ATTITUDES OF BRITISH COLUMBIA DOCTORS TOWARD THE MANUFACTURE AND MARKETING OF DRUGS

by

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Abstract

The purpose of this study was to find differences, in degree of "skepticism" about the manufacturing and marketing of drugs, among groups of medical doctors categorized according to training and experience.

"Skepticism" was measured by a questionnaire prepared by the Department of Pharmacology with the collaboration of the Department of Psychology, University of British Columbia. The questionnaire was composed of eighteen statements representing issues about the manufacturing and marketing of drugs; "skepticism" was measured by degree of agreement or disagreement with each statement, expressed on a four-point response scale accompanying each statement.

Eleven different ways of classifying doctors according to training and experience were employed, and each of these eleven involved a plurality of groups. Altogether 906 groups were considered.

The "Skepticism" questionnaire together with a "Personal Data" section to supply data for classifying according to training and experience were sent to the 2413 B.C. doctors registered by the B.C. College of Physicians and Surgeons.

Of the 2413 sent, 1193 were returned. Chi-square comparisons were made in order to determine which groups of doctors were relatively "skeptical" or "naive" according to each of the eighteen questionnaire statements.

The great majority of comparisons failed to show differences significant

at the .05 level.

Comparisons which were significant showed instances where groups of respondents were relatively "skeptical" or "naive"; these were the findings it was the purpose of this study to obtain. These findings were discussed with reference to the particular groups of doctors, and questionnaire statements involved.

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CHAPTER I

BACKGROUND AND STATEMENT OF THE PROBLEM

There are a number of issues, concerning the manufacture and selling of Pharmaceuticals, that have in the last few years been matters for considerable controversy and attention.

These issues have to do with the matter of whether the manufacture and marketing of pharmaceuticals are conducted to the disadvantage of the consumer. Degree of concurrence with the view that they are conducted to the disadvantage of the consumer may be defined as degree of "skepticism"; or, conversely, degree of concurrence with the opposite may be defined as degree of "naivete".

Most of the more frequently considered issues have been put into the forms of statements on an attitude questionnaire designed to measure "skepticism" as just defined.

This questionnaire was prepared by the Department of Pharmacology with the collaboration of the Department of Psychology at the University of British Columbia. It contains eighteen statements, each accompanied by a four point scale which allows for a response of either (1) disagree or mostly disagree, (2) disagree more than agree, (3) agree more than disagree, and (4) agree or mostly agree. The statements are such that a response at one end of the scale, depending on the statement, represents the adoption of a "skeptical" position while a response at the other end represents the adoption of a "naive" position.

One of the purposes of the questionnaire was to assess the degree to which medical students had adopted a "skeptical" attitude as a result of a

course designed to make them do so (Daniel and Leedham, 1964). In a series of studies done by the Departments of Pharmacology of both the University of British Columbia and the University of Alberta, where the focus was more specifically on a skeptical attitude toward claims made in promoting new drugs, only ten of the eighteen statements were used. However, all eighteen will be considered here since the focus is a broader one.

A discussion of the eighteen questionnaire statements and the issues they directly represent, should provide the best illustration of what is involved in the matter of whether the manufacture and marketing of pharmaceuticals are being conducted to the disadvantage of the consumer. Moreover it should give the necessary meaning to the "skepticism" being measured in this study.

Questionnaire Statement 1. Drug companies are not accurate in their claims for their products.

To the extent that a respondent agrees with this statement, he is "skeptical", specifically about the issue of accuracy in drug companies' claims for their products. The issue was one investigated in the United States by the Kefauver Committee - Kefauver (1961) outlines that one of the crucial points highlighted by the hearings before that Committee was that: "Many of the drug companies tend to exaggerate the merits and minimize the hazards of new drugs", and that, in relation to this, the Food and Drug Administration had not been active in policing statements made for prescription drugs. He further pointed out that drugs especially lend themselves to overassertion for therapeutic claims, and that in the hearings several doctors, present and past medical directors for drug manufacturing companies, said their recommendations with regard to this were "either disregarded or overruled".

In Canada parallel findings were made by the Restrictive Trade Practices Commission (Canada, 1963, p.525) which on the basis of its findings recommended that "consideration should be given to the advisability of bringing under the supervision of the Food and Drug Directorate all advertising and promotion activities related to drugs, including the distribution of samples and the content of advertising literature".

The above mentioned findings of the Kefauver Committee in the United States and the Restrictive Trade Practices Commission in Canada, illustrate the kind of "skepticism" the degree of which is to be measured by Questionnaire Statement number one.

The kind of claim at which such skepticism might be levelled is a recent advertisement in a journal concerned with therapeutics - a drug is claimed to provide "24-hour emotional stability with 1 mg. once a day". It is purported to be "for every symptom of anxiety and tension...from depression or lethargy...to emotional agitation", relieving any or all of "tension, apathy, apprehension, confusion, agitation, or depression".

Questionnaire Statement 2. It is a good practice to use only drugs that are officially approved.

"Officially" means included in the British Pharmacopoeia, or in the United States Pharmacopeia, or another official formulary, or recommended by the Council on Drugs of the American Medical Association. While these represent listings of "meticulously selected, effective, and well established drugs" (The New York Hospital Formulary, 1960, p.67) "there does not seem to be any concise, complete and current source of information about drugs available to a practicing doctor who, obviously, would not have all the time or facilities to keep abreast of all current medical literature." It is further pointed out in the Report of the Restrictive Trade Practices

Commission (Canada, appendix, 1963, p.242) that this is the lack which the drug manufacturers "purport to satisfy through detail men and informational literature". Those of a "skeptical" view tend to feel that such a lack is not significant since new products cannot be trusted to be more effective than, nor as safe as, older and better proven products (e.g. Nickerson and Gemmell, 1959).

A convincing explanation of the merits of an "officially" approved list is a 1960 editorial in the Journal of the American Medical Association (The New York Hospital Formulary, 1960, p.67). It explains that the New York Hospital Formulary is compiled with the aim of giving "the best possible therapy" and that this is the prime rule used in deciding what to "remove from or add to the list". The list is compiled through the efforts of a highly qualified committee which is satisfied that "its Formulary prepares the hospital in every way for the treatment of all disease, no matter how uncommon." Yet the 1960 edition contains only 359 different drugs while "the pharmacy of a hospital which does not have this form of control may stock 2500 drugs...." Economy is provided in that without the formulary system the hospital's bill for drugs would be up to almost twice what it is. Safety has not been risked because United States Pharmacopeia or National Formulary standards are followed. The committee "recognizes the importance of purchasing drugs manufactured only by houses whose reputations are impeccable" and inspects the plants it does not already know well.

Bearing in mind the efficacy, economy and safety of drugs on an officially approved list, the "skeptical" respondent will agree with Questionnaire Statement 2.

Questionnaire Statement 3. The use of trade names is a sales promotion device.

The issue here is whether trade names function to permit companies to increase sales and maintain high prices on drugs rather than to identify a superior product. Representing the American Pharmaceutical Manufacturers Association, Smith (1961) stressed that trade names were the only real guarantee of quality. The "skeptical" position on this issue is illustrated by the comments of Taylor (1963a), to the effect that it is a poor practice to assume trade names are a good guarantee of quality. In illustrating that trade names cause doctors to choose drugs for prescription not on the basis of therapeutic value or economy to his patient, he comments further that "Drugs are promoted by trade name. Pharmaceutical houses keep the physician's mind working this way by sending him well planned advertising material....Trade names seem to be selected in such a way that an appropriate preparation can readily be associated with the disease process for which it is meant to be used. A successful drug distributor can through skillful promotion, so arrange the physician's thinking that a particular trade name will snap to mind with IBM precision, immediately that a diagnosis is made".

"Skepticism" is indicated by agreement with Statement number 3.

Questionnaire Statement 4. Drug companies do not induce physicians to increase the cost of therapy by using new drugs when equally effective older remedies are available.

The "skeptical" view on this Statement is in disagreement with it. Kefauver (1961) pointed out that in the U.S.A. "Physicians are subjected to expensive hard sell when often old drugs are just as good." He had found that this "hard sell" was made under the guise of keeping the doctor informed.

In Canada, one of the findings of the Restrictive Trade Practices

Commission (Canada, 1963, p.522) was that the patent system had placed a "profit premium" on minor modifications of established drugs and was at least "partly responsible for the appearance on the market of many drug preparations of slight value or even questionable merit". This Commission also observed that it seemed "that no really important new drugs have appeared on the scene since about 1955" (Canada, 1963, p.521). That the Commission concluded that drug companies' promotional efforts for new drugs worked, however, is indicated by the recommendation (Canada, 1963, p.525) that "Consideration should be given to the advisability of bringing under the supervision of the Food and Drug Directorate all advertising and promotion activities related to drugs, including the distribution of samples and the content of advertising literature."

An indication as to the importance of drug firms' promotional activities is given in a British study (Wilson, Mapes, Banks and Korte, 1963) which showed that as a source of information in determining physicians' choices of therapeutic agents for prescriptions, drug firms were second only to their own formal schooling.

For this Questionnaire Statement, "skepticism" is indicated by disagreement with the statement.

Questionnaire Statement 5. In order to be patented, the constituents of a medicine must be a new discovery.

Legally, this Statement is incorrect (Fox, 1963). It is actually the process that is the basis for a patent, so if a new method of synthesizing an already patented drug is found, the new method can also be patented and the drug produced for marketing, by this method. The "naive" view on this issue is the less-informed one, which would agree with the Statement, tending to trust that patents always functioned to stimulate the

development of new and better drugs. The "skeptical" view, and the better-informed one, disagrees with the Statement, recognizing it is not legally true, and believing that, as was concluded by the Restrictive Trade Practices Commission, (Canada, 1963, p.429) "...the existence of patent protection on drugs does not and is not likely to stimulate materially research and invention in Canada". One of the Commission's observations related to this conclusion was that nearly all new drugs patented recently were as a result of minor modifications of existing drugs (Canada, 1963, p.525).

Questionnaire Statement 6. The price of new drugs is determined by production and distribution costs.

The "naive" on trusting view on this Statement would be in agreement with it, while the "skeptical" view would involve the belief that factors other than production and distribution costs determined prices. A finding to illustrate this "skeptical" view is that of the Kefauver Committee (Kefauver, 1961) that costs of advertising and promotion was the biggest item in determining the price of drug - that the cost to the druggistwas often around ten times as much as factory cost. Also reflecting "skepticism" with regard to the determinants of drug prices is the recommendation by the Restrictive Trade Practices Commission (Canada, 1963, p.523) that drug patents be abolished, made on the basis that drug prices are too high "in relation to the cost of production and distribution".

Questionnaire Statement 7. Detail men of drug companies do not provide a a service to physicians.

The "skeptical" view here is that if a physician changes his prescribing habits because of a detail man's promotional effort, he is beginning to prescribe drugs that are not yet proven safe, not of proven superiority,

and of greater than necessary expense. It is based on the same rationale that is behind a "skeptical" view on Questionnaire Statement number two, "It is a good practice to use only drugs that are officially approved," that is, in the interest of safety, proven efficacy, and economy to the patient a physician should in prescribing confine himself to drugs on official lists. Accepting this necessarily implies acceptance that the detail man is doing a disservice in promoting the newest drugs. The affirmative view on this Questionnaire Statement is the "skeptical" one.

Questionnaire Statement 8. The claims made for drugs in mailed literature are not accurate.

This Statement is very similar to Questionnaire Statement number 1, "Drug companies are not accurate in their claims for their product", except that it deals specifically with mailed literature. The already-cited findings of the Kefauver Committee concerning the tendency of drug companies to exaggerate the merits and minimize the hazards of new drugs, and the conclusion of the Restrictive Trade Practices Commission that the advisability of bringing such advertising under Food and Drug Directorate supervision needs to be considered, again are examples of what can form a rationale for the "skeptical" viewpoint.

Questionnaire Statement 9. A druggist may substitute an equivalent from another manufacturer when a drug is prescribed by its patented name.

Legally, the druggist may not. He must fill the prescription with whatever was written. The significance of this Statement to "skepticism" is that an awareness that the Statement is not true is likely to involve increased awareness of the potency of advertising by promotion of "trade name"

- that a physician may well remember a well promoted, easy-to-remember trade name and not know the generic name (Taylor, 1963a) or how the particular brand compares to others in quality or price. That is, the respondent who is "skeptical" on this item is more likely to realize that promotion levelled at him can result in his patient having to purchase a specific perhaps unduly expensive brand of a drug without regard to any critical comparison between it and equivalent products.

Questionnaire Statement 10. The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.

The "naive" or trusting, view here would be that new drugs are better and hence justify their higher cost to the patient. Taylor (1963a) points out that the doctor's choice of a new drug tends not to be a function of therapeutic significance, but rather of effective promotion, since data is usually not available to show new drugs are better. This is one of the findings of the Kefauver committee aswell: "Physicians are subjected to expensive hard sell when often old drugs are just as good" (Kefauver, 1961). In Canada, the Restrictive Trade Practices Commission (Canada, 1963, p.521) found, "that no really important new drugs have appeared on the scene since about 1955" and with the aim of reducing prices of new therapy recommended Federal supervision of drug claims. Nickerson and Gemmell (1959, p.523) admonish practitioners to "be slow to accept any new agent" in order to save them from dangerous side effects and undue expense.

The "skeptical" view, then, is in agreement with this Questionnaire Statement.

Questionnaire Statement 11. Information from detail men regarding claims about drugs is accurate.

The discussion for Questionnaire Statement number 7 applies here; the "skeptical" view obviously is in disagreement with Statement number 11.

Questionnaire Statement 12. It is a poor practice to use non-patented names when prescribing drugs.

The "skeptical" view, which disagrees with this Statement, involves the position that trade names are promotional devices not necessarily guaranteeine quality. The "naive" view involves the position that trade names are useful guarantees of quality. The Restrictive Trade Practices Committee (Canada, 1963, p.496) found "Brand names applied to single drugs and the few official compounds that exist may be of considerable value, but, from a medical and social point of view, they are of very doubtful value and may actually have many detrimental aspects". However the Committee at that time was of the view that "governmental inspection and testing services would have to be placed on a level adequate to insure that all prescription drugs offered for sale in Canada are safe to use and of good quality" (Canada, 1963, p.493). The "skeptical" view would concur with that of the Restrictive Trade Practices Commission and further involve the notion that trade names do not act as a measure of quality in the absence of adequate government inspection and testing, since the prescriber's choice of a brand-name is a function of clever promotion, not critical comparison with equivalent products (e.g. Taylor 1963a).

Questionnaire Statement 13. Drugs are not placed on the market before being adequately tested.

The "skeptical" view here is, of course, that drugs <u>are</u> placed on the

market before being adequately tested. One of Kefauver's findings was that the Food and Drug Administration had been screening for acute but not chronic toxicity. Speaking in terms of the Canadian situation, Taylor (1963b) discusses how difficult it is to carry out adequate testing, and how infrequently it is done. Based upon its investigations, the Restrictive Trade Practices Commission (1963, p.254) concluded, "There should be more stringent regulations in order to give reasonable assurance that all prescription drugs offered for sale in Canada are safe to use and of good quality."

Questionnaire Statement 14. It is a good practice to rely upon authoritative therapeutic sources, primarily, for information about drugs.

