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**Long Term Economic Forecasts**



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# *THE JOURNAL*

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## *AMERICAN COLLEGE OF DENTISTS*

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**A Quarterly Publication Presenting  
IDEAS IN DENTISTRY**

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Summer 1981

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## News of Fellows

**Carlton J. McLeod**, Dental Corps, USN, has been selected for promotion to Rear Admiral. A periodist, Admiral McLeod is currently Head of the Professional Branch of the Dental Division of the Navy Bureau of Medicine and Surgery.

**Monica Novitski** of Albuquerque, New Mexico, received a Merit Award from her Alma Mater, Marquette University. A pedodontist, Dr. Novitski previously was a practicing dental hygienist. She was involved in the development of the dental programs at the University of New Mexico and was honored by having a hall named in her honor. Presently, she is Professor Emeritus of Dental Hygiene.

**Robert H. Peterson**, Milwaukee, Wisconsin, received an Alumni Service Award from Marquette University for his services on the Marquette Alumni Board. Dr. Peterson is an Assistant Professor in the Practice Management Department of the M. U. Dental School and has served on many organizations in dentistry.

**Jerome S. Grosby** of St. Louis was honored with a Merit Award by the Greater St. Louis Dental Society in recognition of his weekly dental health column in the St. Louis newspaper. The Award acknowledged his activities in educating the public in dental health care. (see related story on page 70).



Rear Admiral Carlton J. McLeod,  
DC, USN

**Russell W. Buchert**, St. Louis, was presented with the Gold Medal Award, the highest award of the Greater St. Louis Dental Society for distinguished and outstanding service to the profession and to the community. (see related story on page 70)

**Don L. Allen**, Dean of the University of Florida College of Dentistry since 1973, has been selected as President-Elect of the American Association of Dental Schools (AADS). He will serve as president during the 1982-83 term.



# Section News

## Metropolitan Washington Section

The winter meeting of the Section was held at the National Naval Medical Center under the chairmanship of Irving M. Rothstein. Following the committee reports a gift was presented to outgoing Secretary-Treasurer David E. Beaudreau who was leaving his position as Dean of the Georgetown University School of Dentistry.

Many students were present as guests to view the awards presented each year by the Section to the junior dental students who best exemplified professionalism in their respective schools. Jim Jackson and Bill Wohlfarth presented the awards to Elizabeth Morris from Howard University and Ray McCullough from Georgetown Uni-

versity, each of whom made eloquent and gracious acceptance remarks.

Bernard Yanowitz introduced Dr. Murray Grant, the Chief Medical Advisor of the U.S. Government Accounting Office, who discussed a report his department had sent to Congress in March of 1980 entitled "Increased Use of Expanded Function Dental Auxiliaries Would Benefit Consumers, Dentists and Taxpayers".

Bernard Yanowitz

## Project Library

Approximately two and a half years ago, the Project Library Committee of



Pictured standing, left to right, at Woodrow Wilson High School in Washington, DC, are Mrs. Schneiderman, Librarian; Dr. Irving Rothstein, Chairman of the Washington Section; Mrs. Zens, Librarian; and Dr. Henry Heim, Chairman for Project Library. Seated are students Waseem Haq, left, and Carole Spencer.

the Metropolitan Washington Section of the American College of Dentists embarked on a most ambitious undertaking. It set out to place a Project Library package in every public and private senior high school in the Metropolitan Washington area. Geographically, this area encompasses the District of Columbia, Alexandria, Arlington County, Virginia, Montgomery County, Maryland, and Prince George's County, Maryland.

Now, thirty months later, it has achieved its goal and then some.

Project Library packages have been placed in 101 senior high schools, 7 junior high schools, 9 elementary schools, 1 vocational school, 1 university, 1 county library, and 21 out of town school libraries. This total of 141 Project Library packages is believed to be the highest number ever distributed by any Section. This effort on the part of the Section guarantees the availability of appropriate literature on dentistry where it is needed most—on the library shelves of our school systems.

## Western New York Section

The nominating committee met in Rochester on February 22, 1981 to select the following slate of officers: Chairman: Dr. Dick Johnson, Vice Chairman: Dr. Tom Sweet, Secretary-Treasurer: Dr. Bernie Tofany. Immediate past chairman, Dr. Newt White, was commended for his work on behalf of the College during his tour of office.

It was decided that a moratorium would be placed on section dues for 1981.

A lengthy discussion also took place at this meeting concerning the purpose and activity of the section and a very natural consideration developed. The dental profession is exposed to more pressure for change today than probably ever before. Is it any wonder that many, especially the more recent graduates, are seriously confused as to what drummer to follow. Where can they look for guidance?

The American College is imbued with the highest ideals for the dental profession and its service to humanity. It is composed of members who have verified these ideals by their outstanding contributions to the profession and society. Where is there a better source of guidance for a profession and society. Where is there a better source of guidance for a profession in troubled waters? Fellowships were not awarded to put these individuals out to pasture and here is a function for which they are best qualified to perform. But how?

One of the suggestions was to adopt carefully considered positions of the various issues and to inform the dental profession of these positions. At the same time, we should provide credibility to these positions by better informing the dentists about the College and what it stands for.

Thomas O. Sweet



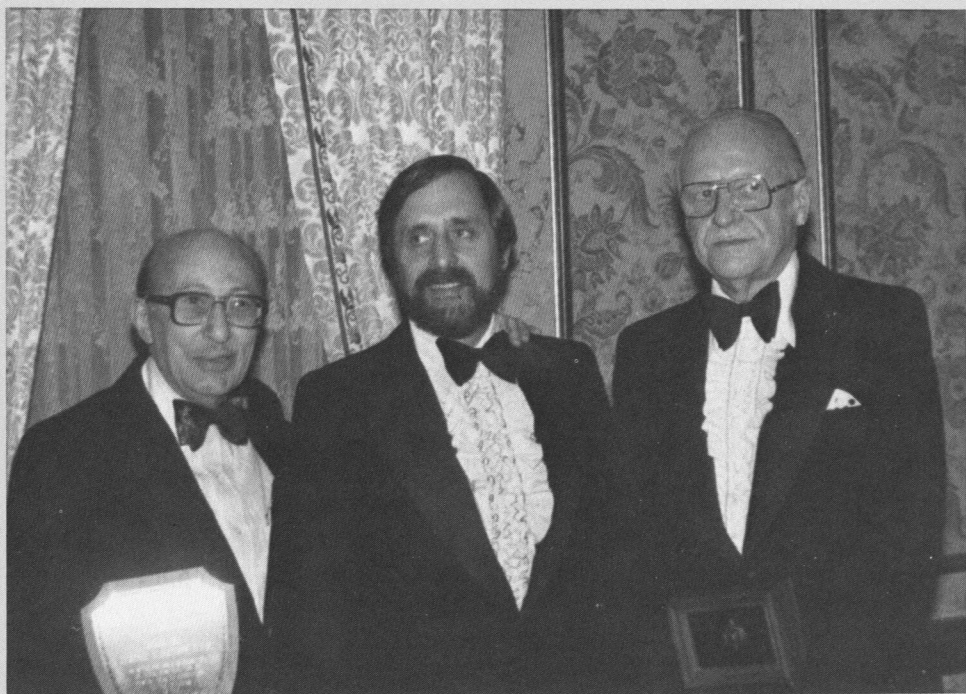
## St. Louis Section

Dr. Bisch, the retiring President of the Greater St. Louis Dental Society, presented its Merit Award to Dr. Jerome S. Grosby who writes a weekly Dental Health column for the St. Louis Globe-Democrat. Dr. Grosby was honored for his activities in educating the public in proper dental health care.

Dr. Russell W. Buchert was presented the Gold Medal Award. This is the society's highest award and is given in recognition of dentists who distinguish themselves by performing unusual and outstanding service, bene-

fitting the health and welfare of the dental society, community, state or nation and who typify the ideals of good citizenship.

Doctors Grosby and Buchert are both members of the American College of Dentists with Dr. Buchert serving as Chairman of the St. Louis Section. Previous recipients of the Gold Medal Award were Doctors Otto Brandhorst, Harold Hillenbrand, Robert Shira, Max Kornfeld, Charles Voeker and Joseph Hagan. Each one is a Fellow in the American College of Dentists.



Left to right, Dr. Jerome S. Grosby; Dr. Walter E. Bisch, President of the Greater St. Louis Dental Society, and Dr. Russell W. Buchert. Doctors Grosby and Buchert were honored for their activities on behalf of the profession.



The St. Louis Section met January 22 at the University Club. The excellent program was entitled "Chemicals and Conflict" presented by Dr. Byron Williams of the Monsanto Chemical Company.

Dr. Buchert reported that there will be no Brandhorst Award this past year as there was no Senior graduating class at Washington University due to the change back to a four-year curriculum.

Mr. James Brophy, Executive Director of the American Association of Orthodontists, was awarded an Honorary Fellowship in our Section.

New Section officers are George Selfridge, Chairman; William Kelly, Vice-Chairman; and Everett Roeder, Secretary-Treasurer.

Everett R. Roeder

## Florida Section

The Florida Section annually presents the Senior Student Award for Outstanding Professionalism at the University of Florida College of Dentistry. The Section also supports student participation in the remote dental clinic in Lafayette County.

Section officers are Chairman Don L. Allen, Dean of the University of Florida Dental School; Vice-Chairman Leslie B. Bell of West Palm Beach; and Secretary-Treasurer Lee Eggnatz of Hollywood.

Dean Don Allen was recently selected as president-elect of the American Association of Dental Schools for the 1982-83 term.

Lee Eggnatz

## New York Section

The New York Section held its March meeting at the Harvard Club in New York City. The newly elected officers for this year are Henry I. Nahoum, Chairman, George L. O'Grady, Vice Chairman, Howard L. Ward, Historian and Board Members Joseph Fiasconaro and Robert Fisher.

Dr. Gerard E. McGuirk, our Regent, addressed the group on current activities of the College. Dr. Nahoum presented certificates of appreciation to Dr. Joseph A. Gibson, Past Chairman; Dr. Walter Mossman, Past Regent, and Dr. Anthony Mecca.

Guest speaker for the evening was Alden H. Haffner, O. D., M.P.A., Ph.D., who is the Associate Chancel-

lor for Health Sciences at the State University of New York. Dr. Haffner specializes in public administration and public social policy in health care. His stimulating and provocative speech was entitled, "Societal Pressure Affecting Professionalism in the Health Sciences." He discussed present factors that run counter to professionalism in dentistry and concluded that while professionalism, itself, is not changing, the profession of dentistry is changing. This results in a subsequent decline of professionalism in dentistry.

Howard L. Ward

*Continued on Page 123*

## EDITORIAL

# COPING WITH CHANGE

—A Challenge For The Profession

Change is constant. Things are never as they used to be. The corner grocery has largely succumbed to the efficiency and volume of the super-market. Small cars are replacing large ones. Television has replaced the elegant movie theatre as the entertainment center. Fast-food chains have spread over the country by popular choice. Medicine is now practiced with the aid of scanners and computers.

Dentistry is also undergoing changes, along with the rest of the world, and many dentists are confused, resentful and pessimistic as they try to cope with some of the changes.

Coping with change is a continuing challenge. People always resist change because it is human nature to do so. Some changes are inevitable because of scientific and technological advances which occur in every field. However, other changes are sometimes brought about through debatable social, economic and political actions which may or may not be in the best interests of the public. When proposed changes affect dental care and dentists judge them to be detrimental for the public, the profession is obligated to strongly express its views, opposing such actions where necessary.

