previously discussed, age at first marriage has been found to be positively related to social class.

TABLE II

FREQUENCY DISTRIBUTION OF SAMPLE FOR AGE AT FIRST COITUS AND AGE AT FIRST MARRIAGE

Years of Age	First Coitus No.	First Coitus %	First Marriage No.	First Marriage %
7	1	.34		
8	1	.34		
9	1	.34		
10	2	.68		
12	4	1.37		
13	10	3.42	1	.34
14	36	12.38	7	2.40
15	43	14.73	29	9.93
16	63	21.58	48	16.44
17	37	12.67	54	18.49
18	43	14.73	53	18.15
19	27	9.25	31	10.62
20	10	3.42	20	6.85
21	7	2.40	16	5.48
22	3	1.03	4	1.37
23	0	0	6	2.05
24	1	.34	5	1.71
25	1	.34	8	2.74
26	0	0	0	0
27	1	.34	2	.69
28	0	0	2	.69
29	0	0	1	.34
30	0	0	4	1.37
36	1	.34	1	.34
Total	292	100.00	292	100.00
$\bar{X}$	16.49		18.31	
σ	2.72		3.21	

CHAPTER III

LIMITATIONS, SUMMARY AND CONCLUSIONS, AND RECOMMENDATIONS

Limitations

As was expected, the analysis of the data indicated a positive correlation between age at first coitus and age at first marriage. A positive, less than perfect, correlation for these variables was expected in a culture where norms condemn pre-marital coitus. However, there are at least two aspects of this situation which are related to a discussion of the positive correlation. Both aspects are a function of the cultural norm prohibiting pre-marital sexual experience.

In the first place, the positive correlation of ages at first marriage and first coitus may reflect the degree of conformity to the normative system. However, the fact that the correlation was not perfect ($r = 1$) indicates that the behavior of a significant portion of the sample was inconsistent with the behavior prescribed by the ideal normative structure which prohibits pre-marital coitus.

The extent of conformity is difficult to ascertain as the data gathered by interview are under certain circumstances subject to distortion. Some individuals whose behavior deviates from established norms may anticipate

evaluation and disapproval on the part of the interviewer. Consequently, responses may take a form which are perceived acceptable to the interviewer. These responses may be distortions of personal histories which attempt to present an image of conformity. Therefore, the data probably underestimate the discrepancy between age at first coitus and age at first marriage.

The attempt to create an illusion of conformity through misrepresentation of personal histories is probably more characteristic of females than males. In the American culture the male role is traditionally defined in terms of deviation from the pre-marital coital taboo and in research involving males it would be expected that distortion of data might bias responses in the other direction, that is, creating an illusion of deviance.

It seems safe to assume that both conformity to norms and the misrepresentation of facts must be taken into consideration for an explanation of the positive correlation between age at first coitus and age at first marriage.

The limitations of the data have been previously discussed and should be considered in any interpretation of the results. Attention should be drawn to the fact that the possibility of a biased sample has been reduced by the actual process of data collection over a period of four months and the random sample taken from the original data.

Summary and Conclusions

The sociology of knowledge is based upon the theory that modes of thinking are determined by the social structure. Because of the latitude in defining the concepts "knowledge" and "social structure", the sociology of knowledge studies a wide range of problems. The present study has investigated the relationship between an empirically observed fact and the normative structure. This thesis suggests that normative imperatives have in several instances determined what science will and will not investigate and, therefore, determined empirically classified categories of knowledge. Epidemiologic studies of cervical cancer provide an illustration of the normative constraints on scientific investigation.

Several variables are associated with a high risk of cervical cancer. Recent epidemiologic studies of cervical cancer have indicated that the variable with the strongest association with the disease is early age at first coitus. For some yet to be determined reason, cervical cancer patients for the most part appear to be characterized by early initiation into the sexual experience. Coitus has been suspected of possible etiological significance for cervical cancer since 1842. At this date an Italian physician noted the absence of cervical cancer among nuns and suggested that their unmarried status accounted for the low incidence. Subsequent researchers gathered data

concerning marriage but were reluctant to approach the subject of coitus directly. The first data dealing with age at first coitus was published in 1954 but studies involving the coital variable in relation to cervical cancer only began to appear in the literature regularly after 1960.

The recent exploration of the relationship between cervical cancer and the patient's coital history is no doubt the result of changing social norms. The Puritan tradition continues to be a part of American culture. It is evidenced in the economic virtues of thrift and self-denial as well as legal definitions and statutory restrictions in the area relating to human sexuality. This later restriction has acted as an impediment to scientific investigation of cancer of the cervix.

The research question was posed: to what extent have Puritan mores hampered investigation of the etiology of cervical cancer? Two variables were selected to test the substantive hypothesis that the normative system has significantly impeded research of factors suspected of association with cervical cancer. These two variables were age at first marriage and age at first coitus. For purposes of statistical testing the null hypothesis was the operational statement of the substantive hypothesis. Results of the statistical procedure were that the null hypothesis that age at first marriage was not an accurate indicator of age at first coitus could not be rejected at the specified level of significance.