This Statement involves primarily two notions, first that authoritative sources are adequate and second that less formal sources such as detail men and advertising mail, for example, are not so adequate in terms of "good practice". The second has been discussed in relation to other Questionnaire Statements. Concerning the first, authoritative therapeutic sources such as short postgraduate courses, text books, British or American Pharmacopoeiae, National Formularies or recognized hospital formularies, are felt by the "skeptical" respondent to be among the best sources even though they cannot evaluate the more recent drugs. The more "naive" respondent would be of the view that such sources do not cover recent and useful advances (e.g. Smith, 1961) while the more "skeptical" view (e.g. Nickerson and Gemmell, 1959) would be that the recent "advances" have not been shown to be "useful", and that indeed they might be dangerous. The virtues of relying on an authoritative source are outlined in the editorial of the Journal of the American Medical Association (The New York Hospital Formulary, 1963), discussing the New York Hospital Formulary, which through careful selection by

a highly qualified committee saves the Hospital nearly 50% on drugs while not sacrificing quality of therapy, and certainly avoiding the risk involved with new drugs. The Hospital pharmacy is said to stock 359 drugs while a hospital pharmacy without such a formulary can stock up to 2500. The "skeptical" position on this Questionnaire Statement is in agreement with it.

Questionnaire Statement 15. The manufacture and sale of drugs is governed by business considerations.

As discussed in relation to Questionnaire Statement 4, the Restrictive Trade Practices Commission (Canada, 1963, p.522) found that the patent system had placed a "profit premium" on minor modifications of established drugs and was "at least partly responsible for the appearance on the market of many drug preparations of slight value or even questionable merit". Concerning the sale of drugs, Nickerson and Gemmell (1959, p.521) explain that marketing policy in the ethical pharmaceutical industry is determined in the same fashion as marketing policy for any other industries. On the basis of such examples as these, the "skeptical" position is one which agrees with this Questionnaire Statement.

Questionnaire Statement 16. No new drugs are issued merely to avoid the patent rights of other companies.

Nickerson and Gemmell (1959, p.521) elaborate on this Statement:

"The chemistry of medicinal compounds has advanced to the point where it generally is possible for a group of good chemists to produce on request a compound closely related to a known drug which has comparable activity and avoids patent infringement. This 'me too' agent usually does not have any important advantages over its predecessor, and indeed may be a somewhat inferior."

The "skeptical" view on this Statement would disagree with it.

Questionnaire Statement 17. Physicians are persuaded by advertising to use new drugs before they have been adequately tested.

The "skeptical" position here is the affirmative based on the views (a) that new drugs have not been adequately tested and (b) that advertising persuades physicians to buy them anyway. (a) has been discussed in relation to Questionnaire Statement 4. The present Questionnaire Statement might be said to be the theme in Nickerson's and Gemmell's paper (1959) which in conclusion admonished practitioners to "Be slow to accept any new agent.... Very few new drugs represent major advances in therapy, and those which do will quickly show their real value. You will do your patients little harm by delaying the acceptance of new agents, and you may save them from dangerous side effects, from unjustified reliance on new drug therapy to the exclusion of more reliable, if less spectacular measures, and if nothing else, from the unnecessary expenditure of considerable sums of money".

Taylor (1963b, p.73) points out the difficulty in "the proper evaluation of new drugs" and demonstrates that even a highly respectable way of evaluating whether new drugs have been adequately tested is questionable:

> "Last year a social scientist criticized the Canadian Medical Association Journal and the Canadian Journal of Public Health for publishing articles in which data which did not warrant the conclusions. He studied 103 articles and found only 25% to be adequately controlled. He also discovered evidence of statistical malpractice. Another critic in England evaluated 100 articles published in the British Medical Journal and the Lancet and found only 42 percent with adequate controls. Nor is this situation confined to Commonwealth journals; a similar study of articles in leading United States journals showed only 27% to be adequately controlled" (Taylor, 1963b, p.73).

Questionnaire Statement 18. Drug companies do not try to be accurate in their claims for their products.

This Statement is the same as Statement number 1, "Drug companies are

not accurate in their claims for their products", with the exception that Statement 18 employs "do not try to be" rather than "are not". The "skepticism" involved in this Statement concerns not only the workings of the ethical drug industry but also the motivations or aims.

Nickerson and Gemmell demonstrate the meaning of this "skeptical" view:

> "All promotional material, irrespective of its form or source, must be evaluated with a full appreciation of the role of advertising and of advertising personnel in the contemporary pharmaceutical industry. In the advertising business it is freely recognized that a major purpose, if not the major purpose, of advertising is to create a demand where no real need exists. This clearly is a factor in much drug advertising. New preparations which effectively fill a real need require little promotion. The first sulfonamides, penicillin, cortisone and more recently chlorothiazide needed no advertising to create a demand. Most of the promotional material is not prepared by, or even seen before publication by medical personnel. It is prepared by highly specialized promotional departments, which in many instances represent the effective controlling influence in a pharmaceutical organization. These departments have available extensive analyses of all drug sales from which they evaluate sales trends and determine marketing policy" (Nickerson and Gemmell, 1959, p.521).

McGregor (1963) quotes a witness, a former medical director of one of the largest American drug firms, before the Kefauver Committee inquiring into the American Drug Industry: "...most must depend on selling only their successes. On the other hand, with a little luck, proper timing, and a good promotion program a bag of asafedita with a unique side chain can be made to look like a wonderdrug. The illusion may not last, but it frequently lasts long enough. By the time the doctor learns what the company knew in the beginning, it has two new products to take the place of the old one. This too is well recognized and in some companies calls for casuistry of a high order. In others, it is simply called a business decision".

The "skeptical" position in this Statement, is the affirmative.

"Skepticism" has been defined and given fuller meaning through the preceding discussion of the eighteen Questionnaire Statements. The purpose

of this study is to determine whether there are differences in degree of such "skepticism" among doctors classified according to training and experience. The different ways in which doctors will be classified according to training and experience are as follows;

1. University which granted M.D. degree.
2. Date of M.D. degree.
3. Number of years of postgraduate training in recognized hospitals.
4. Certification (specialty).
5. Years in General Practice.
6. Location of General Practice; urban, rural, or both.
7. Years in Specialty.
8. Type of hospital staff experience.
9. Number of postgraduate courses concerned with therapeutics, attended in last 3 years.
10. Their primary source of information about new drugs.
11. Whether postgraduate training had been received at University-affiliated hospital(s) or at "non-affiliated" hospital(s) only.

Each of these eleven ways of classifying places respondents into a number of groups. The task is to see if and how degree of "skepticism", as measured by distribution of responses on each of the eighteen four-point "skepticism" scales, depends on the group of respondents being considered.

CHAPTER II

PROCEDURE

I THE DATA AND ITS COMPONENTS

In May, 1963, questionnaires containing the eighteen Statements already discussed, were sent to every physician who was in B.C. and licensed by the B.C. College of Physicians and Surgeons, according to their 1963 registry. Enclosed with the 18 Questionnaire Statements were: a Personal Data" section included as part of the questionnaire - this was to provide the data for classifying the respondents according to training and experience; a covering letter printed on University of British Columbia Department of Continuing Medical Education letterhead, signed be Dr. Donald H. Williams, Head of that Department; a business reply envelope addressed to the same Department. Appendix A contains the questionnaire including the Questionnaire Statements and the "Personal Data" section. Appendix B contains the covering letter.

Several months later, after no more completed questionnaires were being returned, the data was coded into a form which could be processed by the IBM 1620 Computer at the University of B.C. Computing Centre, which was used to perform the Chi-square calculations and print the bivariate tables necessary for carrying out the purpose of this study. The purpose was, to repeat, to find differences in degree of "skepticism" among groups of doctors classified according to training and experience. There were, as has already been explained, eleven different ways of classifying according to training and experience. How the purpose was carried out will be discussed separately for each of these eleven ways of classifying.

1. University which granted M.D. degree.

Nearly all respondents were from Canadian universities, so graduates from other universities were put into general groups - U.S.A., Osteopaths, Europe, Great Britain and "Other". It was obvious while the data was being coded that there were too few respondents belonging in these groups to justify any finer grouping. Respondents indicating where they received their M.D. degrees were grouped, then, as follows:

University of British Columbia
University of Alberta
University of Saskatchewan
University of Manitoba
University of Western Ontario
Queen's University
University of Toronto
University of Ottawa
McGill University
Laval University
University of Montreal
Dalhousie University
Osteopaths
U.S.A.
Great Britain
Europe
"Other"

Except in cases where the numbers involved did not justify the use of Chi-square, the group composed of graduates from U.B.C. was compared against the group composed of graduates from all universities other than U.B.C.; the group composed of graduates from University of Alberta was compared against the group composed of graduates from all universities other than University of Alberta; and so on for each group listed, and for each of the 18 "skepticism" scales.

2. Date of M.D. degree.

In order to see any relationship between this classification and "skepticism" the data was analysed to reveal whether respondents who indicated they had graduated since various dates appeared as a group more "skeptical" than their seniors. The comparisons made were as follows:

Respondents indicating they graduated in 1960 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1955 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1950 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1945 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1940 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1935 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1930 or later vs. respondents indicating they graduated earlier.

Respondents indicating they graduated in 1925 or later vs. respondents indicating they graduated earlier.

As is the case throughout, all indicated comparisons are made for all eighteen Questionnaire Statements, except where the numbers of respondents involved are too small to justify the use of Chi-square.

3. Number of years of postgraduate training in recognized hospitals.

The groupings here were:

Respondents indicating they had more than 1 year postgraduate training vs. those indicating they had 1 or fewer.

Respondents indicating they had more than 2 years postgraduate training vs. those indicating they had 2 or fewer.

Respondents indicating they had more than 3 years postgraduate training vs. those indicating they had 3 or fewer.

Respondents indicating they had more than 4 years postgraduate training vs. those indicating they had 4 or fewer.

Respondents indicating they had more than 5 years postgraduate training vs. those indicating they had 5 or fewer.

Respondents indicating they had more than 6 years postgraduate training vs. those indicating they had 6 or fewer.

Respondents indicating they had more than 7 years postgraduate training vs. those indicating they had 7 or fewer.

4. Specialty.

In some cases related specialties were included in a single group in order to keep the number in the group high enough to permit statistical analysis; the groupings among respondents indicating their specialties made as follows:

Internal Medicine.
Surgery.
Anesthesia.
Obstetrics and Gynecology.
Public Health; Pathology; Bacteriology; Pathology and Bacteriology.
Paediatrics.
Radiology; Diagnostic Radiology; Therapeutic Radiology; Diagnostic and Therapeutic Radiology.
Ophthalmology.
Orthopaedic Surgery.
Psychiatry.
Otolaryngology; Otolaryngology and Ophthalmology.
Allergy; Dermatology.
Urology.
Thoracic Surgery.
Neurology; Neurology and Psychiatry; Neurosurgery.
Plastic Surgery.
Proctology.

Except for cases where numbers were too small to justify the use of Chi-square, the group composed of respondents indicating they were certified in Internal Medicine was compared against the group composed of all respondents indicating they belonged to some specialist grouping other than Internal Medicine; those in the group certified in Surgery were compared against the group composed of all specialists not in Surgery; and so on for each of the groupings listed above.

5. Years in General Practice.

In order to reveal whether there was a relationship between this classification and "skepticism" the data was analyzed to find whether respondents

with more than certain numbers of years in General Practice were significantly different (in degree of "skepticism") than those with that number or fewer. The comparisons made were as follows:

Respondents indicating more than 5 years in General Practice vs. those indicating 5 or fewer.

Respondents indicating more than 10 years in General Practice vs. those indicating 10 or fewer.

Respondents indicating more than 20 years in General Practice vs. those indicating 20 or fewer.

Respondents indicating more than 30 years in General Practice vs. those indicating 30 or fewer.

A greater number of comparisons was not made because the comparisons listed would be sufficient to show a relationship between "Years in General Practice" and "skepticism". The comparisons listed above were made for each of the eighteen Questionnaire Statements, except where the numbers of respondents involved were too small to justify the use of Chi-square.

6. Location of practice, urban, rural, or both.

Only one comparison was made here, that of respondents indicating they were non-specialists, and indicating their practice had been urban only, versus respondents indicating they were non-specialists, and indicating their practice had been rural only. The comparison was made, of course, for each of the eighteen Questionnaire Statements.

7. Number of years in specialty.

In order to find whether there was a relationship between this classification and "skepticism" the following comparisons were made:

Respondents indicating more than 5 years in a Specialty vs. respondents indicating some, but not more than 5 years, in a Specialty.

Respondents indicating more than 10 years in a Specialty vs. respondents indicating some, but not more than 10 years, in a Specialty.

Respondents indicating more than 20 years in a Specialty vs. respondents indicating some, but not more than 20 years, in a Specialty.

Respondents indicating more than 30 years in a Specialty vs. respondents indicating some, but not more than 30 years, in a Specialty.

Here again a greater number of comparisons was not made because the comparisons listed would be sufficient to show a relationship between the classification being considered and "skepticism". And as throughout, the comparisons were made for all eighteen Questionnaire Statements, except where the numbers of respondents involved were too small to justify the use of Chi-square.

This classification was used for another comparison as well - that of respondents indicating no experience in a specialty vs. respondents indicating some experience in a specialty.

8. Type of hospital experience.

Two types of data were gathered here, (a) Years on staff of a teaching hospital, and (b) years on staff of "other" hospitals. Four types of comparisons were made:

Respondents indicating they had been on staff of only teaching hospitals vs. those indicating they had been on staff of only "other" hospitals.

Respondents indicating they had been on staff of teaching or "other" hospitals vs. those indicating they had not been on hospital staff.

Respondents indicating they had been on staff of only teaching hospitals vs. those indicating they had not been on hospital staff.

Respondents indicating they had been on staff of only "other" hospitals vs. those indicating they had not been on hospital staff.

9. Number of postgraduate courses concerned with therapeutics, attended in the last three years.

In order to determine whether there was a relationship between this classification and "skepticism", the following comparisons were made:

Respondents indicating they had attended no courses in the last three years vs. those indicating they attended 1 or more.

Respondents indicating they had attended fewer than 2 courses in the last three years vs. those indicating they attended 2 or more.

Respondents indicating they had attended fewer than 3 courses in the last three years vs. those indicating they attended 3 or more.

Respondents indicating they had attended fewer than 4 courses in the last three years vs. those indicating they attended 4 or more.

Respondents indicating they had attended fewer than 5 courses in the last three years vs. those indicating they attended 5 or more.

Respondents indicating they had attended fewer than 6 courses in the last three years vs. those indicating they attended 6 or more.

Respondents indicating they had attended fewer than 7 courses in the last three years vs. those indicating they attended 7 or more.

10. Doctors' primary source of information about new drugs.

Respondents were asked to rank-order the following in terms of where, quantitatively speaking, they get most information about new drugs:

Advertising mail by Pharmaceutical Firms
Articles in Medical Journals
Colleagues in Medicine
Advertising in Medical Journals
Pharmacists
Detail Men from Pharmaceutical Firms
Postgraduate short courses in therapeutics
Textbooks
Other

Respondents indicating that advertising mail ranked firstas their source of information about new drugs, were compared against respondents ranking this source as something less than first; respondents indicating that articles in medical journals ranked first as their source of information were compared against respondents indicating that this source ranked less than first; and so on for each source of information listed.

11. Whether postgraduate training had been received and university-affiliated hospital(s) or at non-university-affiliated hospital(s) only.

One comparison was involved here, that of respondents indicating that they had received postgraduate training at a university-affiliated hospital vs. those indicating they had received postgraduate training only at hospitals not affiliated with universities. These groupings could be made only after corresponding with the various medical schools and/or perusal of their old prospecti in order to determine what Schools had been "university-affiliated" for what periods of time; the respondents had been asked only to indicate at what hospital(s) they had received postgraduate training. Only respondents who indicated they had graduated from Canadian universities were considered, because of the difficulty there would have been obtaining information about other medical schools.

II BASIC STATISTICAL METHODS

The task is to see if and how degree of "skepticism", as measured by distribution of responses on the four-point scales, depends upon the group of respondents being considered.

What kinds of comparisons need be made to perform this task?

As discussed earlier, there are being considered eleven ways for classifying doctors, and each of these eleven involves several groups. For example, one of the eleven ways for classifying is according to where M.D. degree was received; for this one way of classifying there are several groups involved, e.g. respondents who received their degree from U.B.C., those who received theirs from U. of Alberta, and so on.