What is the future for dentistry? Will solo practitioners really become extinct? Will the quality of dental care diminish with increased utilization of



Dr. Keith P. Blair

auxiliaries? Will the doctor-patient relationship gradually evaporate in the vastness of large clinics? Is the dental insurance allowance table tending to bring about a downgrading of dental treatment from conscientious professional care to a "piece-work" trade by emphasizing payment for tooth-by-tooth procedures? These are some of the present concerns expressed by many dentists.

Shall we just go about wringing our hands and lamenting over actions we have experienced where government is intruding and interfering in professional matters? Shall we become resigned to the trend toward methods of treatment which, in our opinion, will lower the quality of dental care? Or

shall we take the initiative to act in every way possible to counter these actions and trends which we view to be ill-advised? Will the dental profession demonstrate leadership in developing innovative methods that are economically efficient, yet will assure the public of quality care?

Is the dental profession concerned enough at this time to organize a concerted effort to resist changes which will not benefit the patient? How severely must the individual dentist be personally affected by these changes before he wants to get involved in whatever is needed to check such actions?

It is conceded that the future of dentistry is ultimately in the hands of the American people. That may be very good because statistics show that a discriminating public has indicated its preference for *quality* in products and services of all kinds. Why shouldn't the public want quality in its dental care also? Our challenge is to educate the public about the need for regular

treatment and the benefits of good dental care.

If we are genuinely serious about coping with change, we must communicate our concerns to people in every way we can, in every community throughout the country. There are many ways to carry out such a project, but the most effective way is through radio and television. Should dentistry undertake an ambitious and expensive program of this type?

Should dentistry also strive to join with other health organizations and business groups to combine its members into a much larger alliance which has mutual interests in self-preservation and in protecting the public? With such strength in numbers, we could more effectively resist undesirable programs and more successfully advocate measures to improve dental health.

Dentistry should act positively to help affect changes, not just react to changes it dislikes.

Keith P. Blair, DDS

### READERS INVITED TO REPLY

ON THE SUBJECT OF COPING WITH CHANGE, OUR PROFESSION APPARENTLY HAS MORE QUESTIONS THAN ANSWERS AT THIS TIME, AND WE CAN USE ALL OF THE ANSWERS THAT WE CAN GET. OUR READERS ARE INVITED TO CONTRIBUTE THEIR SUGGESTIONS, IDEAS AND OPINIONS ON THE BEST WAYS TO DEAL WITH CURRENT CHANGES AFFECTING DENTISTRY AND ON FUTURE ACTIONS THAT DENTISTRY SHOULD TAKE. WITH THE PERMISSION OF THE AUTHOR, OPINIONS MAY BE PUBLISHED IN FUTURE ISSUES. REPLIES SHOULD BE IN THE FORM OF LETTERS OR ARTICLES AND SENT TO THE EDITOR.



# Managing Innovation and Change In An Organization: Six Principles

ARDEN G. CHRISTEN, D.D.S., M.S.D., M.A.\*

Without change and innovation, humans would lead a restricted, stagnant and dull existence. As Van Goethe has stated, "We must always change, review, rejuvenate ourselves; otherwise we harden."<sup>1</sup>

## Terms Defined

*Change* has been defined as the action of making something different in form, quality or state, i.e., the fact of becoming different. *Innovation*, a term often used synonymously with change, differs slightly, in that it refers to the introduction of something new or novel that deviates from established practice or doctrine.<sup>2</sup> For the purposes of this paper, we shall combine these two definitions under the single term "change"

## Change With Improvement

All forms of progress entail some form of change, but change without improvement is not progress. Change involves altering an object, situation or condition, and it can evolve naturally or be a man-made, devious, contrived effort for personal gain. In my opinion, *true change* occurs through normal growth and natural development and represents real progress—a change generated by new needs, pur-

poses and technological advancements. For example, mankind began his mobility on foot, graduating to the chariot, the horse-drawn buggy and all its variations, motor-driven vehicles and finally to the supersonic jet plane.<sup>3</sup> On the other hand, *contrived change* is often a manipulative process, geared for personal gain or profit and exemplified in many areas of the fashion industry.

## Change is Inevitable

Szilagyi<sup>4</sup> captured the essence of change when he wrote: "The flow of history is continuous. There is only one certainty and that is that changes in our lives, in our science, in our environment will continue. The only source of contentment is to expect the changes and find accommodation with them. The greatest evil is to be satisfied with what exists and deny the need for change". Most of us can remember our student days and recall the exhortations by our graduation keynote speaker to charge into the world and "change society". We may have unconsciously realized that the revolutionary rhetoric somehow didn't ring true or apply to us. Perhaps we were too preoccupied to give it that much thought. Possibly the ideas were too

\*Associate Professor, Department of Clinical Preventive Dentistry, Indiana University School of Dentistry, Indianapolis, Indiana.

utopian in nature or the concepts too radical to be considered seriously. At any rate, we were yet too naive to understand that change is needed, and indeed, inevitable in life.

### **Some Difficulties in Instituting Changes**

As I have already stated, you can have no progress without change. However, it is often difficult to institute changes either in one's life or in an organization. An unknown modern-day prophet was overheard to exclaim, "Changing an institution is like changing a cemetery". Unless you are fortunate enough to start something brand new, fresh attitudes must be

formed and past practices altered among the current members of the group. In an old group, the strong tendency for status quo exists—the larger the organization, the greater the problem. The "Chinese War Lord Program" is often in operation, e.g., "I'll stay in my department, you stay in yours." Somehow, we and our co-workers must be coaxed to shed the idea that simply because things have always been done this way, they should always be continued in the same manner.

Eventually, most of us learn that we have at least partial control over change in our day-to-day life and we can exercise initiative in planning, instituting or modifying some of the changes that will occur.

## **Six Principles**

How can changes be managed most effectively? Although the following guidelines are far from exhaustive, they do take into account some of the lessons learned in recent years.

**Principle Number One: Changes which are instituted in a slow, systematic and deliberate manner are usually more successfully adopted.** Hastily assembled crusades and/or "revolutions" almost inevitably backfire, and the result can be an actual regression. This should not preclude idealistic thinking or long range planning, since a long journey begins with a simple step. Single steps which prove

to be feasible and realistic can help break through some of the barriers to change, especially in a bureaucracy, whereas a giant step could lead in the wrong direction and cause confusion and wasted effort.

**Principle Number Two: Whenever possible, expand the "ownership" of change.** Any kind of change is inherently political, because it usually affects others. The more people who actively participate in and support an innovation or change, the better. In a group-setting, any change that is not supported by key policy or opinion-makers has little chance of success. If

the proposed change is the Chief's idea alone, however, the "Indians" may not be willing to support it. One person advocating a particular change will often have to fight the system. It is wise to encourage open discussion among the staff, enabling varied ideas to surface. Every organization and group has a set of unofficial "norms" which it maintains and enforces, largely by peer pressure. These norms are established by a few opinion leaders and reinforced by group conformity. Change agents should enlist the support of these opinion leaders and of sub-groups and other individuals within the organization.

**Principle Number Three: When contemplating change, the needs of those around us must be considered and efforts made to meet them.** An unwilling but influential staff member can sabotage any constructive strategy. Innovations are most successful when they improve life for all staff members as well as for those being dealt with outside the immediate organization. Anyone choosing a promising strategy should consider which, among a variety of alternatives, will best satisfy the staff.

**Principle Number Four: If you must delegate, select the right individuals to direct innovative changes.** Those who supervise a new program or preside over change must be credible. The young firebrand who is despised by senior staff or the group opinion

leaders, may be eager to take control over a particular project, but could easily alienate the very people that should be persuaded. Implementing a change requires a great deal of sensitivity to group dynamics and individual needs.

**Principle Number Five: Avoid the extremes of rhetoric.** Most of us are pre-conditioned to be defensive when the subject of change is introduced. Most people want to become more effective workers but undeserved excessive praise or criticism will usually hinder true, progressive change. One should be cautious about heralding new proposals as "miracle cures" which will magically solve the problems of organization.

**Principle Number Six: Incorporate in-service training to encourage and initiate change.** Not only must organization members be encouraged to keep abreast of new developments in their field, but they must be allowed the time and incentive to do so. Training in, and discussion of the new strategies can improve group communication and cohesion. We can all learn to improve our interpersonal skills. The psychiatrist, William Glasser<sup>5</sup> maintains that caring relationships are not only essential to growth and happiness, but the need for involvement with others "has been built into our nervous system for the past half-million years".



Other skills which need continual development and improvement are:

**Communication Skills:** techniques for expressing oneself accurately and articulately so that one can better understand the meaning and feelings behind the other person's words and non-verbal behaviors.

**Conflict-Resolution Skills:** means of resolving interpersonal problems in order to maintain and build open, democratic relationships.

**Empathy:** the ability to put oneself in the other person's shoes, and thereby expand the boundaries of one's awareness.

**Team Building and Group Maintenance Skills:** methods of building group identity and providing intra-group support.

**Group Problem-Solving Skills:** ways of organizing groups to solve problems and accomplish tasks.

## Summary

The old axiom, "The only thing that is constant, is change", applies to all aspects of life. In fact, you can have no progress without change. Individual dental practices are constantly in a state of flux. These changes are constantly being engendered by new needs, purposes and technological advancements. Changes can be managed to some extent by careful planning and observing the following guidelines: (1) institute changes in a slow, systematic and deliberate manner, (2) enlist the support of opinion leaders in the organization, (3) consider the needs of others who must put the changes into effect and live with the consequences, (4) select the right individuals to direct changes, (5) avoid the extremes of rhetoric and (6) provide in-service training to initiate change.

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# Long-Term Forecasts of Economic Activity in the Dental Sector

JESSE S. HIXSON

Over a period of three years, the U.S. Public Health Service published two long-term forecasts of economic conditions in the dental sector of the economy.<sup>1,2</sup> These two forecasts were made with two separate econometric models. Although the forecasts were not significantly different in a qualitative sense, there are several distinct differences between the two models. Since their forecasts proved to be in general agreement with each other despite their differences, the models were viewed as mutually complementary to the problem of forecasting the future of the dental sector. Since publication of the two forecasts, however, additional research has been done on the estimation of the first model. This paper provides an updated discussion of the models, their respective forecasts, and their joint validity.

The first published forecast was made with a model of the national supply and demand of dental services based on national time series data. This model, hereinafter called Model I, produces solutions for two variables—annual expenditure on dental services, and the dental component of the consumer price index. The model's parameters were estimated with annual data covering the period 1950-1970. Since publication of the first

model's forecast, the period of observation has been extended to 1975 and alternative estimation techniques were employed to reestimate its equations. The extended versions of Model I differ in several respects from those of the original version, and the forecasts have changed as well.

The second forecast was made with a more elaborate model (Model II). In addition to the quantity and price of dental services, several other variables are determined within Model II including the employment levels of dental assistants, clerical workers and hygienists, and dentists' hours of work and income. To explain employment in the dental sector, the second model concentrates on dental visits as the measure of output rather than real expenditures as in the first model. Various published research results and original research were combined to provide estimates of the second model's parameters. In extending the forecast capability to include employment in the dental sector as well as aggregate prices and expenditures, Model II encountered the limits of the available data in the field; in fact, some of the model's relationships go beyond the limits of the data and rely on educated guesses regarding their parameter values. However, the model's tracking of data subsequent to the years in which

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Jesse S. Hixson is Chief of the Modeling and Research Branch of the United States Health Resources Administration of the U.S. Public Health Services.

its parameters were estimated as well as its general agreement with the predecessor aggregate time series model (Model I) suggested that its forecasts are adequately robust with respect to the more speculative aspects of its quantification.