The data analyzed support the hypotheses that the normative system has significantly impeded the research of factors suspected of association with cervical cancer. These results are consistent with the theory which posits knowledge in an inextricable relationship with the social structure.

Recommendations

An obvious implication of the results is that epidemiological studies of cervical cancer cannot rely on data describing age at first marriage in order to explore the relationship of cervical cancer with early coitus. It is noted from a review of the literature since 1960 that investigation for the most part is no longer restricted to the variable of age at first marriage. Most of the investigations of of cervical cancer epidemiology investigate coitus directly and regard the variable of age at first marriage with secondary interest.

Obviously, it is erroneous to accept data on first marriage as descriptive of first coitus and the necessity of epidemiological studies of cancer of the cervix to obtain data on first coitus is clearly evident. However, normative impediments to scientific research concern a wider range of problems than cancer epidemiology. If a culture accepts the assumption that the elimination of mystery is desirable and the only reliable way to realize this end is through empirical means, then it would be to the advantage of the scientist to anticipate possible conflict with the normative

structure. This may involve an anthropological familarity with cultural or sub-cultural norms that might be incompatable with the scientific method. Anticipation of these norms would permit the scientist the advantage of preparation. Alternatives could be devised to meet contingencies or programs developed to influence public opinion and elicit community support for research.

APPENDIX I

INTERVIEW SCHEDULE

We are trying to find out what causes cancer of the cervix. It will help us if you will answer the following questions as completely and correctly as you can. Your answers will be used only by doctors to study the cause of cancer and will be held in complete confidence.

	Col.#	Code
1_____	1	Pt. classification 0-OP OB GYN Cl. 1-OP PAP stat. 2-OP other 3-EOR 4-In-Pt. PMH 5-In-Pt. Mobile 6-Woodlawn 7-HS PMH 8-HS SMS 9-Plan Parenthood
_____	2-7	Unit Number (9.....Planned Parenthood)
2_____	8	Clinic Code 0-A 1-B 2-C 3-AB 4-CB 5-AA 6-AAOS - (Health Service) 7-other - AFDC 8-No information available
3_____	9-10	Month 01-Jan 07-July 02-Feb 08-August 03-March 09-September 04-April 10-October 05-May 11-November 06-June 12-December
4_____	11-12	Year

	Col.#	Code
5_____	13-14	Age this exam Actual age
6_____	15	Ethnic group 0-White 1-Negro 2-Latin 3-Indian 4-Other
7_____	16-17	Age at first intercourse, ever Actual age; 00 if none
8_____	18	Frequency of intercourse in beginning 0-Never 1-One time or more per week 2-One time or more per month 3-Less frequently than once a month 4-Only once or twice until legal marriage
9_____	19-20	Number of men with whom ever had intercourse Actual number Use 99 to code prostitute
10_____	21-22	Number of men with whom ever had intercourse before age 20
11_____	23-24	Age at first legal marriage, if ever married Actual age 00-Never married
12_____	25	Number of men with whom had intercourse before legal marriage 0-8 Actual number 9-Nine or more
13_____	26	Number of times legally married Actual number 9-Nine or more

	Col.#	Code
14_____	29	Did marriage make a difference in the number of men with whom you had intercourse 1-Yes - increased 2-Yes - decreased 3-No difference 0-Unmarried
15_____	30-31	Number of children ever born Actual number
16_____	32-33	Number of times pregnant Actual number
17_____	34-35	Number of men by whom pregnant Actual number
18_____	36	Did you use any of the following kinds of contraceptives regularly before age 20 0-No 1-Jelly 2-Diaphragm 3-Condom 4-Pill 5-Other 6-Douche-lysol, etc. 7-Rh ythm
19_____	37	Have you ever used tobacco? 0-Never 1-Cigarettes 2-Snuff 3-Chewing tobacco 4-Other
20_____	38	Religion 0-None 1-Catholic 2-Jewish 3-Methodist 4-Baptist 5-Church of Christ 6-Presbyterian 7-Holiness Sects 8-Other Prot. 9-Other Rel.
21_____	39	Estimate of patient's personal hygiene 0-Poor 1-Fair 2-Good 9-No answer
22_____	40-44	Pap number Actual number

	Col.#	Code
23_____	45	Cyto results 0-Neg 1-Neg 11 2-Neg 11B 3-Suspicious 4-Positive 5-Unsat 6-Not done
24_____	46-47	What is the usual number of times you have intercourse per week? 98=less than 1 x mo. 99=less than 1 x wk., at least 1 x mo.
25_____	48-49	What is the greatest number of times per week that you ever had intercourse for any length of time? 99=No answer
26_____	50	Do you have intercourse during menstruation? 0-No 1-Sometimes 2-Makes no difference
27_____	51	Place of first coital experience 1-Auto 2-Ground 3-Bedroom - his, hers 4-Hotel/Motel 5-Couch - his, hers 6-Other
28_____	52	Have you ever used tampons? 0-No 1-Regularly 2-Occasionally 3-No answer
29_____	53	Education 1-less than High School 2-High School 3-Some college 4-College graduate
30_____	54	1-Special (History of Ca. Cx.)

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