Consider the groups involved in one of the elevenways of classifying: if there were 10 groups involved and it were decided to compare each group to the other, there would be 45 pairs of groups to compare. And since there are eighteen different Questionnaire Statements for which to make these comparisons, there would be 45 x 18 = 810 comparisons made to deal with this one of eleven ways of classifying. Comparing each group to the other in this fashion is not practicable, then. Alternately, if each single group of respondents were compared against all the other respondents considered as a whole, there would be only 6 x 18 = 108 comparisons made to deal with this one of the eleven ways of classifying. Comparing each group of respondents against all other respondents considered as a whole, then, is the method that will be used to determine how degree of "skepticism" depends upon the group of respondents being considered.

All these comparisons are to be made using Chi-square as a statistical test. Each comparison will involve a two-by-four bivariate table. The two-possibility side will be made up of (a) a particular group of respondents

being considered and (b) all respondents not in that group. The four-possibility side will represent the four response possibilities for a given Questionnaire Statement. The distribution of responses over the four-point "skepticism" scale for group (a) is compared against that for (b). When the Chi-square value proves to be significant at the .05 level or better, the percentage distribution of responses over the four-point "skepticism" scale for group (a) will be compared, through visual inspection, to that for (b). This should in most cases reveal the direction, on the "skepticism" scale, in which (a) differs from (b). In cases where visual inspection does not clearly do so, the Rank-sums test (Senders, 1958) will be performed, as it is sensitive to direction.[1]

To satisfy the assumptions that are made in the use of the Chi-square test, Chi-square tests will be performed only when no more than one cell per 2 x 4 bivariate table has an expected frequency of less than 5. This is to conform to the rule that for the Chi-square test to be meaningful no more than 20% of the cells should have an expected frequency of less than 5 (Siegel, 1956, p.46).

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1 An illustration of the value of doing this test is: supposing a group of 100 subjects had a response distribution of 40:10:10:40 on one of the four-point "skepticism" scales, and another goup of 100 subjects had a response distribution of 10:40:40:10. Since one end of the scale represents greatest "skepticism" and the other least, one group cannot be said to be more "skeptical" than the other. Yet a Chi-square comparison would yield a highly significant value. The Rank-sums test, taking order or direction into account, would show no difference between the two groups.

CHAPTER III

RESULTS AND DISCUSSION

Of the 2314 questionnaires sent, 1193 were filled out and returned. It is impossible to tell how well the 1193 respondents represent the population of 2314 since those who did not reply could have been, in terms of "skepticism", different from those who replied. That is, decision whether to reply might be related to "skepticism", and there was no control over this since replies were voluntary and anonymous.

A few respondents did not supply all the requested information; this reduced slightly the number of respondents who could be included for each of the various comparisons made. In the presentation of results to follow, the numbers in the various groupings to be compared will be stated.

Findings will be presented separately for each of the eleven methods of classifying according to training and experience. To avoid confusion discussion of findings will follow directly each set of findings presented.

1. University which granted M.D. degree.

Of the 17 different groupings into which respondents were classified according to university from which M.D. degree was received, 9 contained enough respondents to permit statistical analysis with Chi-square, at least for some of the Questionnaire Statements. Restricting analysis to cases where not more than 20% of cells had expected frequencies of less than 5, Chi-square could be calculated in the following cases:

Comparisons made in investigating the relationship of "University which granted M.D. degree" to "skepticism".

Comparison made	Number in each group	Questionnaire Statements for which comparison could be made
Respondents indicating they received their degrees from U. of MAN.	188	
vs.		all but #14
all those indicating they received their degrees from some other univ.	968	
Respondents indicating they received their degrees from U. of ALTA.	137	
vs.		all but #14
all those indicating they received their degrees from some other univ.	1019	
Respondents indicating they received their degrees from EUROPE.	39	
vs.		1,3,6,7,8,10,11,13,17,18.
all those indicating they received their degrees from some other univ.	1117	
Respondents indicating they received their degrees from GREAT BRITAIN	194	
vs.		all but #14
all those indicating they received their degrees from some other univ.	962	
Respondents indicating they received their degrees from U.B.C.	147	
vs.		all but #14
all those indicating they received their degrees from some other univ.	1009	
Respondents indicating they received their degrees from McGILL UNIVERSITY	153	
vs.		all but #14
all those indicating they received their degrees from some other univ.	1003	
Respondents indicating they received their degrees from U. of TORONTO	143	
vs.		all but #14
all those indicating they received their degrees from some other univ.	1007	

Comparison made	Number in each group	Questionnaire Statements for which comparison could be made
Respondents indicating they received their degrees from U. of WESTERN ONT.	28	
vs.		1,6,7,8,10,11,13,18.
all those indicating they received their degrees from some other univ.	1128	
Respondents indicating they received their degrees from QUEEN'S UNIVERSITY	63	
vs.		all but #14
all those indicating they received their degrees from some other univ.	1093	

There are 137 comparisons indicated above. As shown in Appendix C, only 15 produced significant Chi-square values, and 2 of these were shown by the Rank-sums test not to be due to directional difference (i.e. not a difference in degree of "skepticism"). The 13 remaining, and pertinent, findings, are shown in Table I.

TABLE I

TABLE I

Significant findings made in investigating the relationship between "University which granted M.D. degree" and "skepticism"

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group[1]				Chi-square found
Those indicating U. of Man.	18	17.6	33.0	33.0	16.5	9.982
vs. those indicating some other U.		17.4	43.4	28.3	10.6	
Those indicating Europe	10	7.7	17.9	28.2	46.2	13.452
vs. those indicating some other U.		31.2	19.2	23.1	25.3	
Those indicating Europe	13	15.4	17.9	41.0	25.6	8.655
vs. those indicating some other U.		28.2	26.9	32.2	12.2	
Those indicating Great Britain	2	2.6	9.8	32.0	51.5	10.224
vs. those indicating some other U.		3.4	7.1	24.0	64.4	
Those indicating Great Britain	7	22.7	35.6	20.1	21.6	13.108
vs. those indicating some other U.		31.8	34.1	20.5	12.9	
Those indicating Great Britain	10	21.1	19.6	22.2	34.5	13.360
vs. those indicating some other U.		32.2	19.1	23.5	24.3	

(continued)

1 Summating the percentage value horizontally usually yields a value a little less than 100% since the Computer Program included in the distribution a fifth category, that for respondents who did not respond to the Questionnaire Statement.

TABLE I (continued)

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating Great Britain	12	66.0	21.1	4.6	7.2	8.122
vs. those indicating some other U.		57.7	23.3	10.5	7.7	
Those indicating U.B.C.	4	52.4	38.1	2.7	5.4	17.396
vs. those indicating some other U.		50.4	27.1	12.2	9.1	
Those indicating U.B.C.	11	25.9	46.3	25.9	2.0	9.381
vs. those indicating some other U.		25.6	34.4	35.2	3.8	
Those indicating U.B.C.	15	0.0	3.4	31.3	64.3	9.881
vs. those indicating some other U.		2.4	7.6	36.3	53.5	
Those indicating U.B.C.	18	8.8	46.9	31.3	12.2	8.524
vs. those indicating some other U.		18.6	40.9	28.7	11.5	
Those indicating U. of Alta.	10	47.4	13.9	24.8	13.9	25.795
vs. those indicating some other U.		28.1	19.9	23.1	27.7	
Those indicating U. of Alta.	12	62.8	18.2	14.6	4.4	8.718
vs. those indicating some other U.		58.6	23.6	8.8	8.0	

The findings indicated in Table I may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "University which granted M.D. degree" and "skepticism".

Group of respondents	Relation to other respondents	Questionnaire Statement involved
Those indicating they graduated from U. of Manitoba	more "skeptical" than those indicating some other univ.	18: Drug companies do not try to be accurate in their claims for their products.
Those indicating they graduated from Europe	more "skeptical" than those indicating some other univ.	10: The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.
	more "naive" than those indicating some other univ.	13: Drugs are not placed on the market before being adequately tested.
Those indicating they graduated from Great Britain	more "skeptical" than those indicating some other univ.	2: It is a good practice to only drugs which are "officially"[2] approved. 7: Detail men of drug companies do not provide a service to physicians. 10: The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies. 12: It is a poor practice to use non-patented names when prescribing drugs.

(continued)

2 In the questionnaire, "officially" was supposed to have been given a footnote to clarify its meaning. This was omitted by mistake. However, the writer concluded after reading background material for this study, that most practitioners would know what it meant. Therefore findings concerning Statement 2 have been included. The meaning of "officially" was outlined on p.3 of this paper.

Group of respondents	Relation to other respondents	Questionnaire Statement involved
Those indicating they graduated from U.B.C.	more "skeptical" than those indicating some other univ.	4: Drug companies do not induce physicians to increase the cost of therapy by using new drugs when equally effective older remedies are available. 11: Information from detail men regarding claims about drugs is accurate. 15: The manufacture and sale of drugs is governed by business considerations. 18: Drug companies do not try to be accurate in their claims for their products.
Those indicating they graduated from U. of Alberta	more "skeptical" than those indicating some other univ. more "naive" than those indicating some other univ.	12: It is a poor practice to use non-patented names when prescribing drugs. 10: The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.

The two groups, if any, that show a consistent enough trend to comment upon are respondents indicating they received their degree from Great Britain, and those indicating they received their degrees from U.B.C. Both were relatively "skeptical", but in terms of different Questionnaire Statements.

The Great Britain graduates appeared "skeptical", for Statements 2,7, 10 and 12. These Statements have most obviously in common a stress upon being conservative in prescribing habits, relying upon older, proven drugs. Relative to other respondents then, the Great Britain graduates appeared "skeptical" primarily about the prescribing of new drugs. While British doctors in B.C. may not be representative of doctors in Britain, the findings suggest at least the possibility that universities in Great Britain may have teaching techniques which are particularly effective in imparting con-

servative prescribing habits to their students.

The most obvious feature the four Statements for which the U.B.C. graduates appeared "skeptical" have in common is a fairly direct stress on the manufacturing and promotional policies of drug firms. The "skepticism" that U.B.C. graduates showed, then, was most directly concerned with the manufacturing and promotional activities of drug companies.

2. Date of M.D. degree

The Chi-square comparisons that could be made here while complying with the rule of not having more than 20% of cells with expected frequencies of less than 5, are as follows:

Comparisons made in investigating the relationship of "Date of M.D. degree" to "skepticism".

Comparison made	Number in each group	Questionnaire Statements for which comparison could be made
Respondents indicating year of graduation to be 1960 or later	54	1,3,4,5,6,7,8,10,11,12,13,16 17,18.
vs.		
Respondents indicating year of graduation to be before 1960	1118	
Respondents indicating year of graduation to be 1955 or later	261	all but #14
vs.		
Respondents indicating year of graduation to be before 1955	911	
Respondents indicating year of graduation to be 1950 or later	531	all but #14
vs.		
Respondents indicating year of graduation to be before 1950	641	

(continued)

Comparison made	Number in each group	Questionnaire Statements for which comparison could be made
Respondents indicating year of graduation to be 1945 or later	705	all but #14
vs.		
Respondents indicating year of graduation to be before 1945	467	
Respondents indicating year of graduation to be 1940 or later	870	all but #14
vs.		
Respondents indicating year of graduation to be before 1940	302	
Respondents indicating year of graduation to be 1935 or later	990	all but #14
vs.		
Respondents indicating year of graduation to be before 1935	182	
Respondents indicating year of graduation to be 1930 or later	1088	all but #14
vs.		
Respondents indicating year of graduation to be before 1930	84	
Respondents indicating year of graduation to be 1925 or later	1132	1,3,6,7,8,10,11,13,17,18.
Respondents indicating year of graduation to be before 1925	40	

There are 126 comparisons indicated above. As shown in Appendix D, only 50 produced significant Chi-square values, and 10 of these were shown by the Rank-sums test not to be due to directional difference. The 40 remaining and pertinent findings are shown in Table II.

TABLE II

TABLE II

Significant findings made in investigating the relationship between "Date of M.D. degree" and "skepticism"

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating 1960 or later	5	66.7	14.8	7.4	9.3	12.208
vs. Those indicating before 1960		48.9	10.1	8.1	30.6	
Those indicating 1960 or later	12	46.3	20.4	24.1	9.3	14.697
vs. Those indicating before 1960		59.5	23.4	8.7	7.5	
Those indicating 1955 or later	3	5.7	21.8	32.2	39.5	14.560
vs. Those indicating before 1955		6.5	13.5	29.7	49.5	
Those indicating 1955 or later	5	57.7	12.6	8.0	20.7	14.568
vs. Those indicating before 1955		47.5	9.7	8.1	32.2	
Those indicating 1955 or later	9	77.8	6.9	5.7	8.4	10.255
vs. Those indicating before 1955		69.4	6.5	7.8	15.5	
Those indicating 1955 or later	12	51.3	26.1	13.8	8.4	11.485
vs. Those indicating before 1955		61.0	22.5	8.1	7.4	
Those indicating 1950 or later	3	7.3	18.1	32.0	42.2	13.029
vs. Those indicating before 1950		5.5	13.1	28.9	52.1	

(continued)

TABLE II (continued)

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating 1950 or later	4	50.8	31.1	11.1	6.2	8.601
vs.						
Those indicating before 1950		49.8	27.8	10.9	10.9	
Those indicating 1950 or later	5	55.9	11.5	8.7	22.8	24.421
vs.						
Those indicating before 1950		44.6	9.4	7.6	35.3	
Those indicating 1950 or later	9	75.7	7.0	6.2	10.2	14.106
vs.						
Those indicating before 1950		67.6	6.2	8.3	17.0	
Those indicating 1950 or later	10	34.3	21.7	23.0	20.5	18.906
vs.						
Those indicating before 1950		27.6	16.8	23.6	30.4	
Those indicating 1950 or later	16	58.0	24.9	10.4	3.2	8.279
vs.						
Those indicating before 1950		50.0	27.0	13.3	5.0	
Those indicating 1945 or later	2	3.1	8.5	27.7	59.1	9.479
vs.						
Those indicating before 1945		3.6	5.8	22.1	67.0	
Those indicating 1945 or later	3	7.2	16.6	31.3	44.4	8.488
vs.						
Those indicating before 1945		4.9	13.5	28.7	52.5	
Those indicating 1945 or later	4	50.6	31.5	11.1	6.1	17.750
vs.						
Those indicating before 1945		49.7	25.9	10.9	12.8	

(continued)

TABLE II (continued)

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating 1945 or later	5	55.6	11.5	7.9	23.5	36.799
vs.						
Those indicating before 1945		40.9	8.6	8.4	38.8	
Those indicating 1945 or later	6	35.6	25.4	25.5	11.8	20.329
vs.						
Those indicating before 1945		34.3	21.2	22.3	21.4	
Those indicating 1945 or later	9	75.2	6.8	6.4	10.6	20.457
vs.						
Those indicating before 1945		65.3	6.2	8.8	18.8	
Those indicating 1945 or later	10	34.5	21.4	22.7	20.9	32.010
vs.						
Those indicating before 1945		24.8	15.4	24.2	33.6	
Those indicating 1940 or later	2	3.4	8.5	27.7	58.7	19.322
vs.						
Those indicating before 1940		3.0	4.3	18.9	72.5	
Those indicating 1940 or later	3	6.4	16.9	30.8	45.5	8.606
vs.						
Those indicating before 1940		6.0	10.9	20.8	53.6	
Those indicating 1940 or later	4	49.9	30.8	11.6	6.9	17.749
vs.						
Those indicating before 1940		51.3	24.8	9.3	14.2	
Those indicating 1940 or later	5	53.6	11.1	7.9	25.5	31.662
vs.						
Those indicating before 1940		38.7	7.9	8.6	41.4	

(continued)

TABLE II (continued)