### **Declining Role for Auxiliaries**

The forecasts of Model II were surprising to some in the dental community. Contrary to widely-held expectations in the dental field, the model did not forecast an increase in the use of dental auxiliaries in the future. Rather, the model predicted that a declining role for auxiliaries will accompany an increasingly stringent economic environment to be faced by dentists as the projected growth in the supply of dentists accelerates the productive capacity of the dental sector ahead of the aggregate demand for services. Competitive

pressures on prices will force dentists, on the average, to economize in their employment of auxiliaries by substituting their own time for that of auxiliaries to a slight degree. The overall predicted effect is for level trend in the total employment of dental auxiliaries over the next decade.

Despite the underlying economic logic of the employment forecast as well as its consistency with observed economic behavior of dentists, it has caused some contention in the dental community. In part, this is because the model is extended beyond the point where a solid empirical base provides grounds for validation in the usual ways. However, the availability of a simpler but more solidly grounded model for comparison provides an alternative way of assessing the reliability of the second model's forecasts. In the following, various aspects of the respective models will be discussed, and their forecasts of dental prices and expenditures compared.

## **A Brief History of the Two Models**

The respective histories of Model I and Model II provide an interesting illustration of the expense and time required for developing such models. Work on Model I began in 1976 and culminated in 1978 with the forecasts of dental demand upon which the published projections of requirements for dentists were based. The initial research on Model II was begun by Professor Paul J. Feldstein at the University of Michigan in 1971. The results of his initial modeling effort

were reported in 1973.<sup>3</sup> The Division of Dentistry, U.S. Public Health Service, started contributing to its development in 1974, and awarded two additional contracts for further work undertaken in 1977 and 1978. Not until 1979 was the model considered a suitable basis for forecasting; it was then used to forecast employment in the dental sector and also to forecast the consequences of several dental benefit plans proposed for national health insurance plans.

While the forecasting capability of Model I is limited to the aggregate demand for dental services and the aggregate supply given the number of dentists, Model II extends the forecasting capability of Model I to the employment of dental auxiliaries—assistants, hygienists, and office clerical personnel. Model II is still not capable of determining the national output of dental graduates as a solution of the model, although some work has been done on that problem. Work is also being done on the labor market behavior of dental hygienists to improve the hygienists' labor supply function of the model.

A complete technical description of Model II is available elsewhere.<sup>4</sup> As it now stands Model II represents the most sophisticated and comprehensive model of any health care sector. The complete model consists of 195 equations, 75 of which model the demand for 3 types of dental services by the population decomposed into 6 age and 4 income groups. 79 equations including production, factor supply and cost functions model the short-run supply of dental services; and 41 equations, primarily dealing with demand and supply of education, model long-run adjustments in the supplies in inputs. The model has exploited to the limit the available data in the field. Even so, much of the model's specification rests on a shallow empirical foundation. The model sharply illuminates the constraints implied for comprehensive and detailed health sector modeling by the quantity and quality of data available to health

system researchers, as well as the resources and time required to develop sound detailed models of health care markets. Such modeling efforts are not straightforward exercises, and require much creativity and ingenuity in exploiting the available data to develop credible and useful forecasts and policy analyses.

In extending the forecasting capability to dental auxiliaries, Model II had to make dentists' economic decisions explicit. As opposed to Model I, which views the whole nation as a single dental care market and thereby abstracts from the aspects of individual dentists' economic behavior, Model II includes a model of individual dental practice in which dentists' employment decisions are the central factor. Within the model, dentists are constrained by the demand they face for dental services, dental auxiliary labor supply, technical limits to producing dental care, and their own work-leisure preferences. Given these constraints, dentists choose the combination of auxiliary inputs and their own time to produce the profit-maximizing level of services.

Perhaps the weakest part of Model II is the relation describing dentists' own work choices. Only limited data have been available to estimate this relationship; consequently, the specific form of the equation describing the relation between dentist's hours worked and the net profit they would require to work an additional hour contains some speculative elements. Therefore, as a forecast diverges farther and farther away from the behavior

observed in the past, the more speculative becomes the solution for the combination of his own and auxiliaries' time that the dentist chooses. Although the model has predicted very closely the number of hours dentists work and the employment of auxiliaries in the years 1976 to 1978 subsequent to the years within which the model was fit to data, confidence in its forecasts of future employment cannot be as great as it would be had the relationship between net profit and dentists' hours worked been fully

estimated with actual data. This uncertainty is the price that must be paid, however, to extend the scope of prediction beyond the limits of a concrete empirical base. Model II, then, must be viewed as at least one step beyond the point where a rigorous test of validity can be conducted internally. Rather, one must resort to external criteria to test the validity of the model. A comparison of Model II's forecasts with those of a more thoroughly empirically based Model I is one such test.

### Comparison of Long-Run Dental Forecasts

Model I and Model II both forecast the future price and total expenditure for dental services. Comparisons of their respective forecasts are made in terms of these two variables, holding all other variables to identical values in both models. The exogenous variables common to both models are population, real personal income, the stock of dentists, and the percent of the population covered by dental prepayment. Model II assumes the same rate of productivity increase as the original version of Model I, 2.75 percent annually. In addition, Model II assumes that the real wages of dental auxiliaries will grow at the same rate as that of the real growth of personal income. The growth rates of the exogenous variables assumed in the forecasts to be compared are summarized in Table 1.

The alternative forecasts derived from the models are shown in Table 2. The table shows the changes in dental service price and expenditure forecast by each model over the period 1975-1990. For easy comparison, the forecasts are presented as values of indexes of real price and real expenditure with 1975 as the base year.

As seen in Table 2, the forecasts of the extended versions of Model I and that of Model II are in very close agreement. Despite significant differences among of the extended versions of Model I, their individual forecasts do not vary more than 2.1% for price and 5.6% for real expenditure. The mean of the forecasts of the extended versions of Model I differs from the forecast of Model II by 1.4% in price and 0.5% in real expenditure.

On the other hand, the forecast of



the original version of Model I differs from that of the mean of the extended versions by -18.4% in price and by 9.73% in real expenditure. These differences can be traced to differences in the responsiveness to price changes of quantity demand and supplied between the two versions. The extended versions are more responsive to changes in income, increasing the projected demand in response to

growth in personal income by a greater amount than the original version. At the same time, supply increases at a slower rate in the extended versions than in the original due to the diminished rate of technological progress in the former. The net result of an increased demand and diminished supply in the extended versions relative to the original is a higher equilibrium price and a lower aggregate consumption of dental services.

Table 1: Growth Rates of Exogenous Variables Projected through 1990

Variable	Average Annual Growth Rate		
	1975-80	1980-85	1985-90
Population <sup>a</sup>	0.9	1.0	0.9
Real Personal Income <sup>b</sup>	2.3	3.4	3.3
Dental Prepayment <sup>c</sup>	2.5	3.3	3.0
Stock of Dentists <sup>d</sup>	3.1	3.6	3.0

a. U.S. Bureau of the Census, Series II

b. Revised from that assumed in references 1 and 2.

c. Revised from that assumed in references 1 and 2.

d. Same as assumed in reference 2.

Table 2: Forecasts of Changes in Dental Services Prices and Expenditures, 1975-1990

Forecast Model	Forecast Index, 1990 a	
	Price	Expenditure
Model II	108.13	180.01
Model I		
1950-1970 2SLS (Original) b	87.05	196.57
1950-1975 2SLS b	106.94	184.65
1950-1975 3SLS c	105.48	178.28
1950-1975 2SLS Auto d	107.72	178.69
1950-1975 3SLS Auto d	106.47	174.93

a. 1975=100; the forecast dental price is relative to the overall CPI; the forecast of dental expenditure is in constant (1975) dollars.

b. 2SLS = Two-Stage Least Squares estimating technique

c. 3SLS = Three-Stage Least Squares estimating technique

d. Auto = estimating technique incorporating First-Order Autogressive disturbances

## Summary and Conclusion

In this paper, the models that have been used by the Public Health Service for long-range forecasting of prices, expenditures, and employment in the dental sector of the private economy were compared. The models include a comprehensive econometric model exploiting a variety of micro and macro data for parameter estimates (Model II), and several versions of a less

complex model based on national time series data (Model I). The comparison was made to examine the joint validity of the two models since Model I has been updated and since some questions have arisen in the dental community over the implications of employment forecasts recently published from Model II. Since the models are based on different units of dental

service (real expenditures in Model I and dental visits in Model II), and since they are based on different data, close agreement between the forecasts of the different models would enhance their joint validity.

Forecasts of gross changes in real prices and real expenditures between 1975 and 1990 are within 1.5% of each other for Model II and the mean of the forecasts of the various extended versions of Model I. Variation of the forecasts of the extended versions of Model I, due to different econometric estimation techniques, are within 1.4% for price and 0.5% for real expenditure. In general, the extended versions of Model I and Model II forecast essentially the same future economic conditions for the dental sector.

Compared to the extended versions, the original version of Model I fore-

casts an 18% lower real price and 10% higher real expenditures in 1990 relative to 1975. The original version forecasts a rapid growth of supply relative to demand. In comparison, the extended versions give less weight to technological change in increasing the supply of services, and more weight to economic growth in increasing the demand for services, than does the original version. These changes in weights can be attributed nominally to the extension of the period of observation from 1950-1970 to 1950-1975. During the additional five years of observation, dental prepayment coverage increased substantially from 6% to 15.5% of the population. Also, the presence of economic controls during the Economic Stabilization Program may have affected the estimates of the weights.

### **Some Dentists Will Work More Hours With Fewer Auxiliaries**

The forecasts for the extended Model I and that of Model II are mutually reinforcing. Both predict a constant-to-slightly rising trend in the real price of dental care, with a substantial increase in output. Model II extends this forecast to implications for employment of dentists and auxiliaries, resulting in a slight increase in dentists' workweek. Thus, the projected expansion in the aggregate stock of dentists through 1990 will result, through dentists' employment decisions, in an increase in total hours

worked by dentists to meet the expanding demand for dental services with a constant total employment of auxiliaries.

The implication of the forecast of the original version of Model I is for a more stringent economic environment in dentistry than that forecast by the extended version or by Model II. To revise the forecasts of the latter in the light of original Model I calls for a downward revision of total auxiliary employment.

Although these forecasts may be

viewed pessimistically by dentists and dental auxiliaries contemplating the future economic status of their professions, they need not be viewed in that way. For, the employment forecasts generated by Model II are for the "average" dentist, and there will certainly be a variance around the average. Thus, one can easily imagine that the future will find the projected increase in the stock of dentists "spilling over"

into rural or sub-urban areas not previously served by dentists. These outlying practices will employ less than the average levels of auxiliaries commensurate with a smaller scale technology, while the supply response in urban areas can still be based on the expanding use of auxiliaries where competitive conditions and concentrations of economic activity make it advantageous.

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# Comparison of Males and Females in the Dental Admissions Interview

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The University of Iowa College of Dentistry has used a standardized, structured interview since 1977 as part of the admission process.<sup>1</sup> During these interviews, the observation was made that female applicants seem to score generally better than male applicants. Whether this observation is valid or not is especially appropriate in view of the increase in women seeking and gaining admittance to dental school.

It is generally accepted that our school environment favors females. Maccoby<sup>2</sup> reports that in pre-school and early school years, females exceed males in most aspects of verbal performance. By approximately age ten, boys have caught up in their reading skills.<sup>3</sup> However, girls usually continue to do better on tests of grammar, spelling, and word fluency. The American College Testing Program (ACT)<sup>4</sup> reports that females obtain better grades throughout their school years, even in subjects where males score higher on their standardized achievement test. They further report that male students generally have higher ACT scores than females, ex-

cept in English, where females score significantly higher.

These findings hold for freshman undergraduate students at this particular university. Males have higher entering ACT scores in all areas except English, yet average high school rank is greater for females. By the end of the first semester, undergraduate females as a group earn a grade-point average (GPA) of 2.77, and males 2.60. This trend continues, as reflected in the entire undergraduate group means of 2.68 for males and 2.86 for females.

However, the admission interview does not intend to measure the ability to achieve good grades. Its prime intent is to assess personality characteristics. The supposition that females would interview better because they do better in school-type situations has no support from the literature.

Dental educators have used a variety of different standardized personality inventories to assess non-grade characteristics of dental students.<sup>5,6,7,8</sup> Gershen<sup>9</sup> compared the personality traits of women dental students to those of their male counterparts, as well as to the norms for women. It was found

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that the sexes were more similar to each other than to the population norms. Coombs<sup>10</sup> reported that males and females possess similar motivation and intrinsic values when selecting dentistry as a career. Graham<sup>11</sup>

reported a sex difference in the results of the Dental Admissions Test (DAT), but this difference was neither large nor consistent, and he did not feel it was sufficient to affect the admission process.

## METHOD

Since the observation that females seem to interview stronger than males was only conjecture, a study was designed to provide evidence of any sex difference specific to the interview. Also within the framework of the study, it was intended to compare dental applicants to general university students using the same instrument. From the applicant pool of interviewed residents for the 1977-78 admissions cycle, a random sample of  $N = 20$  males and the total group of  $N = 20$  females were selected. The other half of the study were randomly selected undergraduate students from this University, with equal numbers of males and females, ( $N = 20$ ). A restriction was placed on the undergraduate subjects which attempted to reflect the population from which dental applicants emerge. These subjects had to be enrolled in a junior or senior class

level, and had to have a GPA of 2.5 or higher. In addition, no professional students, or those with a pre-professional major, were selected in the undergraduate sample.

Data from the dental applicant interviews were secured from the admission records, while the undergraduate students were interviewed by the same faculty who conducted the dental interviews. The interview format was the same for all subjects, except the undergraduate students were paid ten dollars to participate in the study. All interviews were scored from audio tapes by qualified analysts,\* and the total score of the interview was used. A two factor analysis of variance was performed to determine differences between groups and a two factor analysis of covariance was employed using GPA as the covariate.

## RESULTS (See Table I on next page)

Female applicants were found to have a significantly higher total interview score than did the male applicants, 59.90 as compared to 54.50. The

population mean of the total applicant group from which they were sampled was 52.51 with SD of 10.89. When examining overall GPA's at the

\*previous studies showed the rater agreement of the analysis .85 or higher.

TABLE I

## GROUP MEANS

## INTERVIEW SCORES COVARIED WITH GRADES

	<u>APPLICANT</u>		<u>UNDERGRADUATE</u>		<u>COMBINED</u>	
	Interview	GPA	Interview	GPA	Interview	GPA
FEMALES	59.90 *58.72	3.44	47.95 *48.50	3.14	53.95 *53.61	3.29
MALES	54.50 *54.58	3.22	43.55 *44.09	3.14	49.02 *49.34	3.18
COMBINED	57.20 *56.65	3.30	45.75 *46.29	3.14		

\*covaried means

Analysis of Covariance

<u>Source</u>	<u>DF</u>	<u>SS</u>	<u>F</u>	<u>P</u>
Sex	1	358.44	3.43	.068
Level	1	2032.87	19.44	<.0001
Sex X Level	1	.35	0.00	.954
GPA	1	428.56	4.10	.046
Error	75	7844.14		

Analysis of Variance

<u>Source</u>	<u>DF</u>	<u>SS</u>	<u>F</u>	<u>P</u>
Sex	1	480.20	4.41	.039
Level	1	2622.05	24.09	<.0001
Sex X Level	1	5.00	.05	.831
Error	76	8272.70		

time of the interview, the female applicant group mean was 0.23 greater than the male group, and this difference was not significant. Looking at the DAT scores of both groups, a non-significant difference was also observed, but here the male group mean was slightly higher (4.6 to 4.3 for the Academic average; 4.85 to 4.35 for the PMAT average), which essentially agrees with Graham.<sup>11</sup>

When the undergraduate students were studied, the female group again scored significantly higher on the interview, 47.95 as compared to 43.55. The two groups of undergraduates had identical GPA's of 3.14.

When all females were combined for statistical analysis and compared to all males, the females maintained a significantly higher total interview score by 4.90 points. Overall grade differences remained non-significant, with a 0.11 difference in favor of the women.

When interview scores of dental applicants were covaried with grades to remove their influence, the female

group mean was 58.70 compared to the male mean of 54.60. Combining undergraduates with applicants of identical sex, the covariant p-value did not reach significance.

Combining all the undergraduate subjects, and comparing them to all dental applicants, the applicants were significantly higher on the interview by 11.45 points. The GPA was likewise shown to be in favor of the dental applicants, but the 0.19 difference was not sufficient for significance.

Since the male applicant random sample had an interview mean two points higher than the mean of the group from which they were drawn, a t-test was performed using the academic average of the DAT score, a standardized measure. The random sample had essentially the same characteristics as the applicant pool ( $t = .36$ ). This random sample of males with such a high mean score tended to load the design against achieving significance between males and females, yet significance was obtained.

## DISCUSSION

This study found a significantly higher interview score for females. Such a finding might lead one to suspect that the instrument is biased toward females, or there are true differences being reflected by the interview. Why females score better is not answered by this study, but the trend for females to do better in academics, starting in grade school and continu-

ing into college, may be an underlying factor. What we may be measuring in this study is a more motivated, more persistent and higher achieving female who is in college.

This speculation is supported by the covariant analysis, which removed the effect of grades from the interview score. The analysis resulted in a loss of significance in the difference between



the group means. Thus one may assume that the factors that enabled females to get better grades in school must cause them to score better on the

structured interview. This finding would not support the possibility of sex bias in the instrument.

### **Women were more highly motivated**

Graham<sup>11</sup> reported that 52.9% of females who took the DAT were accepted to dental school, as compared to only 36.5% of the males. The finding that females have a better chance of being admitted might support the speculation that they are "stronger" than male applicants in non-grade attributes. It is reasonable to suspect that women who are oriented toward a career in dentistry are more highly motivated to achieve, have stronger career convictions to help people, and possess greater self-awareness. The interview evidently reflects these types of attributes, which would help explain why the female dental applicants had the higher interview scores.

Not only was a significant differ-

ence found between males and females in this study, but dental applicants, as a group, were significantly stronger than general university undergraduates. Once again, the interview might be suspected of having a bias, for it could favor dental applicants as that group is its intended target. The dental career-oriented students might think of themselves more often in dentally oriented situations, and consequently deal better with those dental-type questions that are posed by the interview. This did not seem to be the finding, as some high interview scores were earned by general university students. In fact, the highest score for any subject in this study was earned by a female undergraduate majoring in music education.

### **Dentistry Applicants Rated Higher**

It was comforting to find that applicants to dentistry (both male and female) score significantly higher on the interview than do university students not oriented for health science careers. Higher scores on the interview, in general, means that more of a "people relating" trait is present in the

applicant pool. Since the interview has been shown to have validity, then dentistry is attracting, as a group, students that are viewed as desirable by the faculty and generally would have a positive prediction of success in dental practice.<sup>1</sup>

## CONCLUSION

A significant sex difference was found in the total scores of the structured dental admission interview, but this difference disappeared when grades were utilized as a covariate. Whatever is attributed to females achieving better grades in school (despite generally lower standardized test

scores) may also be basic to higher interview scores. The study further showed that dental applicants, regardless of sex, are higher quality persons on non-grade attributes, as measured by the interview, than general university undergraduate students.

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# Measurement and Evaluation of Professional Attitudes in Dental Students in Remote Site Training Programs

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## INTRODUCTION

"Professionalism" is an abstract concept that can be defined as an implicit attitude that comes from within the individual. It cannot be seen, felt, touched, or observed in any direct fashion. It can be inferred from certain types of observable behavior, but the identification and evaluation of professionalism must always be an inference of the observer. Despite its nebulous nature, the term "professional" is widely used to describe desirable qualities not only in health care providers, but in many other callings. Because of this common usage and because its presence is expected in dental practitioners, it becomes important to stimulate the development of professionalism in dental students.

Strategies for the promotion of professional development in dental students fall into two fundamental categories. The student acquires the techniques, skills and knowledge to perform the duties required in dentistry and secondly he/she assumes the manners, attitudes, beliefs and behaviors that represent the foundation for a professional role. The dental student learns the technical skills by traditional methods of academic study and practice. He/she learns the second by a process of observation and osmosis. It has been suggested by More that failure to make the grade in professional school may result as often from failure to achieve these attitudinal changes as it does from failure to master the technical skills.<sup>1</sup>

## BACKGROUND

During the past two decades, changing social values have called for a redefinition of the role of the professional person. Great emphasis is being placed on extending professional services to the poor, the uneducated, or

otherwise underprivileged members of our society, whether or not those groups see themselves as potential consumers of professional service.

It was recognized early by such individuals as Galagan and Blackerby,

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that these changing values had implications for dental education.<sup>2,3</sup> Dental schools were encouraged to establish departments of community dentistry specifically charged with the responsibility of integrating a sense of social awareness into dental education and to stimulate the development of professionalism in the dental student. New types of faculty members began to appear in the dental schools to develop these programs and new kinds of courses began to appear in the curriculum. The desired result was best expressed by the initial planners of the University of Kentucky's dental curriculum, who summarized their objectives as an effort to produce dentists who were "technically capable, biologically oriented, and socially sensitive."<sup>4</sup>

The University of Iowa's dental curriculum introduces the student to the development of professional attitudes in the freshman and sophomore years through courses in communication skills and interpersonal relationships that are taught by behavioral scientists. In the third year, an intensive course covering many non-clinical

subjects such as ethics, jurisprudence, health care delivery and financing, epidemiology and the structure of the organized profession is required. This preparation prepares the student for the extra-mural program which constitutes one quarter of the senior year. The extra-mural program is designed to place students in a site remote from the dental school, where they can play their role as a health care provider in a more realistic setting than can be provided on campus. In these settings, the student becomes more aware of the problems of access to dental care, problems in financing dental care, and other socio-economic problems of health care delivery. The student also begins to realize that the profession has a responsibility to seek solutions to these problems. With the advent of this philosophy of dental education came the need for a valid and reliable method of evaluating student performance in these non-traditional programs. It was this need that prompted the authors to develop, test, and implement a system of measuring professionalism in dental student performance in remote site training programs.

## PREVIOUS ATTEMPTS TO MEASURE PROFESSIONAL ATTITUDES

Several methods have been used to identify the elements of professionalism. Fisher, in an address to the American Association of Dental Schools, was arbitrary in his selection

of attributes. He identified the following attributes as components of professionalism: high ethical standards, impeccable personal integrity, appreciation of dignity, acute sense of re-



sponsibility, dedication to service, aspiration to vocational accomplishment, and inclination to scholarship.<sup>5</sup>

Bobek, while developing a measurement system for use in evaluating behavioral traits in medical technology students, stressed the importance of distinguishing between non-essential or "shallow" and essential or "substance" attributes of a student. As examples of substance attributes, she gave the following: punctuality, ability to deal with patients, personal appearance, organizational ability, and professional relationships.<sup>6</sup>

While developing an attitude rating scale for medical technology students, Lynch selected the attributes by using the critical incident technique proposed by Schwab and others. He had his faculty score selected attributes, on a scale of ten, as to their degree of importance as indicators of professional attitudes. The criteria for acceptance of the attribute for inclusion on the evaluation instrument was arbitrarily established as being a mean score greater than six, with a standard deviation less than 1.9.<sup>7</sup>

## MEASUREMENT IN THE AFFECTIVE DOMAIN

Knowledge and skills, in general, are divided by many educational psychologists into three categories known as "domains". The "cognitive" domain encompasses the area of didactic information that students need to know, the "psychomotor" domain is the area of motor skills that students need to possess, and the "affective" domain consists of the student's attitudes, values, and feelings.<sup>8</sup> The characteristic known as "professionalism" falls into the affective domain.