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating 1940 or later	6	36.0	25.5	24.8	12.2	31.317
vs.						
Those indicating before 1940		32.5	18.5	22.5	25.5	
Those indicating 1940 or later	9	74.6	6.2	6.3	11.8	21.565
vs.						
Those indicating before 1940		61.6	7.6	10.3	19.9	
Those indicating 1940 or later	10	33.2	20.3	23.2	22.4	26.919
vs.						
Those indicating before 1940		23.2	15.2	23.5	36.1	
Those indicating 1935 or later	2	3.4	8.1	27.2	59.6	18.931
vs.						
Those indicating before 1935		2.7	3.8	15.9	76.9	
Those indicating 1935 or later	5	51.6	10.8	8.3	27.2	19.116
vs.						
Those indicating before 1935		39.6	7.7	7.1	42.9	
Those indicating 1935 or later	6	36.0	24.8	24.4	13.2	27.988
vs.						
Those indicating before 1935		30.2	17.6	23.1	28.6	
Those indicating 1935 or later	9	73.0	6.7	6.8	12.5	14.789
vs.						
Those indicating before 1935		61.5	6.0	10.4	21.4	
Those indicating 1935 or later	10	32.7	19.7	22.8	23.7	23.369
vs.						
Those indicating before 1935		19.2	15.4	25.8	37.9	

(continued)

TABLE II (continued)

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating 1935 or later	11	26.0	37.0	33.2	2.9	13.893
vs.						
Those indicating before 1935		22.0	30.2	39.0	7.7	
Those indicating 1935 or later	16	54.9	25.7	12.2	3.9	22.975
vs.						
Those indicating before 1935		46.7	28.0	10.4	10.4	
Those indicating 1930 or later	2	3.3	7.4	26.6	61.0	11.46
vs.						
Those indicating before 1930		3.6	7.1	10.7	78.6	
Those indicating 1930 or later	5	50.6	10.7	8.2	28.3	12.956
vs.						
Those indicating before 1930		38.1	6.0	7.1	46.4	
Those indicating 1930 or later	9	72.2	6.8	7.0	13.0	15.833
vs.						
Those indicating before 1930		58.3	3.6	11.9	26.2	
Those indicating 1930 or later	10	32.0	19.2	22.9	24.9	16.906
vs.						
Those indicating before 1930		13.1	16.7	28.6	39.3	
Those indicating 1930 or later	12	59.3	23.7	9.3	7.0	9.301
vs.						
Those indicating before 1930		53.6	17.9	10.7	15.5	
Those indicating 1925 or later	4	50.7	29.2	11.2	8.2	12.886
vs.						
Those indicating before 1925		37.5	32.5	5.0	25.0	

(continued)

TABLE II (continued)

Comparison made	Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating 1925 or later	7	29.9	34.2	21.0	14.4	9.740
vs.						
Those indicating before 1925		47.5	27.5	5.0	17.5	
Those indicating 1925 or later	9	71.9	6.6	7.1	13.4	9.943
vs.						
Those indicating before 1925		52.5	5.0	15.0	27.5	
Those indicating 1925 or later	11	25.8	36.1	33.4	3.7	8.254
vs.						
Those indicating before 1925		12.5	30.0	55.0	2.5	
Those indicating 1925 or later	12	59.1	23.8	9.3	7.1	14.045
vs.						
Those indicating before 1925		52.5	10.0	12.5	22.5	

The findings indicated by Table II may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "Date of M.D. degree" and "skepticism".

Questionnaire Statement	Grouping as to date of M.D. degree indicated	Relation to respondents indicating an earlier date of M.D. degree
2: It is good practice to use only drugs which are "officially" approved.	Respondents indicating 1945 or later	less "skeptical" than their seniors
	Respondents indicating 1940 or later	less "skeptical" than their seniors
	Respondents indicating 1935 or later	less "skeptical" than their seniors
	Respondents indicating 1930 or later	less "skeptical" that their seniors
3: The use of "trade names" is a sales promotion device.	Respondents indicating 1955 or later	less "skeptical" than their seniors
	Respondents indicating 1950 or later	less "skeptical" than their seniors
	Respondents indicating 1945 or later	less "skeptical" than their seniors
	Respondents indicating 1940 or later	less "skeptical" than their seniors
4: Drug companies do not induce physicians to increase the cost of therapy by using new drugs when equally effective older remedies are available.	Respondents indicating 1950 or later	more "skeptical" than their seniors
	Respondents indicating 1945 or later	more "skeptical" than their seniors
	Respondents indicating 1940 or later	more "skeptical" than their seniors
	Respondents indicating 1925 or later	more "skeptical" than their seniors

(continued)

Questionnaire Statement	Grouping as to date of M.D. degree indicated	Relation to respondents indicating an earlier date of M.D. degree
5: In order to be patented, the constituents of a medicine must be a new discovery.	Respondents indicating 1960 or later	more "skeptical" than their seniors
	Respondents indicating 1955 or later	more "skeptical" than their seniors
	Respondents indicating 1950 or later	more "skeptical" than their seniors
	Respondents indicating 1945 or later	more "skeptical" than their seniors
	Respondents indicating 1940 or later	more "skeptical" than their seniors
	Respondents indicating 1935 or later	more "skeptical" than their seniors
	Respondents indicating 1930 or later	more "skeptical" than their seniors
6: The price of new drugs is determined by production and distribution costs.	Respondents indicating 1945 or later	more "skeptical" than their seniors
	Respondents indicating 1940 or later	more "skeptical" than their seniors
	Respondents indicating 1935 or later	more "skeptical" than their seniors
7: Detail men of drug companies do not provide a service to physicians.	Respondents indicating 1925 or later	more "skeptical" than their seniors
9: A druggist may substitute an equivalent from another manufacturer when a drug is prescribed by its patented name.	Respondents indicating 1955 or later	more "skeptical" than their seniors
	Respondents indicating 1950 or later	more "skeptical" than their seniors

(continued)

Questionnaire Statement	Grouping as to date of M.D. degree indicated	Relation to respondents indicating an earlier date of M.D. degree
	Respondents indicating 1945 or later	more "skeptical" than their seniors
	Respondents indicating 1940 or later	more "skeptical" than their seniors
	Respondents indicating 1935 or later	more "skeptical" than their seniors
	Respondents indicating 1930 or later	more "skeptical" than their seniors
	Respondents indicating 1925 or later	more "skeptical" than their seniors
10: The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.	Respondents indicating 1950 or later	less "skeptical" than their seniors
	Respondents indicating 1945 or later	less "skeptical" than their seniors
	Respondents indicating 1940 or later	less "skeptical" than their seniors
	Respondents indicating 1935 or later	less "skeptical" than their seniors
	Respondents indicating 1930 or later	less "skeptical" than their seniors
11: Information from detail men regarding claims about drugs is accurate.	Respondents indicating 1935 or later	more "skeptical" than their seniors
	Respondents indicating 1925 or later	more "skeptical" than their seniors
12: It is a poor practice to use non-patented names when prescribing drugs.	Respondents indicating 1960 or later	less "skeptical" than their seniors
	Respondents indicating 1955 or later	less "skeptical" than their seniors

(continued)

Questionnaire Statement	Grouping as to date of M.D. degree indicated	Relation to respondents indicating an earlier date of M.D. degree
	Respondents indicating 1930 or later	more "skeptical" than their seniors
	Respondents indicating 1925 or later	more "skeptical" than their seniors
16: No new drugs are issued merely to avoid the patent rights of other companies.	Respondents indicating 1950 or later	more "skeptical" than their seniors
	Respondents indicating 1935 or later	more "skeptical" than their seniors

All Statements for which there was any trend for recent graduates to be more "skeptical", that is Statements 4,5,6,7,9,11 and 16, tend to focus on circumstances of marketing and promoting of drugs. Two of the three Statements for which there was some trend for recent graduates to be more "naive" had to do with conservative prescribing habits - relying on older well proven remedies. "Skepticism" toward the marketing and promotional policies of drug companies seems associated with recency of graduation while the tendency to prescribe older better established drugs seems associated with the opposite. This suggests conservative prescribing habits are related to a notable extent to factors other than "skepticism" toward the drug industries' manufacturing and marketing policies as such.

These findings indicate there are distinctly different kinds of "skepticism" being measured - the fact that "skepticism" on a certain group of items with one type of content occurs together with a lack of "skepticism" on a group of items with another type of content suggests there are two factors in evidence.

3. Number of years of postgraduate training in recognized hospitals.

The Chi-square comparisons that could be made here while complying with the rule of not having more than 20% of cells with expected frequencies of less than 5, are indicated as follows:

Comparisons made in investigating the relationship between "Number of years of postgraduate training" and "skepticism"

Comparison made	Number in each group	Questionnaire Statements for which comparison could be made
Respondents indicating more than 1 year of postgraduate training	865	
vs.		all but #14
all those indicating only 1 year	224	
Respondents indicating more than 2 years of postgraduate training	643	
vs.		all but #14
all those indicating 2 or fewer	446	
Respondents indicating more than 3 years of postgraduate training	491	
vs.		all but #14
all those indicating 3 or fewer	598	
Respondents indicating more than 4 years of postgraduate training	361	
vs.		all but #14
all those indicating 4 or fewer	728	
Respondents indicating more than 5 years of postgraduate training	162	
vs.		all but #14
all those indicating 5 or fewer	927	
Respondents indicating more than 6 years of postgraduate training	74	
vs.		all but #14
all those indicating 6 or fewer	1015	

As shown in Appendix E, of the 102 comparisons indicated above, eleven yielded significant Chi-square values. None of these were shown by the Rank-sums test to be due to non-directional differences, so all eleven findings are shown in Table III.

TABLE III

TABLE III

Significant findings made in investigating the relationship between "Number of years of postgraduate training" and "skepticism"

Comparison made	Questionnaire Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating over 1 year	3	5.8	19.2	34.8	39.3	10.156
vs.						
those indicating 1 year		6.1	13.9	29.0	50.5	
Those indicating over 1 year	9	77.2	3.1	6.3	12.5	7.838
vs.						
those indicating 1 year		69.7	8.0	7.3	13.9	
Those indicating over 1 year	16	62.1	20.5	12.9	1.8	11.067
vs.						
those indicating 1 year		51.7	28.3	11.0	4.4	
Those indicating over 2 years	2	1.8	9.9	25.8	61.4	9.299
vs.						
those indicating 2 or fewer		4.4	6.4	25.8	61.3	
Those indicating over 2 years	7	32.3	35.7	20.0	11.0	9.372
vs.						
those indicating 2 or fewer		27.8	33.3	21.2	17.3	
Those indicating over 2 years	12	55.2	24.4	11.7	7.4	10.213
vs.						
those indicating 2 or fewer		63.0	23.0	6.8	6.4	
Those indicating over 2 years	13	30.5	28.7	30.7	9.0	12.311
vs.						
those indicating 2 or fewer		24.9	26.4	33.3	15.2	

(continued)

TABLE III (continued)

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating over 3 years	12	56.4	24.7	10.5	7.2	7.970
vs.						
those indicating 3 or fewer		64.0	22.2	6.7	6.3	
Those indicating over 4 years	2	2.1	8.4	26.8	61.4	11.92
vs.						
those indicating 4 or fewer		5.8	6.6	23.8	61.2	
Those indicating over 4 years	6	32.4	26.8	24.0	15.4	10.943
vs.						
those indicating 4 or fewer		40.2	18.6	24.1	15.5	
Those indicating over 5 years	12	58.3	24.8	9.4	6.5	9.618
vs.						
those indicating 5 or fewer		68.5	16.7	5.6	8.6	

The findings indicated by Table III may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "Number of years of postgraduate training" and "skepticism".

Questionnaire Statement	Grouping as to number of years of postgraduate training	Relationship to respondents with fewer years of postgraduate training
2: It is a good practice to use only drugs which are "officially" approved.	Respondents indicating over 2 years postgraduate training	more "naive" than those indicating 2 or fewer
	Respondents indicating over 4 years postgraduate training	more "naive" than those indicating 4 or fewer
3: The use of "trade names" is a sales promotion device.	Respondents indicating over 1 year postgraduate training	more "skeptical" than those indicating only 1
6: The price of new drugs is determined by production and distribution costs.	Respondents indicating over 4 years postgraduate training	more "skeptical" than those indicating 4 or fewer
7: Detail men of drug companies do not provide a service to physicians.	Respondents indicating over 2 years postgraduate training	more "skeptical" than those indicating 2 or fewer

(continued)

Questionnaire Statement	Grouping as to number of years of postgraduate training	Relationship to respondents with fewer years of postgraduate training
9: A druggist may substitute an equivalent from another manufacturer when a drug is prescribed by its patented name.	Respondents indicating over 1 year postgraduate training	more "naive" than those indicating only 1
12: It is a poor practice to use non-patented names when prescribing drugs.	Respondents indicating over 2 years postgraduate training	more "skeptical" than those indicating 2 or fewer
	Respondents indicating over 3 years postgraduate training	more "skeptical" than those indicating 3 or fewer
	Respondents indicating over 5 years postgraduate training	more "skeptical" than those indicating 5 or fewer
13: Drugs are not placed on the market before being adequately tested.	Respondents indicating over 2 years postgraduate training	more "naive" than those indicating 2 or fewer
16: No new drugs are issued merely to avoid the patent right of other companies.	Respondents indicating over 1 year postgraduate training	more "naive" than those indicating only 1

The findings indicated above show a tendency for "skepticism" on Statements 2,9,13, and 16 to be associated positively with number of years of

postgraduate training, and a tendency for "skepticism" on Statements 3,6,7, and 12 to be associated negatively with number of years of postgraduate training. Of those for which "skepticism" increased with years of postgraduate training, Statements 9 and 16 are particularly involved with legal informedness while Statements 2 and 13 are particularly involved with relying on older better proven drugs. Those for which "skepticism" was negatively associated with years of postgraduate training, tend to stress marketing and manufacturing matters. It seems then that there is a tendency for the doctors with less postgraduate training to be the "skeptical" ones about the marketing and manufacturing policies of the ethical drug companies, and the doctors with more postgraduate training to be the ones with better legal knowledge concerning drugs and the conservative views on choice of drugs.

4. Certification (specialty).

Of the 18 specialist groupings, there were large enough expected frequencies found in 8 to permit statistical analysis with Chi-square, at least for some of the Questionnaire Statements. Restricting analysis to cases where not more than 20% of cells had expected frequencies of less than 5, Chi-square could be calculated in the following cases:

Comparisons made in investigating the relationship between "Specialty" and "skepticism".

Comparison made	Number in each group	Questionnaire Statements for which comparison was made
Respondents indicating their specialty was Internal Medicine	63	
vs. all those indicating some other specialty	429	1,3,4,5,6,7,8,10,12, 13,16,17,18.

(continued)

Comparison made	Number in each group	Questionnaire Statements for which comparison was made
Respondents indicating their specialty was Surgery	101	all but #14
vs.		
all those indicating some other specialty	391	
Respondents indicating their specialty was Anesthesia	42	1,3,4,6,7,8,10, 11,13,16,17,18
vs.		
all those indicating some other specialty	450	
Respondents indicating their specialty was Obstetrics and Gynecology	46	1,3,4,5,6,7,8, 10,11,13,18
vs.		
all those indicating some other specialty	446	
Respondents indicating their specialty was Public Health, Bacteriology, Pathology, Pathology and Bacteriology	36	1,3,6,7,8,10,11, 13,17,18
vs.		
all those indicating some other specialty	456	
Respondents indicating their specialty was Paediatrics	35	1,3,6,7,8,10,11, 13,18
vs.		
all those indicating some other specialty	457	
Respondents indicating their specialty was Radiology	30	1,6,7,8,10,11, 13,18
vs.		
all those indicating some other specialty	462	
Respondents indicating their specialty was Psychiatry	40	1,3,6,8,10,11, 13,17,18
vs.		
all those indicating some other specialty	452	

There are 89 comparisons indicated above. As shown in Appendix F, only 8 of the 89 produced significant Chi-square values, and one of these was shown by the Rank-sums Test not to be due to a directional difference (i.e. not a difference in degree of "skepticism"). The seven remaining, and pertinent, findings are shown in Table IV.