Evaluation of student performance in dental education has traditionally emphasized the cognitive and psychomotor domains. Evaluation in the affective domain has been ignored or

minimized for two reasons: (1) affective variables are difficult to measure with validity, reliability, and (2) the emphasis in dental education has been on how to do things and the reason for doing them.

The most frequently used instrument to measure and evaluate the affective domain has been a rating scale which requires the observer to assign a numerical value to the level of performance in the characteristic being judged. This technique assumes that the range of performances is unidimensional in nature: that is, the performances can be arranged in order from most desirable to least desirable.

## DEVELOPMENT OF THE EVALUATION INSTRUMENT

To fit our requirements, an instrument needed to be developed that would be usable in a variety of programs by observers who were not skilled in measurement and evaluation of the educational process. The adjunct faculty involved in most of the remote site programs, who would be using the instrument, were recruited primarily from private dental practice and generally did not have formal training in evaluation of student performance. It was also necessary that the measurement instrument standardize the assessment process and make possible valid and reliable evaluation.

Consideration of different types of instruments usable for attitude measurement resulted in a rating scale being selected for the following reasons:

- (1) They are relatively easy to construct;
- (2) They can be executed by the observer in short periods of time;
- (3) They can be objectively scored by machine;
- (4) They yield adequate data with sufficient variance to discriminate between observations; and
- (5) They are stable in longitudinal studies unless shifts in attitude occur.<sup>9</sup>

Observable areas of behavior were identified that were considered to be indicators of the degree to which the observed student was maturing into a professional health care provider. The selection of these attributes was arbitrarily made by the Community Dentistry departmental faculty which included three dentists, two behavioral scientists, a measurement specialist and an educational psychologist. The areas of behavior selected were: program interest, personal appearance, personal hygiene, response to faculty suggestion, response to stressful situations, motivation for academic performance, and patient rapport. One cognitive observation (professional judgement) and one psychomotor observation (clinical skills) were added to allow comparisons to be made between the three domains.

Each area of behavior was provided with a five point scale and the high, middle and low points of the scale were defined with phases descriptive of good, mediocre or poor performance in the area being observed.

A behaviorally anchored scale, utilizing easily identifiable and observable patterns of behavior, was thus produced. This type of example-anchored scale has an interrater reliability with a mean Pearson correlation of 0.76 and a range of 0.67 to 0.89 in contrast to numerical scales whose mean interrater reliability is 0.43 with a range of 0.10 to 0.63.<sup>10</sup>

## USE OF THE INSTRUMENT

Pilot studies in the use of the instrument were carried out during an academic year when a pass-fail grading system was being phased out in favor of a letter grading system. The new evaluation procedure was then introduced at the beginning of the following academic year as part of the basis for grading student performance on remote site training programs.

Each student participating in the remote site training programs was given a copy of the evaluation form and its use was explained during orientation meetings at which time the goals and objectives of the programs were discussed. It was also stressed during these meetings that, while not necessarily a formal or structured matter, evaluation of professional attitude is an inevitable factor in the life of a health care provider. Students were also encouraged to make appointments with the program director to discuss their evaluations as derived from the use of the forms.

Observations were made of each group as they participated in two separate remote site training programs. In one program, students were evaluated by the same instructor every day and in the other program, by a

different instructor every day.

Observations were recorded weekly by each faculty member having contact with each student. Twenty-five to 30 observations were accumulated on each student during the nine-week period spent in remote site training. Numerical scores are derived from the forms by summing the ratings on the nine scales recorded by faculty members. The range of possible scores is 9-45. The mean score of all observations on the same student is computed and becomes the raw score to be used as a basis for assigning a grade to that student. All students participating in remote site programs in any given academic quarter are considered to be a group for norm referenced grading based on the distribution of their mean raw scores.

The letter grade of "A" is given to those students whose raw score is greater than one standard deviation above the mean score of the group. The "B" range of grades is given to those raw scores falling between one standard deviation above the mean and one standard deviation below the mean. Any raw score falling more than one standard deviation below the mean is graded a "C".

## RESULTS

Observations were made of each group as they participated in two separate remote site training programs. In one program, students were evalu-

ated by the same instructor every day and in the other program, by a different instructor every day.

Table 1 summarizes the raw scores

TABLE 1

Affective Evaluation Scores for 10 Groups  
of Senior Dental Students

GROUP	N	HIGH	LOW	RANGE	MEAN	S.D.	CORRELATION TO GP
A	10	39.0	32.7	6.3	36.26	1.96	-0.08
B	8	40.25	36.0	4.25	38.36	1.58	0.07
C	11	40.4	33.0	7.4	37.75	2.37	0.48
D	8	37.6	28.6	9.0	32.10	2.88	0.31
E	24	41.04	30.45	10.6	36.9	3.08	0.48
F	8	41.75	32.75	9.0	36.08	2.78	0.49
G	23	42.6	31.8	10.8	38.16	2.80	0.65
H	20	45.0	31.3	13.7	37.8	3.5	0.29
I	10	41.75	36.2	5.55	38.48	2.18	0.32
J	10	39.4	32.42	6.98	35.53	2.62	-0.43
$\bar{x}$		40.88	32.92	8.35	36.74	2.57	0.26
S.D.		2.07	2.60	2.83	1.92	0.56	0.32

of the first ten groups of students to be evaluated by use of the instrument.

Table 2 compares the scores of the male students to the scores of the

female students in the same ten groups.

Table 3 is derived from the pilot study of the instrument during its first year of use.

## DISCUSSION

The ability of the instrument to produce a sufficient range of scores to allow discrimination between students, especially in the larger groups,

is evident in Table 1. Although there is a wide range of correlations (0.43 to 0.65) of mean raw scores to cumulative grade point averages, the overall mean



correlation (0.26) suggests that the instrument is measuring something different than cognitive and psychomotor achievement.

Table 2 is presented to demonstrate that female students generally are rated somewhat higher than male students, although the difference is not statistically significant in this instance ( $t = 0.6212$ ,  $p = 0.12$ ).

Table 3 is derived from the pilot study of the instrument during its first year of use. It is a sociometric approach to the question of construct validity. The entire senior class of 86 students was interviewed by another investigator working on a different project.<sup>11</sup> During the interview, each student was to identify by coded number three of his classmates with

TABLE 2

Affective Evaluation Scores for  
10 Groups of Dental Students

MALE STUDENTS				FEMALE STUDENTS		
GROUP	N	MEAN SCORE	ST. DEV.	N	MEAN SCORE	ST. DEV.
A	8	35.95	2.03	2	37.5	1.41
B	6	37.75	1.36	2	40.1	0.17
C	10	38.23	1.86	1	33.0	0
D	8	32.10	2.88	0	--	--
E	25	37.49	2.98	4	37.22	2.22
F	5	34.57	1.17	3	38.6	3.00
G	23	38.16	2.80	0	--	--
H	17	37.03	3.08	4	40.9	3.31
I	9	38.07	1.88	1	41.75	0
J	9	35.74	2.70	1	33.69	0
Mean		36.51	2.25		37.84	3.19

TABLE 3

Ten High and Low Students Most Selected by Peers

MOST LIKE TO PRACTICE WITH			LEAST LIKE TO PRACTICE WITH		
Student Ident.	Votes	Affective Score	Student Ident.	Votes	Affective Score
086	14	31.8	061	45	26.4
010	10	33.5	079	36	31.7
020	10	31.8	007	18	28.5
054	10	31.4	030	14	26.4
018	8	31.4	052	14	26.3
081	8	31.6	067	12	20.0
031	7	33.0	069	11	29.2
048	7	27.0	060	10	20.5
066	7	28.3	004	8	25.1
014	7	30.4	059	7	29.0
Mean		30.99			26.61
S.D.		4.6			3.71

whom he would "most like" to practice and the three with whom he would "least like" to practice. The ten students receiving the largest number of "most like" votes had affective measurement scores with a mean of 30.99 as compared to the ten students receiving the greatest number of "least like" votes, who had a mean affective score of 26.61. The difference is statistically significant ( $t = 3.528$ ,  $p = 0.002$ ) and

supports the construct validity of the instrument.

The instrument described in this article has been in use at The University of Iowa College of Dentistry since 1975 as part of the basis for grading students on their performance in remote site training programs. Scores produced by the instrument comprise 50 percent of the grade given in the course. The other half of the grade

UNIVERSITY OF IOWA

DATE

COLLEGE OF DENTISTRY  
IN EXTRACURRICULAR PROGRAMS

DARKEN THE CIRCLE ALONG THE CONTINUUM WHICH REFLECTS YOUR EVALUATION OF THE STUDENT WITH RESPECT TO EACH CHARACTERISTIC. IF YOU HAD NO OPPORTUNITY TO OBSERVE A CHARACTERISTIC, LEAVE THE ITEM BLANK.

PROGRAM INTEREST

INSTRUCTOR

EVALUATION OF STUDENT PROGRAMS

STUDENT LAST NAME

STUDENT IDENTIFICATION NUMBER

INSTRUCTOR NUMBER

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reflects student performance in other areas, depending on the nature of the remote site experience. The instrument is also used as a stimulus for initiating individual student counseling.

Most students have accepted the evaluations produced by the instrument as being valid measurements of their affective performance. In only a few instances have students questioned the desirability of attitude evaluation.

## SUMMARY

The development of an affective evaluation instrument designed to measure professionalism as a characteristic of dental students is described. Implementation of the use of the instrument in grading student performance in remote site training in The University of Iowa's extra-mural programs is also described and the results of three years of experience with the instrument is reviewed.

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# Faculty Evaluation: A Survey of Dental School Administrators

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Faculty evaluations play an integral part in promotion and tenure decision in higher education in general<sup>1,2</sup> and in dental education in particular.<sup>3-7</sup> For many administrators, faculty evaluations constitute a necessary and justifiable response to students' complaints about quality teaching, to public and private demands for accountability, to academic staffing and promotion decision resulting from decreased funding and to providing control.<sup>8,10</sup> However, administrators have found themselves in a dilemma. They have been encouraged to fund and support faculty evaluation systems by means which range from administrative mandates to subtle persuasion techniques,<sup>8-11</sup> even though past research on faculty performance has been sporadic, limited in perspective, and largely ineffective.<sup>12</sup> This is not to say that faculty evaluations have been useless. Rather, it simply points out that the role of the administrator is extremely complex. On the one hand, outside forces have demanded accountability;<sup>9,10</sup> while on the other, an agreement on consistent and appropriate evaluation criteria for faculty

evaluation has not been forthcoming.<sup>13,14</sup>

This dilemma, however, has not gone unnoticed. In a special issue devoted entirely to evaluation of faculty in dental education, DiBaggio<sup>11</sup> has stated:

Often the dean finds himself in a peer relationship with members of his faculty. This collegial atmosphere tends to mitigate against objectivity and may force him to rely heavily upon informal evaluations, particularly when there are no other reliable measures of faculty competence. (p. 320).

In attempting to deal with some of the cited problems, the administration at the Louisiana State University School of Dentistry (LSUSD), desired to know the perspective of other administrators toward faculty evaluation. It was hoped that through this added perspective, LSUSD's faculty evaluation system could be improved. Hence, a survey was developed which attempted to answer three broad questions. They were: (1) did most dental

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schools conduct faculty evaluations and what were their perceived purposes; (2) what were the primary sources and methods employed to evaluate faculty effectiveness; and (3) what were the perceived benefits of faculty evaluations to faculty, students, and administrators?

### Methodology

A questionnaire was sent to the dean of each dental school in the United States and Canada during the summer of 1979. The questionnaire was pre-tested on a selected group of administrators at LSUSD and was revised to minimize completion time while maximizing information obtained. The final questionnaire contained a total of 8 yes-no, short answers, and ranking type questions. An explanation of the rationale and purpose appeared along with directions inside the survey booklet.

### Results

A total of 69 surveys were distributed and 67 returned for an overall response rate of 97 percent. Every question, however, did not elicit the same total percentage of responses. The individual question response ranged from 58 to 100 percent.

### Perceived Purposes

Out of the 67 schools which responded to the survey, 59 schools (88%) indicated that they did conduct faculty evaluations and that it was generally the responsibility of the administration to conduct them. Not surprisingly, responses from schools which did not conduct formal faculty evalua-

tions included such comments as: "there is a suspicion on the part of the faculty that the results will be used punitively;" "evaluations are fragile in nature;" "definitive routine evaluations are not emphasized;" and "evaluations lack meaningfulness."

Generally speaking, evaluations of faculty appear acceptable only if it leads to satisfaction, suggestions for improvement, and/or rewards.<sup>12</sup> The reluctance exhibited by some institutions to institute a formal evaluation system, even though this is a small percentage, reflects a need to clearly define the purpose and goals of faculty evaluations.

When asked what the perceived purpose of faculty evaluations was, the majority of administrators indicated that it was to provide feedback to instructors and to provide information for faculty promotions. Table 1 indicates the perceived purposes that faculty evaluations serve and the ranking of those purposes in terms of importance. Such an emphasis by the administration should facilitate the evaluative process if the faculty are aware of it. Communication of the intended use of the information is essential. Obviously, the reluctance of some institutions may reflect problems with proper communication concerning the purpose of the evaluations rather than any inherent threat of the evaluations themselves.

### Sources and Methods Used to Evaluate Faculty

Various sources of information have been cited as important determinants of the reliability and validity of faculty

evaluations.<sup>12,15</sup> Table 2 contains a listing of all sources of information employed to evaluate faculty as reported by the respondents and the percentage of schools which employed each source. The results indicate that the majority of schools relied upon more than one source of information. This finding is very encouraging since it implies that numerous perspectives are being considered in the evaluation process. The results also support previous research which cited the heavy use of students and peers in the evaluation process while outside experts and testing were only minimally employed.<sup>9</sup>

A total of five methods were cited as being used to evaluate faculty members. A rank ordering of these methods indicated that questionnaires were utilized most often, surveys second, testing third, interviews fourth, and classroom observations fifth. Although many schools employed more than one method in any particular evaluation, the total number of possible choices is limited. That is, out of the many methods and techniques available for collection of information, only five were cited; and the majority of schools rely almost solely upon questionnaires and surveys. Several new methods and techniques for evaluations have recently been developed, but have not been extensively explored in the health sciences.<sup>16-18</sup> These methods have been adapted from other fields such as law, photography, investigative journalism and operations research. Although relatively untested, it appears that the breadth and scope of the types of evaluation information could be significantly

increased by exploring these new techniques and applying them to the health science arena.

### Perceived Benefits

It is interesting to note how most administrators perceived students, faculty, and themselves as benefiting from faculty evaluations results. Table 3 indicates that the majority of administrators felt that each of the three groups benefited only "somewhat" or "very little" from the results. Also, since the respondents cited the perceived purposes of faculty evaluations as primarily for providing feedback to instructors and for faculty promotions, it is notable that 67 percent of them stated that the results provided "very little" or only "somewhat" benefit to them. These types of information should be helpful in further exploring how faculty evaluation results are being utilized and provide a rationale for making them more meaningful. Obviously, at least from the administrative perspective, these results are currently not meeting several groups' needs.

### Summary

Within the limited purposes of this survey, the findings presented raise a number of questions about faculty evaluations which require further study. Although most dental schools conduct faculty evaluations, several schools report that the results may be used punitively. If better methods of communication were opened between faculty and the administration, it is possible that the evaluation process

TABLE 1

## PERCEIVED PURPOSE OF FACULTY EVALUATIONS

Purpose	% of Schools Checking that Purpose	% of Schools Ranking the Purpose in Terms of Importance		
		1	2	3
To Provide Feedback to Individuals	96%	63%	12%	10%
Faculty Promotions	71%	27%	20%	24%
To Provide Feedback to the Administration	55%	8%	31%	18%
Faculty Merit Raises	31%	2%	22%	16%
To Provide Feedback to Students	18%	0	10%	10%
		No response	0%	5%
		22%		
Total		100%	100%	100%

would be perceived as less threatening. Ways to facilitate the communication process need to be investigated. Jacobs<sup>19</sup> has presented one method for facilitating the communication/accountability process by suggesting that clear definitions of performance expectations be provided to the faculty.

Information for the evaluation of faculty has come from a wide variety of sources and is being employed in a multidimensional fashion. However, the methods of data collection appear to be rather limited and other methods of evaluation outside of the field of dental education should be considered. Hopefully, totally new perspectives

can be developed and the meaningfulness of faculty evaluations increased by incorporating outside information and techniques.

Finally, administrators perceive faculty evaluations as possessing only moderate utility for students, faculty, or themselves. Whereas the purpose cited by most schools for faculty evaluations was to provide feedback to instructors, the perceived benefits that instructors received are questionable from an administrative perspective. A method by which the results can benefit each group is sorely needed if the evaluation process is to take on greater meaning and usefulness.



TABLE 2

PERCENT OF DENTAL SCHOOLS USING A  
PARTICULAR SOURCE OF INFORMATION TO EVALUATE FACULTY

SOURCE	Total Percentage of Schools Using that Sources
Student Evaluations	96%
Peer Review	93%
Outside Experts	40%
Research Publications	12%
Informal Observations	7%
Competency Examinations	6%
Self Assessment	6%

TABLE 3#

PERCEIVED BENEFITS OF FACULTY EVALUATIONS ON  
FACULTY, STUDENTS AND ADMINISTRATORS

Group	Very Little	Somewhat	Greatly	No Response
Faculty	4%	55%	40%	1%
Students	16%	55%	18%	11%
Administrators	11%	56%	29%	4%

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# Specialty Programs, General Practice Residencies and the Changing World of Dentistry

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The issues related to the legalization of independent denturists, the increase in functions by expanded duty auxiliaries, independent practice by dental hygienists, advertising and the potential impact of the encouragement by the Federal Trade Commission and the General Accounting Office to increase the delegation of duties to auxiliaries as a means of reducing the cost of dental care, have filled professional journals and provided the subject matter for many dental society speeches and workshops. By now there can be little doubt that the delivery of dental services will undergo significant changes during the 1980's.

These issues which now are impact-

ing on the practices of current dentists, similarly are affecting dental students and recent graduates. For some, the advertising clinics have replaced the "medicaid mills" of the late 1960's and early 1970's as an avenue to earn sufficient income to repay large debts and accumulate sufficient income to establish their own practices. For others, speciality programs and general practice residencies provide an opportunity to increase their education and, as many students volunteer, offer an opportunity to escape from those areas where duties could be taken over by lesser trained independent auxiliaries.

## I. The Changing Number of Specialists

Traditionally, the area of a specialty has been "one for which specially trained dentists are needed to fulfill the profession's responsibility for promoting and improving the health and welfare of the public."<sup>1</sup> Indeed, the specially trained practitioner has provided the needed expertise for particular types of dental services. However, during the 1970's there was concern regarding the increasing numbers of practitioners and recent graduates at-

tracted to the eight dental specialties. Hein<sup>2</sup> described the trend toward specialization as a "pell-mell rush by recent dental graduates away from careers in general practice." Writing in the mid 1970's, he foresaw a time in the 1980's when approximately half of all practicing dentists would be specialists. His basic concern was that the "direction in specialty training and the production of large numbers of present-type specialists is not serving a

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socially useful purpose." By 1979, Luebke and Calvert<sup>3</sup> raised the prospect that too many endodontists were being trained.

On the other hand, Coady<sup>4</sup> (current executive director of the American Dental Association) writing during the mid 1970's, commented that, "many believe that the number of general practitioners will decrease as the number of specialists increases. A year ago, I would have supported this premise. Now I am not sure that the trend will continue . . . Until the last several years, the income of specialists was increasing at a rate faster than the income of general practitioners. Now that has changed."

Indeed, Coady's forecast has been borne out. Despite an overall increase in dental school graduates from 3,775 in 1971 to 5,324 in 1978 (a 41 percent increase), there has been almost no net change in the number of first year student enrollments in specialty programs during this same period (1,203 in 1971 and 1,218 in 1978, or about one percent increase). (Table I) However, as Rovin<sup>6</sup> suggests, "there is a greater likelihood that specialties will undergo a change in response to the exigencies of our developing health care system . . ." For example, as a result of an expected decreasing demand for orthodontic care during the 1980's in the 5 to 17 year old group, the American Association of Orthodontists has begun a national advertising and public relations campaign to develop an understanding of their services amongst adults.<sup>7</sup>

While there was no major change in

the overall number of graduates from specialty programs during the 1970's, there was significant changes in the numbers of graduates in particular specialties. There was a general increase in the number of graduates from endodontic, periodontic, pedodontic and prosthetic training programs, a major increase and then decrease in graduates from orthodontic programs and a general ongoing decrease in graduates from oral surgery programs. (Chart I)

Similarly, there were major differences in the numbers of practitioners who were reported by the American Dental Association as practicing in each of the specialties during the 1970's. Between 1976 and 1979, the Association reported an increase of 86 percent in the numbers of periodontists, as compared to a 46 percent increase in endodontists and pedodontists and a 12 percent increase in oral pathologists and oral surgeons. (Table II)

While variations have occurred within particular specialties, Hein's projection that half of the practitioners during the 1980's would be specialists does not appear to be the direction of future practice arrangements. By 1979 only 11.9 percent of practicing dentists were reported as specialists (Table II), and less than 16 percent of 1978 and 1979 graduates anticipated entering advanced dental specialty programs. (Table III)





Table I. - The number of dental school graduates and first year enrollment in specialty programs, 1971-78.<sup>5</sup>

	<u>Number of dental school graduates</u>	<u>First year enrollment in specialty programs</u>
1971	3,775	1,203
1972	3,961	1,222
1973	4,230	1,213
1974	4,515	1,282
1975	4,969	1,227
1976	5,336	1,171
1977	5,177	1,213
1978	5,324	1,218

## II. General Practice Residencies

No doubt much of the concern during the 1970's regarding the potential increase in the numbers of dental specialists was a reflection of the much publicized increase in medical specialists. By the early 1970's, only 18 percent of physicians were providing services as general practitioners.<sup>15</sup> The general medical practitioner had become all but an endangered species. In an effort to restore the numbers of primary physicians, general practice was "elevated" to the status of a specialty with the creation of the specialty of Family Practice. In addition, federal funding was provided to ensure the development of residency

programs in this "newest" of specialties. By 1978, fifty percent of graduating physicians were selecting residencies in one of the primary care fields—family practice, internal medicine, pediatrics and obstetrics and gynecology.<sup>6</sup> The success of these efforts to train increased numbers of competently prepared general medical practitioners provided the impetus to sponsor general dental practice residency programs. By 1978, 835 dentists were enrolled in the first year of general practice residencies, an increase of more than 62 percent from the number who entered similar programs in 1971. (Table IV) In 1978, 32