TABLE IV

TABLE IV

Significant findings made in investigating the relationship between "Specialty" and "skepticism"

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square obtained
Those indicating Internal Medicine	13	39.7	22.2	28.6	7.9	11.852
vs.						
those indicating some other specialty		21.0	28.0	35.0	15.6	
Those indicating Internal Medicine	17	4.8	11.1	25.4	58.7	7.835
vs.						
those indicating some other specialty		9.1	15.4	35.0	40.1	
Those indicating Internal Medicine	18	14.3	30.2	33.3	20.6	10.060
vs.						
those indicating some other specialty		19.1	41.5	30.3	8.9	
Those indicating Anesthesia	1	2.4	42.9	38.1	16.7	9.441
vs.						
those indicating some other specialty		1.8	22.4	43.8	30.9	
Those indicating Anesthesia	6	26.2	9.5	38.1	26.2	10.472
vs.						
those indicating some other specialty		39.3	20.4	23.8	14.4	
Those indicating Anesthesia	18	33.3	45.2	16.7	4.8	9.585
vs.						
those indicating some other specialty		17.1	39.6	32.0	10.9	
Those indicating Surgery	4	48.5	21.8	14.9	14.9	8.542
vs.						
those indicating some other specialty		47.6	33.0	10.7	7.9	
Those indicating Psychiatry	6	40.0	37.5	15.0	7.5	10.583
vs.						
those indicating some other specialty		38.1	17.9	25.9	16.2	

The findings shown in Table IV may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "Specialty" and "skepticism".

Specialty	Relation to the rest of specialists	Questionnaire Statement involved
Respondents indicating their specialty was Internal Medicine	More "skeptical" than all those indicating other specialty	13: Drugs are not placed on the market before being adequately tested. 17: Physicians are persuaded by advertising to use new drugs before they have been adequately tested. 18: Drug companies do not try to be accurate in their claims for their products.
Respondents indicating their specialty was Anesthesia	More "naive" than all those indicating other specialty	1. Drug companies are not accurate in their claims for their products. 6: The price of new drugs is determined by production and distribution costs. 18: Drug companies do not try to be accurate in their claims for their products.
Respondents indicating their specialty was Surgery	More "naive" than all those indicating other specialty	4: Drug companies do not induce physicians to increase the cost of therapy by using new drugs when equally effective older remedies are available.
Respondents indicating their specialty was Psychiatry	More "skeptical" than all those indicating other specialty	6: The price of new drugs is determined by production and distribution costs.

There are very few significant findings here considering the number of comparisons made. The fact that specialists in Internal Medicine and Psychiatry showed some "skepticism" while specialists in Anesthesia and Surgery showed some "naivete" suggests that experience with prescription drugs is related to "skepticism", inasmuch as the former two specialties are more involved with chemotherapy than the latter two.

5. Years in General Practice

The Chi-square comparisons that could be made here while complying with the rule of not having more than 20% of the cells with expected frequencies of less than 5, are as follows:

Comparisons made in investigating the relationship of "Years in General Practice" to "skepticism".

Comparison made	Number in each group	Questionnaire Statements on which comparisons were made
Respondents indicating more than 5 years in General Practice	444	
vs.		all but #14
those indicating 5 or fewer	350	
Respondents indicating more than 10 years in General Practice	280	
vs.		all but #14
those indicating 10 or fewer	576	
Respondents indicating more than 20 years in General Practice	117	
vs.		all but #14
those indicating 20 or fewer	739	
Respondents indicating more than 30 years in General Practice	37	
vs.		1,3,6,7,8,10,11, 13,18
those indicating 30 or fewer	819	

Of the 60 Chi-square comparisons made here, 15 were statistically significant (See appendix G). Three of these 15 were shown by the Rank-sums test to be due to differences in response distribution that were not directional and hence not indicative of differences in degree of "skepticism". The 12 remaining and pertinent findings are shown in Table V.

TABLE V

TABLE V

Significant findings made in investigating the relationship of "Years in General Practice" to "skepticism"

Comparison made	Questionnaire Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating over 5 years	5	58.3	12.0	6.3	21.7	22.600
vs. those indicating 5 or fewer		44.4	9.0	9.7	34.2	
Those indicating over 5 years	7	29.4	30.0	24.0	16.0	8.493
vs. those indicating 5 or fewer		32.9	35.8	16.9	13.5	
Those indicating over 10 years	5	55.7	11.3	7.6	23.9	28.193
vs. those indicating 10 or fewer		40.0	7.9	10.0	38.9	
Those indicating over 10 years	6	34.4	24.8	26.4	12.5	14.156
vs. those indicating 10 or fewer		31.8	23.6	20.7	22.1	
Those indicating over 10 years	9	74.5	6.6	6.6	11.3	10.806
vs. those indicating 10 or fewer		65.0	6.8	7.9	18.9	
Those indicating over 20 years	2	3.7	7.6	26.5	60.8	8.084
vs. those indicating 20 or fewer		0.0	6.8	18.8	72.6	
Those indicating over 20 years	5	52.9	11.1	7.4	26.4	25.944
vs. those indicating 20 or fewer		35.9	4.3	14.5	42.7	
Those indicating over 20 years	6	33.8	24.5	25.7	14.1	11.834
vs. those indicating 20 or fewer		31.6	23.9	17.1	25.6	

(continued)

TABLE V (continued)

Comparison made	Questionnaire Statement number	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square found
Those indicating over 20 years	9	73.3	6.6	6.6	12.0	15.757
vs.						
those indicating 20 or fewer		59.0	6.8	9.4	24.8	
Those indicating over 20 years	10	31.3	19.4	22.6	25.3	11.369
vs.						
those indicating 20 or fewer		17.9	18.8	25.6	36.8	
Those indicating over 20 years	12	58.5	25.2	9.1	6.2	12.061
vs.						
those indicating 20 or fewer		54.6	17.9	11.1	14.5	
Those indicating over 30 years	10	30.2	19.4	22.2	26.7	8.673
vs.						
those indicating 30 or fewer		13.5	16.2	40.5	29.7	

The findings indicated by Table V may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "Years in General Practice" and "skepticism".

Questionnaire Statement	Grouping as to Years in General Practice	Relationship to respondents with fewer Years in General Practice
2: It is good practice to use only drugs that are "officially" approved.	Respondents indicating more than 20 years in G.P.	More "skeptical" than those with 20 or fewer
5: In order to be patented, the constituents of a medicine must be a new discovery	Respondents indicating more than 5 years in G.P.	Less "skeptical" than those with 5 or fewer
	Respondents indicating more than 10 years in G.P.	Less "skeptical" than those with 10 or fewer
	Respondents indicating more than 20 years in G.P.	Less "skeptical" than those with 20 or fewer
6: The price of new drugs is determined by production and distribution costs.	Respondents indicating more than 10 years in G.P.	Less "skeptical" than those with 10 or fewer
	Respondents indicating more more than 20 years in G.P.	Less "skeptical" than those with 20 or fewer
7: Detail men of drug companies do not provide a service to physicians	Respondents indicating more than 5 years in G.P.	Less "skeptical" than those with 5 or fewer
9: A druggist may substitute an equivalent from another manufacturer when a drug is prescribed by its patented name.	Respondents indicating more than 10 years in G.P.	Less "skeptical" than those with 10 or fewer
	Respondents indicating more than 20 years in G.P.	Less "skeptical" than those with 20 or fewer

(continued)

Questionnaire Statement	Grouping as to Years in General Practice	Relationship to respondents with fewer Years in General Practice
10: The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.	Respondents indicating more than 20 years in G.P.	More "skeptical" than those with 20 or fewer
	Respondents indicating more than 30 years in G.P.	More "skeptical" than those with 30 or fewer
12: It is a poor practice to use non-patented names when prescribing drugs.	Respondents indicating more than 20 years in G.P.	Less "skeptical" than those with 20 or fewer

The same general trend showed here, as showed when the relationship of recency of graduation to "skepticism" was investigated.

Number of years in General Practice showed a positive association with "skepticism" of Statements 2 and 10 which involve primarily the belief in relying on older, better proven drugs. On the other hand, number of years in General Practice showed a negative association with "skepticism" for Statements 9 and 5, involved with legal knowledge, and for Statements 6 and 12, which have more to do with the marketing of drugs. These findings suggest that conservative prescribing habits as such are determined to a large extent by factors other than legal knowledge related to the marketing and manufacturing of drugs, or "skepticism" about the drug marketing as such.

6. Location of Practice; urban, rural, or both

The comparison to be made here was that of respondents indicating they were non-specialists, and indicating their practice had been urban

only, versus respondents indicating they were non-specialists, and indicating their practice had been rural only. At the time of this writing, through difficulty with the Computer, findings have not been obtained.

7. Number of Years in Specialty

The Chi-square comparisons that could be made here while complying with the rule of not having more than 20% of cells with expected frequencies of less than 5, are as follows:

Comparisons made in investigating the relationship of "Years in specialty" to "skepticism".

Grouping for comparison among respondents indicating some years in specialty	Number in each group	Questionnaire Statements on which comparisons were made
Respondents indicating more than 5 years in specialty	361	
vs.		all except #14
all those indicating 5 or fewer	146	
Respondents indicating more than 10 years in specialty	246	
vs.		all except #14
all those indicating 10 or fewer	290	
Respondents indicating more than 20 years in specialty	78	
vs.		all except #14
all those indicating 20 or fewer	458	
Respondents indicating more than 30 years in specialty	16	
vs.		only #11
all those indicating 30 or fewer	520	

Of the 52 Chi-square comparisons indicated above, eleven were found to be significant at the .05 level (See Appendix H). None of these was shown by the Rank-sums test to be due to non-directional differences. The eleven pertinent findings are shown in Table VI.

TABLE VI

TABLE VI

Significant findings made in investigating the relationship between "Years in specialty" and "skepticism"

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square obtained
Those indicating over 5 years	4	53.2	34.5	9.6	2.8	11.041
vs. those indicating 5 or fewer		47.7	29.5	11.3	11.8	
Those indicating over 5 years	5	54.8	13.7	8.2	21.2	9.028
vs. those indicating 5 or fewer		44.8	9.9	5.9	35.8	
Those indicating over 10 years	5	54.1	11.7	6.6	26.2	7.901
vs. those indicating 10 or fewer		42.3	10.6	6.9	35.8	
Those indicating over 10 years	10	31.7	24.1	22.4	21.0	17.462
vs. those indicating 10 or fewer		29.7	13.0	20.7	34.1	
Those indicating over 10 years	16	51.4	30.7	11.7	1.0	18.278
vs. those indicating 10 or fewer		50.0	26.0	9.8	8.5	
Those indicating over 20 years	2	4.1	7.0	26.6	60.5	9.399
vs. those indicating 20 or fewer		5.1	3.8	12.8	78.2	
Those indicating over 20 years	3	5.9	13.5	32.1	48.3	10.900
vs. those indicating 20 or fewer		6.4	11.5	15.4	66.7	
Those indicating over 20 years	6	39.5	21.2	25.5	12.7	22.036
vs. those indicating 20 or fewer		35.9	14.1	16.7	33.3	

(continued)

TABLE VI (continued)

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square obtained
Those indicating over 20 years	9	71.4	7.0	7.4	13.1	7.873
vs.						
those indicating 20 or fewer		60.3	5.1	10.3	24.4	
Those indicating over 20 years	10	31.4	20.7	21.6	24.9	10.815
vs.						
those indicating 20 or fewer		26.9	9.0	21.8	39.7	
Those indicating over 20 years	15	3.1	8.7	36.0	52.2	11.176
vs.						
those indicating 20 or fewer		2.6	2.6	23.1	71.8	
Those indicating over 20 years	16	51.1	29.3	11.4	3.1	13.960
vs.						
those indicating 20 or fewer		48.7	24.4	7.7	12.8	

The findings indicated by Table VI may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "Years in specialty" and "skepticism".

Questionnaire Statement	Grouping as to years in specialty	Relationship to respondents indicating more years in specialty
2: It is a good practice to use only drugs which are "officially" approved.	Respondents indicating 20 or fewer years in a specialty	More "naive" than those indicating more
3: The use of "trade names" is a sales promotion device.	Respondents indicating 20 or fewer years in a specialty	More "naive" than those indicating more
4: Drug companies do not induce physicians to increase the cost of therapy by using new drugs when equally effective older remedies are available.	Respondents indicating 5 or fewer years in a specialty	More "skeptical" than those indicating more
5: In order to be patented, the constituents of a new medicine must be a new discovery.	Respondents indicating 5 or fewer years in a specialty	More "skeptical" than those indicating more
	Respondents indicating 10 or fewer years in a specialty	More "skeptical" than those indicating more
6: The price of new drugs is determined by production and distribution costs.	Respondents indicating 20 or fewer years in a specialty	More "skeptical" than those indicating more
9: A druggist may substitute an equivalent from another manufacturer when a drug is prescribed by its patented name.	Respondents indicating 20 or fewer years in a specialty	More "skeptical" than those indicating more

(continued)

Questionnaire Statement	Grouping as to years in specialty	Relationship to respondents indicating more years in specialty
10: The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.	Respondents indicating 10 or fewer years in a specialty	More "naive" than those indicating more
	Respondents indicating 20 or fewer years in a specialty	More "naive" than those indicating more
15: The manufacture and sale of drugs is governed by business considerations.	Respondents indicating 20 or fewer years in a specialty	More "naive" than those indicating more
16: No new drugs are issued merely to avoid the patent rights of other companies.	Respondents indicating 10 or fewer years in a specialty	More "skeptical" than those indicating more
	Respondents indicating 20 or fewer years	More "skeptical" than those indicating more

The Statements for which "skepticism" was positively associated with "years in specialty" are numbers, 3, 10, and 15, while the Statements for which "skepticism" was negatively associated with "years in specialty" were numbers 4, 5, 6, 9, and 16. There seems to be no obvious rhyme or reason to this combination except that in the latter group items number 5 and 9 are directly involved with legal information; Respondents with fewer years in a specialty appear better informed about legal aspects of the manufacturing and marketing of drugs. This greater legal knowledge is likely not a result of lack of specialist experience as such, for it was found, as discussed earlier, that recency of year of graduation is positively associated with "skepticism" on these two items. Here as in the rest of this study, conclusions cannot be extended far beyond the findings as such;

inferences as to causality cannot be made since the study is essentially a survey, not a controlled experiment.

Specialists as a group were compared to non-specialists as a group using the same data that was used for the comparisons discussed above. On Statements 3 and 12 the specialists were significantly more "skeptical" than the non-specialists. Both these Statements have a direct bearing on the matter of whether "trade names" are special indicators of quality. Respondents indicating they had experience in a specialty were more "skeptical" regarding "trade names" than respondents indicating they did not have experience in a specialty.

8. Type of Hospital Staff Experience

Four types of comparisons were made here: (a) respondents who had been on staff of only teaching hospitals (N=22) vs. respondents who had been on staff of only "other" hospitals (N=128); (b) respondents indicating they had been on staff of teaching or "other" hospitals (N=664) vs. respondents indicating they had not been on any hospital staff (N=128); (c) respondents indicating they had been on staff of teaching hospitals (N=363) vs. respondents indicating they had not been on any hospital staff (N=128); (d) respondents indicating they had been on staff of only "other" hospitals (N=128) vs. respondents indicating they had not been on any hospital staff (N=128).

Each of (a), (b), (c), and (d) were made for each of the 18 Questionnaire Statements, except Statement #14. There were 68 Chi-square comparisons made, then, but no significant findings occurred for any of these, indicating that respondents grouped according to hospital staff experience in the manner done here, are not significantly different from each other

with respect to degree of "skepticism", as measured by any of the 18 Questionnaire Statements (See Appendix I).