Table II. - The number and change in number and percent of specialists and generalists, 1970, 1971, 1976, 1979

<u>Date Board Established</u>	<u>Specialty</u>	<u>1970<sup>9</sup></u>	<u>1971<sup>10</sup></u>	<u>1976<sup>11</sup></u>	<u>1979<sup>12</sup></u>	<u>Change 1976-1979</u>	<u>Percent Change 1976-1979</u>
1964	Endodontics	497	536	632	925	293	46%
1950	Oral Pathology	97	111	65	73	8	12
1947	Oral Surgery	2,406	2,567	3,130	3,492	362	12
1950	Orthodontics	4,335	4,415	4,458	6,020	1,562	35
1948	Pedodontics	1, 159	1,195	1,218	1,776	558	46
1948	Periodontics	1,003	1,042	1,026	1,906	880	86
1948	Prosthetics	715	715	614	701	87	14
1951	Public Health	103	116	67	66	(-) 1	(-) 1
Total	Specialists	10,315	10,022	10,905	14,959	4,054	27%
Total	Dentists	120,916	117,920 <sup>13</sup>	117,746	124,952	7,206	6%
Specialists as a percent of total number of dentists		8.5%	8.5%	9.2%	11.9%	-	-

Table III. - Percent of dental student respondents who intend to pursue advanced dental education programs, by graduating class year.<sup>14</sup>

	<u>Class Of</u>		
	<u>1978</u>	<u>1979</u>	<u>1980*</u>
Endodontics	1.6%	1.4%	3.0%
Oral Pathology	0.4	0.4	0.4
Oral Surgery	3.9	3.7	4.2
Orthodontics	2.7	3.0	3.9
Pedodontics	2.3	2.4	0.1
Periodontics	2.4	2.4	2.4
Prosthodontics	1.5	1.7	1.4
Public Health	0.6	0.6	1.4
<hr/>			
Total	15.4%	15.6%	16.8%
General Practice Residency	15.3%	17.3%	21.9%

\* It should be noted that these data are based on stated intentions resulting from studies done in 1978 and 1979. Data for 1980 were based upon commentaries by students during their third year in dental school.

institutions were approved for federal funding to initiate or expand general practice programs.<sup>5</sup>

McCallum<sup>16</sup> suggested that general practice residencies became particularly attractive to recent graduates because of the phasing out of mandatory military service. A tour of military service provided a period of additional learning and the opportunity to gain meaningful experience. He cited the data that, "44.6 percent of graduates in 1971 chose to enter federal service; whereas only 23.9 percent did so in

1975. During this same period, there was a concomitant rise from 6.3 percent to 11.1 percent of dental graduates electing general practice residency training."

Rovin,<sup>17</sup> in his extended discussion of a curriculum for primary care dentistry, concluded that dental specialties will change dramatically in the future. The halt to the proliferation in the number of specialists that he anticipated is occurring. He suggested, as did Coady,<sup>4</sup> that orthodontics and pedodontics will merge. Whereas

Rovin believes that the accent on legislation and the policy making process will encourage the specialty of dental public health, Coady anticipated that much of the functions of these specialists would become the activities of non-dentist administrators. Increased activity by general dentists and a variety of auxiliaries will impact on periodontist specialists, as will increased efforts to prevent dental disease impact on the extent of services provided by endodontists.

### III. Forces for Change

In turn, each of the specialties will be affected by 1) the public's changing attitudes and expenditures for services, 2) the evolving patterns of disease, 3) the developing pre-doctoral dental educational curriculum, 4) the diversification of categories of trained ancillary personnel and 5) the availability of general practice residencies.

Oral surgery will continue, as Coady suggests, but exodontia will be handled almost exclusively by the general den-

Table IV. - First year enrollment in general practice residency programs and annual percent of increase, 1971-1978.

	<u>Number</u>	<u>Percent Increase</u>
1971*	516	-
1972	542	5.0%
1973	587	8.3
1974	660	12.4
1975	694	5.1
1976	733	5.6
1977	753	2.7
1978	835	10.9
<hr/>		
Overall Increase 1971 - 1978	319	62.0%

\* 1971 figures include internships, mixed dental internships and general practice residencies.



tist, with the oral surgeon being more identified with other hospital oriented specialized surgeons. Oral pathologists may merge with oral medicine, oral diagnosis and dental radiology. Prosthetics could be affected severely by extensive programs in prevention and the activities by denturists.

The results of these changes and other developments could lead to the eventual association of the dental specialist with academic institutions and secondary and tertiary health centers in a consultation role. Thus specialty education would continue but would be academically oriented and focus on the training of the scientist/educator as described by Hein.<sup>2</sup> Rovin<sup>17</sup> envisions the end product of this process as the advent of the physician/dentist.

### 1. The public's changing attitudes and expenditures for service—

The general environment for the delivery of dental services has changed, including: a) the Oregon vote for independent practice by denturists (and continuing efforts in other states to legalize denturism), b) the continuing decrease in dentistry's share of medicaid expenditures (from 2.8 percent in 1975 to 2.7, 2.5 and 2.1 percent in successive years),<sup>18</sup> c) the general downturn in the economy accompanied by a staggering rate of inflation, d) the establishment of consumer groups like the American Association of Dental Victims<sup>19</sup> "exposing" the past inequities and injustices of dental

services and e) a seeming exponential increase in litigations involving dental practitioners.

Despite forecasts that dental insurance coverage will exceed 90 million citizens by 1985,<sup>20</sup> a relatively high percentage of dental care expenses currently are paid directly by the consumer. For example, expenditures for dental care amounted to \$45.41 per capita in 1977 out of a total per capita health care expenditure of \$646.11. However, of the \$196.09 out-of-pocket expenditures for health services, \$36.10 was for dental care. Private health insurance covered only 15.5 percent of the total cost for dental care. Public funding accounted for 5.0 percent of expenditures, while direct payments for services accounted for 79.5 percent.<sup>21</sup>

Thus dental care "is felt" more by the consumer than its price would indicate relative to other health expenditures.<sup>22</sup> It is ironic that dentistry, which has been one of the least inflationary sectors of the health service industry (compared to hospital and general medical services) is considered as one of the more expensive commodities and out of proportion to its benefits.<sup>23,24</sup> In addition, dental care expenditures which once represented nine percent of health care in 1950, progressively decreased during the 1960's and 1970's, until by 1977 it represented only seven percent of personal health expenditures.<sup>25</sup>

### 2. The evolving patterns of disease—

It is not uncommon to read the litany of unmet dental needs. For example, for every one hundred 17 to

19 year olds entering the U.S. Army, 560 fillings, 144 extractions, 24 bridges and 14 dentures are needed; or that only slightly more than 50 percent of the nation receives dental care in any particular year, and only 25 percent receives comprehensive dental services. In addition, there is the general disparity between different racial and economic groups—white 17 year olds have 70 percent of their decayed teeth filled, blacks have only 23 percent restored, even though they experience less decay. Similar differences have

been noted between children from high and low income families with respect to dental visits and services received. In fact, young children from low income families have four times as many unfilled cavities as children from higher income families.<sup>26</sup>

But of equal significance (and all too often neglected) is the impact that dental and public health measures are having on the reduction of dental disease and its affect on the delivery of dental services. From community water fluoridation to the topical ad-

Table V. - Percentage Distribution of Dental Visits by Type of Services, July 1957 to June 1958 and July 1963 to June 1964<sup>28,29\*</sup>

<u>Types of Services</u>	<u>July 1957- June 1958</u>	<u>July 1963- June 1964</u>
	<u>Percent of Visits**</u>	
Fillings	43.0%	37.8%
Extractions & Other Surgery	17.0	15.0
Cleaning Teeth	10.4	13.6
Examination	7.8	21.1
Straightening Teeth	3.4	5.8
Gum Treatment	1.5	3.6
Denture Work	8.6	13.2
Other and Unknown	12.3	1.6

\* Adapted from Douglass and Cole<sup>27</sup>

\*\* More than one type of service may have been performed during a single visit.

Table VI. - Percent Distribution of Dental Visits by Type of Service, 1959 and 1969<sup>30\*</sup>

<u>Service</u>	<u>Percent Distribution</u>	
	<u>1959</u>	<u>1969</u>
Oral Examination	20.1%	27.8%
Prophylaxis	19.9	25.5
Radiographs	18.1	23.9
Fluoride Treatments	0.9	4.0
Orthodontic Treatments	3.7	6.5
Extractions	13.0	9.8
One-surface Amalgam Filling	20.1	15.9
Two-surface Amalgam Filling	20.6	16.4
Complete Upper Dentures	1.4	1.2
Periodontal Treatment	3.2	2.5

\* Adapted from Douglass and Cole<sup>27</sup>

ministration of fluorides, to adhesive pit and fissure sealants and ongoing programs for community and individual education to alter and improve food consumption and home health care, the cumulative affect has resulted in major changes in the types of services delivered during the past 20 years; including increased prophylactic and preventive services and a reduction in fillings and extractions. (Tables V, VI, VII\*) However, it should be noted that Douglass and Cole<sup>27</sup> caution that these changes do

not necessarily reflect an improved oral health status, at least based upon the Health and Nutrition Survey conducted during the early 1970's.<sup>32</sup>

### 3. The developing pre-doctoral dental education curriculum—

McCallum,<sup>16</sup> in his review of factors which have led to the decrease in the dental student's perceived need for specialty training, emphasized the increased exposure to the clinical sciences now possible in the pre-doctoral curriculum. Better prepared and more

sophisticated applicants to schools of dentistry now permit many dental schools to reduce the time formerly needed in the areas of the basic sciences. In addition, the greater in-depth instruction in traditional clinical sciences has been extended to other specialty areas, including practice management, community dentistry and the behavioral sciences. The results of an annual poll taken of recent graduates indicates that in all categories the graduates would appear to have

an improved appreciation of their own capabilities and knowledge. (Table VIII)

#### 4. The diversification of categories of trained ancillary personnel—

"The dentist's time is spent inexorably doing those things which could be done equally well by others spending less time to learn them at less cost to the educational system and, ultimately, to the patient."<sup>17</sup> Comments

Table VII. - Percent Distribution of Dental Visits by Primary Reason for Visit, 1977<sup>31\*</sup>

<u>Reason for Visit</u>	<u>Percent Distribution</u>
Examination for X-rays	16.1%
Prophylaxis & Other Preventive Treatment	13.1
Fillings (including inlays)	32.0
Oral Surgery (including extractions)	5.7
Crowns and Bridges	13.5
Periodontal Treatment	1.6
Orthodontic Treatment	2.5
Endodontic Treatment	5.2
Dentures	8.2
Other	0.2
Inaccurate data or unknown	1.6

\* Adapted from Douglass and Cole<sup>27</sup>

\* Although these tables are all based on data collected in national survey samples, there is substantial variation in the labeling of services, sources of data and units of measurement to necessitate separate presentation, which in turn do not permit complete trend analysis.<sup>27</sup>

Table VIII. - Rating of Knowledge by recent Dental School Graduates in Specialty Subject Areas, 1971, 1975\*

<u>Specialty Subject</u>	<u>Percent in Good or Excellent Categories</u>	
	1971 (N = 2,877)	1975 (N = 3,607)
Endodontics	66%	75%
Oral Surgery	53	67
Orthodontics	11	15
Pedodontics	72	77
Periodontics	51	74
Prosthetics -		
Fixed	75	85
Removable	66	77

\* Adapted from McCallum<sup>16</sup>

such as these by Rovin are not new or uncommon in the dental literature. Nor are his thoughts that the actions taken by the ADA House of Delegates in 1976 (which limited the suggested delegation of duties to expanded function auxiliaries<sup>33</sup>), "was not as much an intellectual denouncement of the role of expanded function auxiliaries in dental practice as it was a hasty response by some to a perceived but unreal encroachment on the economic and professional status of the dentist."<sup>17</sup>

Despite the statements and actions by the Association, the dental literature in the United States is filled with studies demonstrating that auxiliaries

can perform quite capably many of the routine tasks currently performed by dentists, including cutting procedures in restorative dentistry<sup>34,35,36</sup> and services in orthodontics,<sup>37</sup> periodontics,<sup>38,39</sup> prosthetics<sup>40</sup> and endodontics.<sup>41</sup> In addition, there is an extended literature discussing the performance of duties by denturists and auxiliaries in other countries.

However, of greater significance may be the reality that large numbers of practitioners are in fact delegating duties illegally to auxiliary personnel. Waldman and Shakun<sup>42</sup> reported that 78 percent of the dental hygienist and 97 percent of the dental assistant respondents to their questionnaire



indicated that they performed functions in the offices of general practitioners and specialists which placed themselves and their employers in violation of the state dental practice act. Similarly, McClosky<sup>42</sup> reported that one hundred percent of dental hygienist respondents from ten different states in her study indicated that they performed duties not permitted within their respective state practice acts.

Surely, the continued legal and possibly illegal performance of duties by auxiliary personnel will affect the variety and quantity of services that the general practitioner would be willing to defer to the specialist practitioner, particularly in light of the general practitioner's increased levels of training. In addition, the ongoing efforts by the Academy of General Dentistry to encourage and strengthen the general practitioner's performance, including the efforts to establish diplomate status in general dentistry,<sup>44</sup> must impact similarly on the extent of referrals to specialist practitioners.

##### **5. The availability of general practice residencies—**

"Perhaps dental education should consider a mandatory residency . . . requirement for all dental graduates. This would serve to reinforce the predoctoral dental experience to increase the clinical skills and

competence and better patient management."<sup>45</sup> Kentros' proposal is seconded by numbers of educators who favor the expansion of the dental program to a fifth year to accommodate the increased requirements of the basic and clinic sciences and general research. For example, Harvard School of Dental Medicine requires for its 1980-81 entering class, four academic years of 11 months each and a fifth year of nine months.<sup>46</sup> In addition, Kentros suggests that membership by a dentist on any hospital medical staff should have the rigid requirement of at least one year of an approved general practice residency or approved specialty training.

No doubt, the continued increase in general practice residencies supported by government funds could create a sufficient population of practitioners with general practice residencies training to permit the increased requirement standards for hospital appointment and other activities. "This would have the watershed effect of creating in the new graduate a general desire and interest in obtaining general practice residencies in dentistry prior to his entering private practice . . . Organized dentistry, state boards of dentistry, and educators should enter into meaningful discussions on a national level to effect this highly necessary mandate to the end that the public be better served at a more reasonable cost (than with the creation of more specialists)".<sup>45</sup>

#### IV. Discussion

While there is an ever increasing series of forces impacting on the practice of dentistry, probably one of the more difficult dilemmas is that associated with the delegation of duties to ancillary personnel. (As of this writing, the General Accounting Office has just called for the expanded use of auxiliaries in an effort to reduce the costs of dental services to the consumer.<sup>47</sup>) However, the lessons learned by our medical colleagues in their efforts to encourage the specialty of general medicine (i.e. family medicine) could provide some direction for our efforts. For example, as general medical practice was "elevated" to the status of the specialty of family medicine, so, too, could a general dentistry specialty (i.e. for those practitioners who have completed a residency program) provide an alternative for dentists interested in establishing practice configurations which would employ expanded function auxiliaries. In effect, the added diagnostic, treatment planning and service acumen, achieved by the added training, could "elevate" the practitioner beyond those tasks which many investigators report can be performed adequately by dental auxiliaries. Such an arrangement, with the elective delegation of duties, would closely resemble the general practice of medicine with the employment of physician assistants, nurses and other allied health personnel.

Lest we assume that such an effort would undermine the basic intent in the establishment of general practice residencies, Zucker's report<sup>48</sup> on the

career decisions of individual residents provides important information. His findings "suggest that general practice residencies may in fact lead to an increasing degree of specialization rather than enhancing long range career interests in general dentistry." Almost 55 percent of the residents in his study group reported taking general practice residencies while seriously considering specializing upon completion of their studies. Almost one-third of the respondent practicing specialists reported having first completed general practice residencies. For many, the residency provided the necessary additional credentials for acceptance to a desired specialty training program.

The suggested use of expanded function personnel by specially trained residents is not a requirement to compel dentists to provide services in any particular arrangement; rather, the suggestion is an effort to offer an opportunity to overcome the difficulties faced by the profession. Indeed, the day is upon the profession when it must come to terms with personnel capable of performing many of the tasks long believed to be within the sole province of the dental practitioner. The added training and experience gained by the general practice resident working in a hospital environment (with the intensive use of medical and dental auxiliary personnel) could provide the necessary motivation to bridge the present delivery arrangements and the practice configurations of the future.

## V. Outcome

Increased services by auxiliaries and additional training for general practitioners must impact eventually on the services provided by dental specialists. If, as it now appears, the economic realities of health services may limit the extent of dental treatment under any eventual national health insurance scheme, the possibility exists that the current leveling off in the numbers of entering positions to train specialists could be followed by an actual

decline in numbers.

Dental specialty programs, general practice residencies and the changing realities for the delivery of health services are inextricably interrelated. Changing societal demands undoubtedly will impact on all segments of the dental profession. It would seem better for the profession to grasp this opportunity for innovative planning than to permit outside forces to continually shape our future.

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## Kentucky Section

The fifty-first annual meeting of the Kentucky Section was held at the Galt House Hotel, Louisville, Kentucky on March 31. Members of the American College of Dentists and the International College of Dentists were joined in breakfast.

Dr. Arthur Van Stewart, Chairman of the Student Leadership and Professionalism Award, introduced the Award winners, Ms. Carol Summe from the University of Louisville and Mr. Robert G. Henry of the University of Kentucky. Both students were presented with a plaque and a check. Dr. Stewart announced that the College had approved the purchase of two permanent plaques for this award, one to be placed at the University of Louisville School of Dentistry and the other at the College of Dentistry, University of Kentucky.

New officers elected were Dr. Arthur Van Stewart, Chairman, Dr. Rudy Keeling, Vice Chairman and Dr. Hubert Fields, Jr., Secretary-Treasurer.

Hubert Fields, Jr.

## West Virginia Section

The Section meeting was held at the Greenbrier Hotel, White Sulphur Springs, West Virginia. Speakers were Dr. Balfour Mattox, Dr. Norman Olsen, Dr. I. Lawrence Kerr and Mr. Angelo Spinazzola, President of the Dale Carnegie Institute.

Dr. Mattox spoke about professional advertising and reviewed related actions by the American College of Dentists, the American Dental Association and the Academy of General Dentistry. He, then, introduced Dr. Norman Olsen as the new Regent for Regency 4.

Dr. Carl Laughlin introduced our main speaker, Mr. Spinazzola, who presented a dynamic, inspiring talk on the subject of public relations.

Newly elected officers of the Section are Dr. Dino Colombo, Clarksburg, Chairman; Dr. James Overberger, Morgantown, Vice Chairman and Dr. Robert E. Sausen, Morgantown, Secretary-Treasurer.

Robert E. Sausen

## Kansas City—Midwest Section

The annual meeting was held in the Roanoke Room of the Crown Center Hotel in Kansas City, Missouri. Chairman Russell Sumnicht conducted the meeting. Donald Williams and John S. Stone, both of Topeka, Kansas were introduced as recently elected to the College.

Dr. Sumnicht related some of the responsibilities of the Kansas City-Midwest Section at the ADA Annual

Session to be held in Kansas City in October 1981. The Convocation of the American College of Dentists will be held at the Hyatt Regency Hotel on Saturday, October 24, 1981.

Elected as new Section officers were Dr. Peter Fedi, Chairman; Dr. John McFarland, Vice Chairman and Dr. Ed Hall, Secretary-Treasurer.

Harry H. Cook



## Carolinas Section



Newly elected Chairman, Dr. Charles W. Horton, right, presents the Chairman's plaque to outgoing Chairman Dr. James A. Harrell, center. Secretary-Treasurer, Dr. Jack Shankle looks on.



Dr. William Draffin, left, President of the American College of Dentists, receives a recognition award from the Carolinas Section. The presentation was made by former Chairman of the Section, Dr. Henry Goodall, right.



The Carolinas Section held its recent meeting at the Mills Hyatt House in Charleston. This was the first annual Section meeting held away from Southern Pines, North Carolina in many years.

Nick Mandanis, Program Chairman, arranged afternoon tours of historic Charleston, followed by the evening banquet.

Dr. William Draffin, the current President of the American College of Dentists, was honored at the meeting. Dr. Draffin is a member of the Carolinas Section and practices in Columbia, South Carolina.

The membership unanimously endorsed a letter of congratulations to Dr. James B. Edwards on his appointment as Secretary of Energy in the Reagan administration. Dr. Edwards is a member of the Carolinas Section, an Oral Surgeon from Charleston and a former Governor of South Carolina.

New officers are Charles Horton, Chairman; Frank Hines, Vice Chairman; and Jack Shankle, Secretary-Treasurer.

R.J. Shankle

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## Southern California Section



Regent for Regency Seven, Dr. Leon Ashjian of Los Angeles, addresses the Southern California Section at the Disneyland Hotel. At left is outgoing Chairman, Dr. Leo Young.

The Southern California Section met April 12 at the Disneyland Hotel, joining in breakfast with the International College of Dentists. The meeting was held in conjunction with the Annual Scientific Session of the California Dental Association at Anaheim.

Dr. Leon Ashjian of Los Angeles, Regent for the American College of Dentists Regency 7, addressed the large group on some activities and concerns of the College.

Dr. Ashjian announced that his term as Regent would be completed in October, 1981. He expressed his appreciation to the Section for the honor of being its Regent.

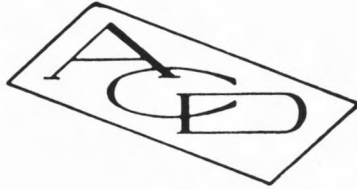
New officers for the Section were elected for the coming year: Dr. Lennart Karlson, Chairman; Dr. William Molle', Vice Chairman; and Dr. Richard Hancock, Secretary-Treasurer.

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## STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

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## *The Objectives of the American College of Dentists*

The American College of Dentists in order to promote the highest ideals in health care, advance the standards and efficiency of dentistry, develop good human relations and understanding and extend the benefits of dental health to the greatest number, declares and adopts the following principles and ideals as ways and means for the attainment of these goals.

(a) To urge the extension and improvement of measures for the control and prevention of oral disorders;

(b) To encourage qualified persons to consider a career in dentistry so that dental health services will be available to all and to urge broad preparation for such a career at all educational levels;

(d) To encourage, stimulate and promote research;

(e) Through sound public health education, to improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient;

(f) To encourage the free exchange of ideas and experiences in the interest of better service to the patient;

(g) To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public; and

(h) To make visible to the professional man the extent of his responsibilities to the community as well as to the field of health service and to urge his acceptance of them;

(i) In order to give encouragement to individuals to further these objectives, and to recognize meritorious achievements and potentials for contributions in dental science, art, education, literature, human relations and other areas that contribute to the human welfare and the promotion of these objectives — by conferring Fellowship in the College on such persons properly selected to receive such honor.



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