9. Number of postgraduate courses concerned with therapeutics, attended in last 3 years.

The Chi-square comparisons that could be made here while complying with the rule of not having more than 20% of cells with expected frequencies of less than 5, are as follows:

Comparisons made in investigating the relationship of "skepticism" to "Number of postgraduate courses concerned with therapeutics, attended in last 3 years."

Comparisons made	Number in each group	Questionnaire Statement
Respondents indicating they attended none	445	all but #14
vs.		
Respondents indicating they attended some	620	
Respondents indicating they attended 1 or fewer	558	all but #14
vs.		
Respondents indicating they attended more than 1	447	
Respondents indicating they attended 2 or fewer	748	all but #14
vs.		
Respondents indicating they attended more than 2	317	
Respondents indicating they attended 3 or fewer	899	all but #14
vs.		
Respondents indicating they attended more than 3	166	
Respondents indicating they attended 4 or fewer	947	all but #14
vs.		
Respondents indicating they attended more than 4	118	
Respondents indicating they attended 5 or fewer	989	all but #14
vs.		
Respondents indicating they attended more than 5	76	
Respondents indicating they attended 6 or fewer	1036	6,10,11,13
vs.		
Respondents indicating they attended more than 6	29	

Of the 106 Chi-square comparisons indicated above, nine were significant at the .05 level, (see Appendix J), and all of these nine were obviously directional differences so all are shown in Table VII.

TABLE VII

TABLE VII

Significant findings made in investigating the relationship of "skepticism" to "Number of postgraduate courses concerned with therapeutics, attended in last 3 years".

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-point "skepticism scale for each group				Chi-square obtained
Those indicating 3 or fewer	5	51.8	9.8	8.1	27.9	10.466
vs.						
those indicating more than 3		40.4	9.0	9.0	39.8	
Those indicating 3 or fewer	6	37.0	23.5	23.6	14.6	8.652
vs.						
those indicating more than 3		25.9	25.9	25.3	20.5	
Those indicating 4 or fewer	5	51.4	9.6	8.1	28.5	7.932
vs.						
those indicating more than 4		39.0	10.2	9.3	39.8	
Those indicating 4 or fewer	6	36.6	23.3	24.0	14.6	10.014
vs.						
those indicating more than 4		24.6	28.0	22.9	22.9	
Those indicating 5 or fewer	5	51.2	9.6	8.4	28.5	10.980
vs.						
those indicating more than 5		35.5	10.5	6.6	46.1	
Those indicating 6 or fewer	6	35.4	23.8	24.2	15.0	8.093
vs.						
those indicating more than 6		31.0	24.1	10.3	34.5	

The findings indicated by Table VII may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationship between "Number of postgraduate courses concerned with therapeutics, attended in last 3 years" and "skepticism".

Questionnaire Statement	Group	Relationship to other respondents
5 : In order to be patented, the constituents of a medicine must be a new discovery.	Respondents indicating 3 or fewer courses attended in last 3 years	More "skeptical" than those indicating they attended more
	Respondents indicating 4 or fewer courses attended in last 3 years	More "skeptical" than those indicating they attended more
	Respondents indicating 5 or fewer courses attended in last 3 years	More "skeptical" than those indicating they attended more
6: The price of new drugs is determined by production and distribution costs	Respondents indicating 3 or fewer courses attended in last 3 years	More "skeptical" than those indicating they attended more.
	Respondents indicating 4 or fewer courses attended in last 3 years	More "skeptical" than those indicating they attended more
	Respondents indicating 6 or fewer courses attended in last 3 years	More "skeptical" than those indicating they attended more
11: Information from detail men regarding claims about drugs is accurate.	Respondents indicating no courses attended in last 3 years	More "naive" than those indicating they attended more

There appears to be no consistent theme to these findings. "Skepticism" measured on Statements 5 and 6 could be said to be positively associated with "Number of postgraduate courses concerned with therapeutics,

attended in last 3 years", yet this relationship did not show for other similar Questionnaire Statements. Therefore it would be rather difficult to argue the findings are of any practical significance.

10. Primary Source of Information About New Drugs

The Chi-square comparisons which could be made here while complying with the rule of not having more than 20% of the cells with expected frequencies of less than 5, are as follows:

Comparisons made in investigating the relationship of "Primary source of information about new drugs", to "skepticism".

Comparison being made	Number in each group	Questionnaire Statements on which comparisons were made
Respondents indicating their primary source for information was Advertising mail by pharmaceutical firms	100	all but #14
vs.		
Respondents indicating some other primary source	814	
Respondents indicating their primary source for information was Articles in medical journals	512	all 18 questionnaire statements
vs.		
Respondents indicating some other primary source	601	
Respondents indicating their primary source for information was Colleagues in medicine	168	all but #14
vs.		
Respondents indicating some other primary source.	891	

Comparison being made	Number in each group	Questionnaire Statements on which comparisons were made
Respondents indicating their primary source for information was Advertising in medical journals	33	statements #1,3,6, 7,8,10,11,13,18
vs.		
Respondents indicating some other primary source	879	
Respondents indicating their primary source for information was Detail men from pharmaceutical firms	168	all but #14
vs.		
Respondents indicating some other primary source	823	
Respondents indicating their primary source for information was Postgraduate short courses in therapeutics	53	all but #2,9,14
vs.		
Respondents indicating some other primary source	793	
Respondents indicating their primary source for information was Textbooks	92	all but #14
vs.		
Respondents indicating some other primary source	869	
Respondents indicating their primary source for information was "Other"	77	all but #14,15.
vs.		
Respondents indicating some other primary source	396	

Of the 127 comparisons indicated above, eleven yielded significant Chi-squares (see Appendix K). All these were directional, showing differences in degree of "skepticism". They are shown in Table VIII.

TABLE VIII

TABLE VIII

Signficiant findings made in investigating the relationship between "Primary source of information about new drugs", and "skepticism".

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-ppint "skepticism" scale for each group				Chi-square obtained
Those indicating medical journal articles	7	26.2	32.4	24.2	16.0	19.989
vs. those indicating other primary source		35.8	35.1	16.0	13.0	
Those indicating detail men	1	3.0	32.2	46.2	19.1	8.391
vs. those indicating other primary source		2.6	23.1	46.2	27.4	
Those indicating detail men	3	11.3	17.9	28.6	41.6	8.254
vs. those indicating other primary source		5.6	16.1	31.2	46.5	
Those indicating detail men	4	39.9	31.0	16.7	11.9	8.922
vs. those indicating other primary source		49.9	30.1	10.8	8.4	
Those indicating detail men	7	48.8	38.1	8.3	4.8	32.512
vs. those indicating other primary source		31.1	34.7	21.4	12.1	
Those indicating detail men	10	32.8	29.2	18.5	19.0	11.982
vs. those indicating other primary source		31.8	18.2	23.4	25.1	
Those indicating detail men	11	14.3	34.5	43.4	7.1	14.470
vs. those indicating other primary source		24.2	37.1	34.1	3.4	

(continued)

TABLE VIII (continued)

Comparison made	Questionnaire Statement	Percentage distribution of responses over 4-point "skepticism" scale for each group				Chi-square obtained
Those indicating detail men	12	46.4	28.0	11.9	12.5	11.939
vs.						
those indicating other primary source		59.4	23.0	9.5	7.0	
Those indicating detail men	17	15.5	10.7	36.9	36.9	11.360
vs.						
those indicating other primary source		7.9	15.1	35.1	41.4	
Those indicating postgraduate short courses	5	34.0	20.8	7.5	34.0	10.056
vs.						
those indicating other primary source		52.2	9.6	8.3	28.0	
Those indicating text books	10	24.9	16.3	19.6	39.2	9.518
vs.						
those indicating other primary source		31.1	19.1	24.3	24.4	

The findings shown in Table VIII may, in being interpreted, be set out as follows:

Significant findings made in investigating the relationships between "Primary source of information about new drugs", and "skepticism".

Group	Relationship to respondents indicating some other primary source	Questionnaire Statement for which findings occurred
Respondents whose primary source of information about new drugs was Detail men	More "naive" than respondents indicating some other primary source	1,3,4,7,10, 11,12,17.
Respondents whose primary source of indormation about new drugs was Medical Journal Articles	More "skeptical" than respondents indicating some other primary source	7
Respondents whose primary source of information about new drugs was Short postgraduate courses	More "naive" than respondents indicating some other primary source	5
Respondents whose primary source of information about new drugs was Textbooks	More "skeptical" than respondents indicating some other primary source	10

It is probably reasonable to say that respondents indicating their primary source of information about new drugs were as a group "naive". This would be expected since the using of detail men's service is, by the definition used in this study, "naive".

The other findings here are probably not of practical interest since so few Questionnaire Statements yielded results of statistical significance.

11. Whether postgraduate training had been received at university-affiliated hospital(s) or at "non-affiliated" hospital(s) only.

Comparing respondents who had postgraduate training at a university-affiliated hospital against those who had such training only at non-affiliated hospitals, significant differences in "skepticism" were found for none of the 18 Questionnaire Statements (see Appendix L). That is, degree of "skepticism" did not vary according to whether postgraduate training was at an "affiliated" or "non-affiliated" hospital.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The purpose of this study was to find differences, in degree of "skepticism" about the manufacturing and marketing of drugs, among groups of medical doctors categorized according to training and experience.

"Skepticism" was measured by a questionnaire prepared by the Department of Pharmacology with the collaboration of the Department of Psychology of the University of British Columbia. The questionnaire was composed of eighteen statements representing issues about the manufacturing and marketing of drugs; "skepticism" was measured by degree of agreement or disagreement with each statement, expressed on a four-point response scale accompanying each statement.

Eleven different ways of classifying doctors according to training and experience were employed, and each of these eleven involved a plurality of groups. Altogether 906 groups were considered.

The "Skepticism" questionnaire together with a "Personal Data" section to supply data for classifying according to training and experience were sent to the 2413 B.C. doctors registered by the B. C. College of Physicians and Surgeons.

Of the 2413 sent, 1193 were returned. Chi-square comparisons were made in order to determine which groups of doctors were relatively "skeptical" or "naive" according to each of the eighteen questionnaire statements.

The great majority of comparisons showed differences not significant at the .05 level.

Of the findings that were significant, many had to do with particular groups that could be called relatively "skeptical" or "naive" for only one or two Questionnaire Statements.

The remainder of the significant findings concerned the few cases where particular groups could be called relatively "skeptical" or "naive" in terms of several Questionnaire Statements. Examination of these showed the following.

Often a particular group would respond in a "naive" fashion to a number of Statements which have one particular emphasis, yet in a "skeptical" fashion to some other Statements which have another emphasis. Or, for example, a group would show itself to be relatively "skeptical", but only for Questionnaire Statements with one certain emphasis. Three types of Statements were pointed out in this fashion, each with a different emphasis. They were: those most obviously measuring knowledge of legal aspects of the manufacturing and marketing of drugs; those emphasizing skepticism about drug companies' manufacturing and marketing policies as such; those emphasizing skepticism about the value of prescribing new drugs. The findings indicated that these three kinds of "skepticism" are not well correlated with one another.

Whether general practitioners or specialists, respondents with more seniority in the medical profession tend to have more "skepticism" about the use of new drugs, yet less "skepticism" about drug companies' manufacturing and marketing policies.

Respondents with more postgraduate training tended to have more "skepticism" about the use of new drugs, more "skepticism" as measured by knowledge about legal aspects of the manufacturing and marketing of drugs, and less "skepticism" about drug companies' manufacturing and marketing policies.

Compared to other respondents, those who received their M.D. degrees in Great Britain tended to be relatively "skeptical" about the use of new drugs.

Compared to other respondents, those who graduated from U.B.C. tended to be relatively "skeptical" about drug companies' manufacturing and marketing policies.

To a small extent, respondents in specialties requiring broader experience in the use of drugs tended to be relatively "skeptical", while respondents in specialties in which experience in the use of drugs was less important tended to be relatively "naive".

Whether respondents had training at university-affiliated hospitals or at non-affiliated hospitals made no significant difference to degree of "skepticism".

This study has carried out its purpose, showing several ways in which differences in degree of "skepticism" about the manufacturing and marketing of drugs are related to differences in training and experience. It has shown these only for the 1193 doctors on whom data was obtained, and what it has shown may not apply to all B. C. doctors as a whole. However, in the absence of other evidence, the best guess about what the findings would have been if data had been obtained for all B. C. doctors is that they would be similar to the findings obtained here.

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APPENDIX A

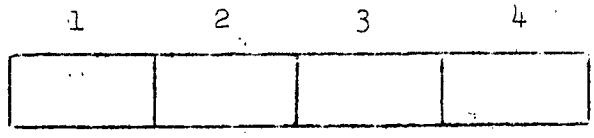
THE QUESTIONNAIRE USED IN MEASURING "SKEPTICISM" AND GATHERING DATA TO CLASSIFY RESPONDENTS ACCORDING TO TRAINING AND EXPERIENCE.

QUESTIONNAIRE

On the following pages you will find 18 statements concerning medicine.

We want to know how much you agree or disagree with each of the statements. Below each statement you will find a rating scale as follows:

Disagree Agree



The points along the scale (1, 2, 3, and 4) should be interpreted as follows:

1. Completely or mostly disagree
2. Disagree more than agree
3. Agree more than disagree
4. Mostly or completely agree

The use of the scale can be illustrated with the following statement:

"Smoking causes lung cancer"

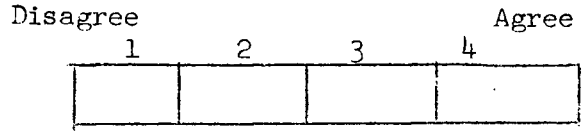
If you agreed completely with the statement, you would place a mark in column 4. If you agreed slightly with the statement, you would place a mark in column 3. If you mostly disagreed with the statement, you would place a mark in column 1. In this way you can indicate the extent to which you agree or disagree with each of the statements on the following pages.

You may feel that your knowledge regarding some of the statements is incomplete. If this occurs, please do not leave the item blank, but give your present view.

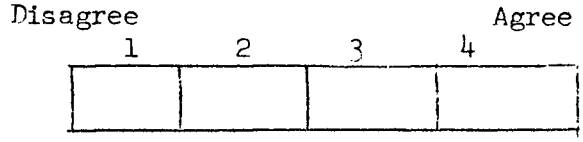
Please make your marks inside the agreement and disagreement boxes of the scales. Do not make your "x" so that it touches a line. Make sure you have a mark for each statement. Leave none of the statements blank, and make only one mark for each.

After completing the questionnaire, please fill in the Personal Data requested on the last page.

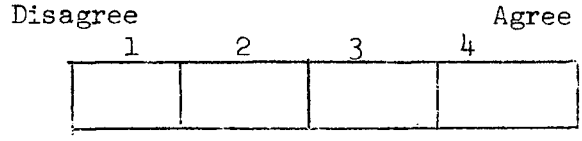
1. Drug companies are not accurate in their claims for their products.



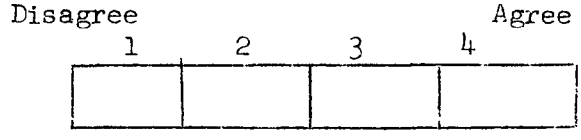
2. It is a good practice to use only drugs which are "officially"[1] approved.



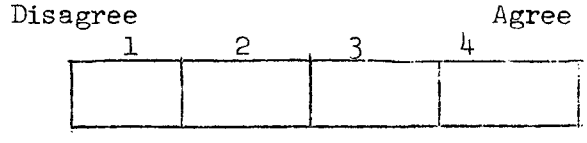
3. The use of "trade names" is a sales promotion device.



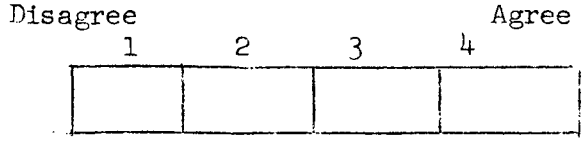
4. Drug companies do not induce physicians to increase the cost of therapy by using new drugs when equally effective older remedies are available.



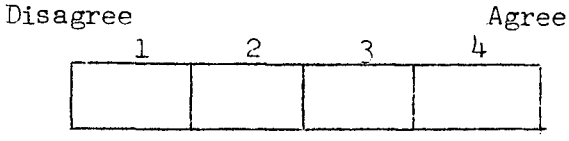
5. In order to be patented, the constituents of a medicine must be a new discovery.



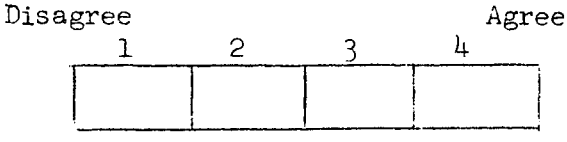
6. The price of new drugs is determined by production and distribution costs.



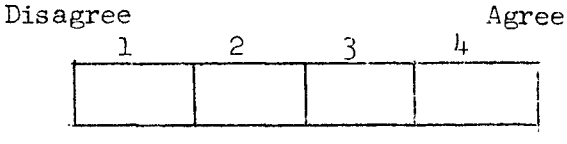
7. Detail men of drug companies do not provide a service to physicians.



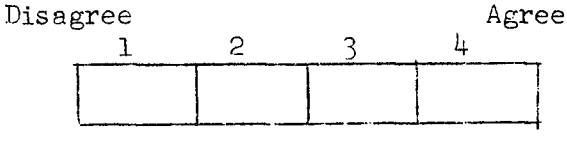
8. The claims made for drugs in mailed literature are not accurate.



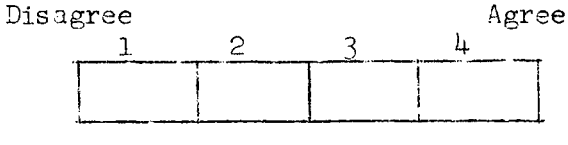
9. A druggist may substitute an equivalent from another manufacturer when a drug is prescribed by its patented name.



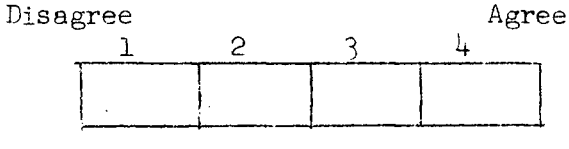
10. The price of therapy when new drugs are used is unnecessarily high because of the existence of equally effective older, cheaper remedies.



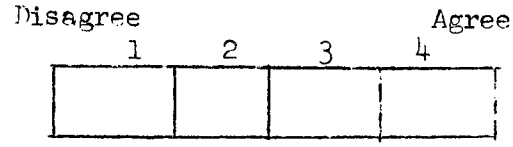
11. Information from detail men regarding claims about drugs is accurate.



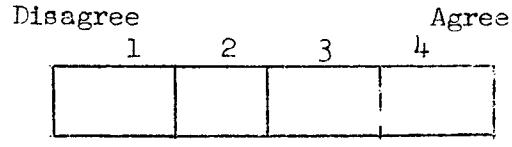
12. It is a poor practice to use non-patented names when prescribing drugs.



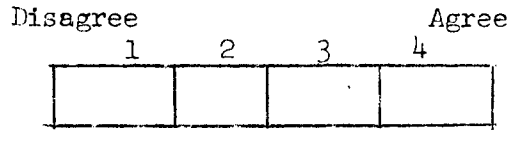
13. Drugs are not placed on the market before being adequately tested.



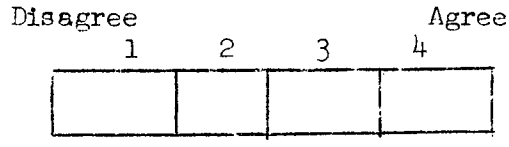
14. It is a good practice to rely upon authoritative therapeutic sources, primarily, for information about drugs.



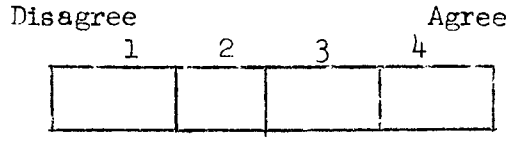
15. The manufacture and sale of drugs is governed by business considerations.



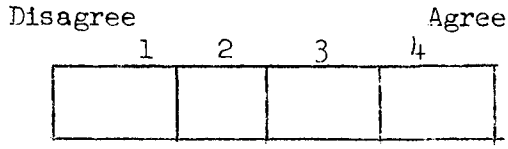
16. No new drugs are issued merely to avoid the patent rights of other companies.



17. Physicians are persuaded by advertising to use new drugs before they have been adequately tested.



18. Drug companies do not try to be accurate in their claims for their products.



PERSONAL DATA

This is an anonymous questionnaire, but some information as to your training and the nature of your practice is necessary for classification of your views.

M.D. degree granted by _____ (University).

Date of M.D. degree _____ (Give date of completion of 4th Year Medicine; not of completion of Interneship)

Number of years of postgraduate training in recognized hospitals _____

Name of Hospital(s) _____

Location of Hospital(s) _____

Certification in _____ (Specialty)

Date of Certification _____

Fellowship in _____ (Specialty)

Date of Fellowship _____

Number of years in general practice _____

Urban _____ (Years in urban practice)

Rural _____ (Years in rural practice)

Number of years in Specialty _____

_____ (Years on staff of a teaching hospital)

_____ (Years on staff of other hospitals)

Number of postgraduate courses attended in last 3 years concerned with therapeutics _____

..... Continued Page 2.

PERSONAL DATA

Quantitatively speaking, where do you get most information about new drugs (list 1, 2, 3 etc. in order of decreasing amount)

Advertising mail by Pharmaceutical Firms _____

Articles in Medical Journals _____

Colleagues in Medicine _____

Advertising in Medical Journals _____

Pharmacists _____

Detail men from Pharmaceutical firms _____

Postgraduate Short Courses in Therapeutics _____

Textbooks _____

Other _____

APPENDIX B

THE COVERING LETTER WHICH ACCOMPANIED THE QUESTIONNAIRE.

THE UNIVERSITY OF BRITISH COLUMBIA

VANCOUVER 8, CANADA

FACULTY OF MEDICINE
DEPARTMENT OF CONTINUING MEDICAL EDUCATION

April 3rd, 1963

Dear Doctor:

The Departments of Pharmacology of the Faculties of Medicine of the University of Alberta and The University of British Columbia are attempting to evaluate the effectiveness of teaching programmes, which it is hoped will lead to a proper attitude towards claims for new drugs and increase knowledge regarding the responsibilities of physicians in the use of drugs. As an aid in evaluating their teaching programme and possibly in redesigning it, these Departments would like to compare the attitudes of experienced medical practitioners to those of their students. They would also like to obtain information as to how physicians acquire their knowledge and opinions about new drugs.

Enclosed is a questionnaire which has been administered to medical students at both Universities at various stages of medical training. It is an anonymous questionnaire and the information elicited on the last page is sought only to allow your answers to be categorized by type of training and experience. The statements in the questionnaire are phrased in such a way as to allow an unambiguous expression of opinion.

In order to obtain the required information a high percentage of doctors must return the completed questionnaire. Answering these questions should require about 15 minutes. In view of the importance of the problems which exist around methods for introducing new drugs safely and of the desirability of having improvements effected by the high standards of our medical graduates rather than by other conceivable methods, the Department of Continuing Medical Education hopes that you will co-operate in what it feels is a worthy endeavour.

A business reply envelope is enclosed for your convenience in returning the completed questionnaire.

Yours sincerely,

Donald H. Williams, M.D.,
Professor and Head,
Department of Continuing Medical Education

Enc.

APPENDIX C

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP OF "UNIVERSITY WHICH GRANTED M.D. DEGREE" TO "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they received their degree from U. of Man. vs. all those indicating they received their degree from some other univ.	1	0.052	
	2	6.727	
	3	3.026	
	4	3.802	
	5	6.328	
	6	4.534	
	7	2.485	
	8	1.854	
	9	2.619	
	10	4.994	
	11	2.568	
	12	0.750	
	13	2.468	
	15	2.752	
	16	3.795	
	17	0.326	
	18	9.982**	
Respondents indicating they received their degree from U. of Alta. vs/ all those indicating they received their degree from some other univ.	1	3.114	
	2	5.627	
	3	3.165	
	4	4.325	
	5	6.077	
	66	0.411	
	7	4.313	
	8	3.131	
	9	0.848	
	10	25.795***	
	11	5.755	
	12	8.178*	
	13	0.303	
	15	2.534	
	16	0.843	
	17	2.897	
	18	3.524	

* signfiicant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value found	z-score obtained from Rank-sums test (when required)
Respondents indicating they received their degree from Europe vs. all those indicating they received their degree from some other univ.	1	3.400	
	3	2.513	
	6	0.370	
	7	3.415	
	8	1.263	
	10	13.452***	
	11	3.745	
	12	2.716	
	13	8.655*	
	17	0.817	
	18	6.233	
Respondents indicating they received their degree from Great Britain vs. all those indicating they received their degree from some other univ.	1	4.084	
	2	10.224**	
	3	4.804	
	4	1.700	
	5	2.113	
	6	3.228	
	7	13.108***	
	8	2.962	
	9	0.896	
	10	13.360***	
	11	7.566	
	12	8.122*	
	13	3.005	
	15	4.706	
	16	1.155	
	17	0.231	
	18	1.547	
Respondents indicating they received their degree from U.B.C. vs. all those indicating they received their degree from some other univ.	1	3.062	
	2	2.320	
	3	1.688	
	4	17.398***	
	5	6.985	
	6	4.946	
	7	1.181	
	8	5.067	
	9	7.378	
	10	1.859	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value found	z-score obtained from Rank-sums test (when required)
	11	9.381*	
	12	4.964	
	13	3.113	
	15	9.881**	
	16	6.529	
	17	4.186	
	18	8.524*	
Respondents indicating they received their degree from McGill University vs. all those indicating they received their degree from some other univ.	1	5.179	
	2	0.031	
	3	0.686	
	4	0.292	
	5	1.785	
	6	2.043	
	7	4.683	
	8	0.988	
	9	10.928**	z = .2 (N.S.)
	10	3.633	
	11	0.499	
	12	1.339	
	13	2.342	
	15	0.015	
	16	3.026	
	17	1.905	
	18	2.540	
Respondents indicating they received their degree from U. of Toronto vs. all those indicating they received their degree from some other univ.	1	0.221	
	2	4.809	
	3	6.569	
	4	4.941	
	5	7.263	
	6	1.123	
	7	1.266	
	8	2.202	
	9	5.596	
	10	1.219	
	11	5.105	
	12	2.198	
	13	2.396	
	15	5.935	
* significant at the .05 level	16	2.971	
** significant at the .02 level	17	0.394	
*** significant at the .01 level	18	2.060	(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they received their degree from U. of Western Ont. vs. all those indicating they received their degree from some other univ.	1, 6, 7, 8, 10, 11, 13, 18	(Results not obtained due to difficulty with Computer)	
Respondents indicating they received their degree from Queen's University vs. all those indicating they received their degree from some other univ.	1	1.553	
	2	2.279	
	3	0.804	
	4	2.652	
	5	0.458	
	6	0.054	
	7	4.414	
	8	3.573	
	9	2.220	
	10	13.357***	z=less than 1 (N.S.)
	11	3.861	
	12	3.066	
	13	1.697	
	15	7.413	
	16	1.873	
	17	1.475	
	18	1.704	

APPENDIX D

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP BETWEEN "DATE OF M.D. DEGREE" AND "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating year of graduation to be 1960 or later vs. Respondents indicating year of graduation to be before 1960	1	0.632	
	3	6.307	
	4	1.526	
	5	12.208***	
	6	7.049	
	7	0.760	
	8	2.727	
	10	2.895	
	11	3,128	
	12	14.697***	
	13	6.740	
	16	0.111	
	17	7.005	
	18	5.468	
Respondents indicating year of graduation to be 1955 or later vs. Respondents indicating year of graduation to be before 1955	1	5.094	
	2	3.772	
	3	14.560***	
	4	3.322	
	5	14.568***	
	6	5.792	
	7	4.252	
	8	8.760*	z=less than .5 (N.S.)
	9	10.255**	
	10	4.501	
	11	3.322	
	12	11.485***	
	13	1.305	
	15	0.429	
	16	2.677	
	17	6.350	
	18	2.286	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating year of graduation to be 1950 or later vs. Respondents indicating year of graduation to be before 1950	1	9.283*	z= -1 (N.S.)
	2	4.187	
	3	13.029**	
	4	8.601*	
	5	24.421***	
	6	20.419***	z= -1.4 (N.S.)
	7	4.413	
	8	8.650*	z= .2 (N.S.)
	9	14.106***	
	10	18.906***	
	11	6.303	
	12	11.620***	z= .7 (N.S.)
	13	1.441	
	15	0.315	
	16	8.279*	
	17	10.276***	z= less than 1(N.S.)
	18	1.904	
Respondents indicating year of graduation to be 1945 or later vs. Respondents indicating year of graduation to be before 1945	1	10.162**	z= 1.4 (N.S.)
	2	9.479*	z= 3.11 ***
	3	8.488*	
	4	17.750***	
	5	36.799***	
	6	20.239***	
	7	0.646	
	8	6.639	
	9	20.457***	
	10	32.010***	
	11	7.695	
	12	9.473*	z= 1.16 (N.S.)
	13	1.231	
	15	1.592	
	16	6.385	
	17	5.115	
	18	2.483	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating year of graduation to be 1930 or later vs. Respondents indicating year of graduation to be before 1930	1	0.712	
	2	11.460***	
	3	3.502	
	4	8.635*	z= -.3 (N.S.)
	5	12.956***	
	6	4.648	
	7	4.753	
	8	0.801	
	9	15.833***	
	10	16.906***	
	11	4.144	
	12	9.301*	
	13	0.550	
	15	4.329	
	16	4.572	
	17	0.395	
	18	2.718	
Respondents indicating year of graduation to be 1925 or later vs. Respondents indicating year of graduation to be before 1925	1	3.469	
	3	0.757	
	6	4.608	
	7	9.740*	z= -1.888 *
	8	3.518	
	10	7.392	
	11	8.254*	
	13	0.360	
	17	4.890	
	18	1.601	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

APPENDIX E

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP BETWEEN "NUMBER OF YEARS OF POSTGRADUATE TRAINING" AND "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating more than 1 year vs. all those indicating only 1 year	1	1.777	
	2	3.731	
	3	10.156**	
	4	2.684	
	5	2.101	
	6	7.516	
	7	4.749	
	8	0.268	
	9	7.838*	
	10	1.971	
	11	1.228	
	12	0.926	
	13	2.523	
	15	1.764	
	16	11.067**	
	17	2.217	
	18	0.561	
Respondents indicating more than 2 years vs. all those indicating 2 or fewer	1	1.584	
	2	9.299*	
	3	6.258	
	4	0.136	
	5	4.718	
	6	6.609	
	7	9.372*	
	8	1.005	
	9	0.535	
	10	2.513	
	11	2.926	
	12	10.213**	
	13	12.311***	
	15	7.452	
	16	5.370	
	17	3.729	
	18	0.603	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating more than 3 years vs. all those indicating 3 or fewer	1	3.942	
	2	7.695	
	3	3.162	
	4	1.812	
	5	3.702	
	6	6.951	
	7	3.643	
	8	2.445	
	9	1.360	
	10	1.723	
	11	3.293	
	12	7.970*	
	13	4.605	
	15	7.040	
	16	5.213	
	17	5.231	
	18	1.461	
Respondents indicating more than 4 years vs. all those indicating 4 or fewer	1	1.455	
	2	11.920***	
	3	3.156	
	4	3.648	
	5	2.473	
	6	10.934	
	7	4.015	
	8	1.781	
	9	2.225	
	10	1.208	
	11	0.582	
	12	5.568	
	13	4.248	
	15	6.874	
	16	2.198	
	17	6.308	
	18	2.699	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating more than 5 years vs. all those indicating 5 or fewer	1	2.173	
	2	5.043	
	3	0.801	
	4	1.590	
	5	1.097	
	6	3.207	
	7	0.611	
	8	0.698	
	9	0.664	
	10	0.767	
	11	0.736	
	12	9.618*	
	13	6.279	
	15	2.701	
	16	4.826	
	17	4.083	
	18	0.819	
Respondents indicating more than 6 years vs. all those indicating 6 or fewer	1	0.964	
	2	3.819	
	3	2.160	
	4	3.300	
	5	2.333	
	6	5.664	
	7	1.919	
	8	1.385	
	9	1.609	
	10	1.911	
	11	2.679	
	12	3.926	
	13	6.622	
	15	2.588	
	16	3.444	
	17	2.882	
	18	0.991	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

APPENDIX F

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP BETWEEN "SPECIALTY" AND "SKEPTICISM"

Comparison made	Questionnaire sta Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating their specialty was Internal Medicine vs. All those indicating some other specialty	1	2.469	
	3	2.431	
	4	6.100	
	5	1.327	
	6	3,393	
	7	7.504	
	8	3.602	
	10	2.811	
	11	6.519	
	12	2.232	
	13	11.852***	
	16	1.175	
	17	7.835*	
	18	10.060**	
Respondents indicating their specialty was Surgery vs. All those indicating some other specialty	1	3.453	
	2	4.946	
	3	1.164	
	4	8.542*	z = 2.93 ***
	5	3.952	
	6	0.713	
	7	4.776	
	8	1.191	
	9	1.152	
	10	2.663	
	11	1.108	
	12	2.256	
	13	1.074	
	15	5.155	
	16	1.096	
	17	1.187	
	18	2.562	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating their specialty was Anesthesia vs. All those indicating some other specialty	1	9.441*	
	3	5.355	
	4	5.125	
	6	10.472**	
	7	1.186	
	8	3.065	
	10	3.759	
	11	2.851	
	13	3.670	
	16	0.457	
	17	6.347	
	18	9.585*	
Respondents indicating their specialty was Obstetrics and Gynecology vs. All those indicating some other specialty	1	8.780*	z = less than 1 (N.S.)
	3	0.965	
	4	1.813	
	5	1.889	
	6	4.137	
	7	3.542	
	8	0.210	
	10	4.215	
	11	2.648	
	13	2.755	
	18	0.830	
Respondents indicating their specialty was Public Health, Bacteriology, Pathology, Pathology and Bacteriology	1	1.408	
	3	0.382	
	6	5.395	
	7	3.547	
	8	3.830	
	10	0.428	
	11	0.868	
	13	4.622	
	17	2.337	
	18	1.813	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test(when required)
Respondents indicating their specialty was Pediatrics	1	0.377	
	3	2.593	
	6	6.947	
	7	2.972	
	8	5.472	
	10	2.736	
	11	3.871	
	13	1.665	
Respondents indicating their specialty was Radiology	1	2.750	
	6	6.807	
	7	0.714	
	8	4.480	
	10	0.125	
	11	0.121	
	13	0.992	
	18	1.043	
Respondents indicating their specialty was Psychiatry	1	0.257	
	3	6.309	
	6	10.583**	
	8	0.697	
	10	2.107	
	11	1.224	
	13	2.491	
	17	2.951	
	18	0.616	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

APPENDIX G

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP OF "YEARS IN GENERAL PRACTICE" TO "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating over 5 years vs. all those indicating 5 or fewer	1	3.066	
	2	7.023	
	3	2.714	
	4	7.125	
	5	22.600***	
	6	10.402**	z= 1.1 (N.S.)
	7	8.493	
	8	2.785	
	9	4.593	
	10	2.741	
	11	0.548	
	12	0.058	
	13	0.246	
	15	2.925	
	16	2.275	
	17	2.140	
	18	0.542	
Respondents indicating over 10 years vs. all those indicating 10 or fewer	1	3.951	
	2	5.465	
	3	1.257	
	4	16.298***	z= .1 (N.S.)
	5	28.193***	z= -2.4 ***
	6	14.156***	
	7	4.416	
	8	3.176	
	9	10.806**	
	10	7.318	
	11	1.709	
	12	0.855	
	13	0.032	
	15	0.477	
	16	5.045	
	17	4.363	
	18	5.410	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating over 20 years vs. all those indicating 20 or fewer	1	2.170	
	2	8.084	
	3	2.923	
	4	11.861***	z= less than 1
	5	25.944***	
	6	11.369***	
	7	2.700	
	8	2.969	
	9	15.757***	
	10	11.369***	
	11	2.905	
	12	12.061***	
	13	1.938	
	15	1.138	
	16	5.910	
	17	0.958	
	18	3.635	
Respondents indicating over 30 years vs. all those indicating 30 or fewer	1	2.452	
	3	1.193	
	6	2.378	
	7	2.885	
	8	0.465	
	10	8.673*	
	11	6.533	
	13	1.641	
	18	2.111	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

APPENDIX H

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP OF "YEARS IN SPECIALTY" TO "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating over 5 years in Specialty vs. all those indicating 5 or fewer	1	4.965	
	2	2.814	
	3	5.293	
	4	10.868**	
	5	9.660*	
	6	9.998**	z=-.8 (N.S.)
	7	1.680	
	8	6.254	
	9	3.962	
	10	7.397	
	11	12.611***	z= -1 (N.S.)
	12	2.461	
	13	3.824	
	15	4.867	
	16	4.801	
	17	3.439	
	18	5.370	
Respondents indicating over 10 years in Sepcialty vs. all those indicating 5 or fewer	1	3.688	
	2	2.982	
	3	4.507	
	4	5.746	
	5	7.901*	
	66	7.772	
	7	1.866	
	8	2.572	
	9	5.011	
	10	17.462***	
	11	6.751	
	12	2.249	
	13	5.683	
	15	2.945	
	16	18.278***	
	17	5.146	
	18	1.507	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required
Respondents indicating over 20 years in Specialty vs. all those indicating 20 or fewer	1	10.182**	z= .03 (N.S.)
	2	9.399*	
	3	10.900**	
	4	5.859	
	5	8.380	
	6	22.036***	
	7	0.356	
	8	3.275	
	9	7.873*	
	10	10.815**	
	11	3.302	
	12	5.299	
	13	1.106	
	15	11.176**	
	16	13.960***	
	17	1.872	
	18	2.926	
Respondents indicating over 30 years in Specialty vs. all those indicating 30 or fewer	11	3.022	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

APPENDIX I

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP OF "TYPE OF HOSPITAL STAFF EXPERIENCE" TO "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they had been on staff of only teaching hospitals vs. respondents indicating they had been on staff of only "other" hospitals	1	0.816	
	6	4.534	
	7	0.500	
	10	1.338	
	11	2.305	
	13	3.013	
Respondents indicating they had been on staff of teaching or "other" hospitals vs. respondents indicating they had not been on any hospital staff	1	1.563	
	2	0.095	
	3	4.890	
	4	5.926	
	5	1.502	
	6	6.391	
	7	1.188	
	8	1.171	
	9	0.228	
	10	2.496	
	11	2.149	
	12	3.662	
	13	5.396	
	15	2.544	
	16	1.162	
	17	6.484	
	18	3.425	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they had been on staff of teaching hospitals vs. respondents indicating they had not been on any hospital staff	1	1.243	
	2	0.890	
	3	6.324	
	4	2.960	
	5	1.883	
	6	6.812	
	7	0.747	
	8	0.158	
	9	0.363	
	10	4.510	
	11	3.698	
	12	3.610	
	13	8.063*	
	15	6.353	
	16	1.134	
	17	7.051	
	18	1.304	
Respondents indicating they had been on staff of only "other" hospitals vs. respondents indicating they had not been on any hospital staff	1	2.728	
	2	1.391	
	3	4.154	
	4	4.060	
	5	4.402	
	6	7.315	
	7	0.915	
	8	1.204	
	9	6.910	
	10	0.696	
	11	2.998	
	12	2.243	
	13	3.653	
	15	0.284	
	16	0.727	
	17	3.845	
	18	5.736	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

APPENDIX J

FINDINGS MADE IN INVESTIGATING THE RELATIONSHIP OF "SKEPTICISM" TO "NUMBER OF POSTGRADUATE COURSES CONCERNED WITH THERAPEUTICS, ATTENDED IN LAST 3 YEARS".

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they attended none vs. Respondents indicating they attended some	1	1.875	
	2	2.019	
	3	2.930	
	4	1.828	
	5	2.214	
	6	3.855	
	7	2.158	
	8	6.926	
	9	1.047	
	10	1.255	
	11	8.367*	
	12	3.860	
	13	1.493	
	15	4.444	
	16	5.492	
	17	0.745	
	18	5.262	
Respondents indicating they attended 1 or fewer vs. Respondents indicating they attended more than 1	This set of comparisons not completed due to difficulty with the Computer.		
Respondents indicating they attended 2 or fewer vs. Respondents indicating they attended more than 2	1	4.331	
	2	3.280	
	3	1.376	
	4	6.779	
	5	3.678	
	6	6.318	
	7	4.804	
	8	3.030	
	9	0.829	
	10	2.428	
	11	4.389	
	12	6.458	
	13	0.948	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
	15	5.673	
	16	2.243	
	17	2.879	
	18	3.887	
Respondents indicating they attended 3 or fewer vs. Respondents indicating they attended more than 3	1	0.879	
	2	3.407	
	3	0.581	
	4	3.077	
	5	10.466**	
	6	8.652*	
	7	3.775	
	8	1.153	
	9	2.186	
	10	2.517	
	11	2.505	
	12	1.212	
	13	0.669	
	15	2.136	
	16	1.195	
	17	3.215	
	18	3.234	
Respondents indicating they attended 4 or fewer vs. Respondents indicating they attended more than 4	1	1.294	
	2	2.552	
	3	0.716	
	4	2.394	
	5	7.932*	
	6	10.014**	
	7	2.363	
	8	0.517	
	9	2.672	
	10	2.014	
	11	3.367	
	12	2.101	
	13	2.571	
	15	2.751	
	16	0.746	
	17	1.661	
	18	4.282	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparisons made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they attended 5 or fewer vs. Respondents indicating they attended more than 5	1	0.435	
	2	3.500	
	3	2.216	
	4	2.526	
	5	10.980**	
	6	5.969	
	7	4.569	
	8	0.895	
	9	2.219	
	10	2.271	
	11	3.035	
	12	6.979	
	13	4.879	
	15	2.705	
	16	2.486	
	17	0.492	
	18	1.615	
Respondents indicating they attended 6 or fewer vs. Respondents indicating they attended more than 6	6	8.093*	
	10	1.062	
	11	7.177	
	13	5.580	

* significant at the .05 level
** significant at the.02 level
*** significant at the.01 level

APPENDIX K

FINDING MADE IN INVESTIGATING THE RELATIONSHIPS BETWEEN

"PRIMARY SOURCE OF INFORMATION ABOUT NEW DRUGS", AND "SKEPTICISM"

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating their primary source for information was Advertising mail by pharmaceutical firms vs. Respondents indicating some other primary source	1	7.296	
	2	1.675	
	3	2.890	
	4	5.665	
	5	4.568	
	6	4.282	
	7	5.291	
	8	2.409	
	9	1.264	
	10	1.139	
	11	4.495	
	12	6.202	
	13	3.974	
	15	2.740	
	16	1.357	
	17	4.470	
	18	0.459	
Respondents indicating their primary source for information was Articles in medical journals vs. Respondents indicating some other primary source	1	3.137	
	2	1.559	
	3	1.215	
	4	2.197	
	5	2.319	
	6	0.289	
	7	19.989***	
	8	1.680	
	9	4.357	
	10	0.620	
	11	2.288	
	12	6.001	
	13	0.497	
	14	0.541	
	15	0.717	
	16	0.505	
	17	0.669	
	18	4.878	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparisons made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating their primary source for information was Colleagues in medicine vs. Respondents indicating some other primary source	1	0.988	
	2	0.411	
	3	0.640	
	4	1.868	
	5	0.989	
	6	2.111	
	7	4.084	
	8	0.548	
	9	2.055	
	10	1.811	
	11	0.355	
	12	2.113	
	13	0.189	
	15	0.288	
	16	0.193	
	17	0.824	
	18	3.015	
Respondents indicating their primary source for information was Advertising in medical journals vs. Respondents indicating some other primary source	1	5.412	
	3	0.947	
	6	6.529	
	7	1.585	
	8	2.967	
	10	0.115	
	11	3.687	
	13	1.459	
	18	6.076	
Respondents indicating their primary source for information was Detail men from pharmaceutical firms vs. Respondents indicating some other primary source	1	8.391*	
	2	6.442	
	3	8.254*	
	4	8.922*	
	5	1.274	
	6	3.008	
	7	32.215***	
	8	5.215	
	9	1.718	
	10	11.982***	
	12	11.939***	
	13	4.316	
	15	5.422	
	16	0.408	
	17	11.360***	
	18	6.244	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparison made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating their primary source for information was Postgraduate short courses in therapeutics vs. Respondents indicating some other primary source	1	1.886	
	3	0.301	
	4	6.046	
	5	10.056**	
	6	2.011	
	7	5.796	
	8	0.476	
	10	6.989	
	11	5.206	
	12	1.064	
	13	3.384	
	15	7.117	
	16	2.336	
	17	1.137	
	18	0.966	
Respondents indicating their primary source for information was Textbooks vs. Respondents indicating some other primary source	1	1.959	
	2	1.862	
	3	0.514	
	4	0.535	
	5	1.604	
	6	7.676	
	7	4.079	
	8	1.204	
	9	4.425	
	10	9.518*	
	11	3.689	
	12	4.286	
	13	0.216	
	15	4.574	
	16	1.537	
	17	3.078	
	18	6.600	
Respondents indicating their primary source for information was "other" vs. Respondents indicating some other primary source	1	6.353	
	2	1.292	
	3	1.427	
	4	1.558	
	5	2.601	
	6	6.140	
	7	0.830	
	8	2.573	
	9	1.559	
	10	6.797	

* significant at the .05 level
** significant at the .02 level
*** significant at the .01 level

(continued)

Comparisons made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
	11	6.689	
	12	2.135	
	13	2.172	
	16	3.015	
	17	5.241	
	18	2.096	

APPENDIX L

FINDINGS MADE IN COMPARING, FOR DEGREE OF "SKEPTICISM", RESPONDENTS WHO HAD RECEIVED POSTGRADUATE TRAINING AT UNIVERSITY-AFFILIATED HOSPITAL(S) AGAINST THOSE WHO HAD RECEIVED POSTGRADUATE TRAINING AT "NON-AFFILIATED" HOSPITAL(S) ONLY

Comparisons made	Questionnaire Statement	Chi-square value obtained	z-score obtained from Rank-sums test (when required)
Respondents indicating they had received postgraduate training at university-affiliated hospital(s) vs. Respondents indicating they had received postgraduate training at "non-affiliated" hospital(s) only	1	5.380	
	2	1.319	
	3	1.174	
	4	1.328	
	5	6,378	
	6	5.048	
	7	2.462	
	8	4.523	
	9	1.306	
	10	4.496	
	11	0.765	
	12	0.242	
	13	0.358	
	15	1.896	
	16	4.298	
	17	3.401	
	18	1.732	