REMOVABLE PARTIAL DENTURE PROSTHODONTICS IN DENTAL PRACTICE A SURVEY

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CONTENTS

SUMMARY

1. Information concerning the concepts and attitudes of dental practitioners in South Australia towards various aspects of removable partial denture (RPD) prosthodontics was unavailable and hence it was decided to proceed with a survey to collect and analyze such data.

2. Questionnaires were prepared and mailed to dentists who possessed the degree of B.D.S. (Adelaide) and who were selected at random from the Dentists' Register after some modifications had been performed. Responses from 98 practitioners were analyzed using the Statistical Package for the Social Sciences installed on a C.D.C. Cyber 173 computer. Cross-tabulations were performed to determine whether the decade in which practitioners graduated, the site of their practice or the type of practice in which they worked influenced their concepts and attitudes.

3. Generally the concepts of practitioners in regard to the history, examination and treatment planning phase were similar to those presently taught undergraduate students in the University of Adelaide. Thus most respondents agreed about the need for assessment of patients' attitudes, oral hygiene habits, periodontal health and pulpal and occlusal status. Completion of mouth preparation prior to recording master impressions, discussing putative treatment plans with patients and providing a recall service were other aspects

about which there was substantial agreement. Dentists were ambivalent about the importance of consulting patients' physicians, assessing bone resorption and existing dentures, and the non-use of RPDs at night, and disagreed that it was important to record medical histories and written treatment plans and to articulate and survey study casts.

4. Analysis of these results according to the decade in which respondents graduated revealed that those who graduated in the 1970s were more likely to stress the importance of the various concepts encompassed by the questions asked than those who graduated in earlier decades. Although the number of dentists in the survey who worked in rural practices was small, it is suggested that some attitudes of these persons were influenced by inter-professional relationships and the need to utilize dental laboratories remote from their practices. Persons in partnership/associateship type practices were more likely to stress the importance of the concepts tested than dentists in solo practices especially those which might facilitate the transfer of information.

5. In view of previous studies, it was perhaps not surprising that many of the criteria presently taught undergraduate students were not followed by these practitioners when designing RPDs which were to be constructed using a base-metal alloy. Dentists were asked to design a Kennedy CLI lower partial denture (PL) and a Kennedy CLIII, modification 2 upper partial denture (PU). In regard to the PL,

respondents preferred to use cast base-metal alloy clasps of the gingival-approaching type and cingulum rests on the canines with lingual plate reciprocation. There was equal preference for lingual bar and plate major connectors. Although there were differences between the designs favoured by graduates from the three decades examined, no group presented ideas which were closer to present teaching concepts than the other two. A similar finding was reported when the responses of those in rural, Adelaide, solo and partnership/associateship practices were compared. Concepts of support for the PL and for the PU were poorly comprehended, as were those relating to the desirability of keeping gingival tissues uncovered by the various components. Designs proposed for the PU did not provide tooth support or retention for the anterior saddle, although the prostheses were generally overclasped on the posterior saddles. Differences were noted between the responses when analyzed according to the decade of graduation and the location and type of practice in which respondents worked, however no group presented concepts which were uniformly closer to those taught in the Dental School.

6. Practitioners were asked to indicate their perceptions of the importance of various educational factors in determining their concepts of three phases of RPD prosthodontics, namely, treatment planning, designing and clinical procedures. Clearly, most respondents stressed the importance of their undergraduate education, however those who graduated prior to 1960 placed less importance on this aspect and more on the

value of continuing education courses and to a lesser extent their associations with other dentists and reading of the literature. Other features of the study were the importance of dental technicians in influencing attitudes towards designs for RPDs and the importance of formal continuing education courses as opposed to study groups. The findings also highlighted differences between those in solo relative to partnership-type practices, and those in non-rural relative to rural practices, and supports the contention that dentists in partnership/associateship forms of practice and those in country areas relate more closely to other professionals.

SIGNED STATEMENT

This research report contains no material that has been accepted for the award of any other degree or diploma in any University, and to the best of my knowledge contains no material previously published or written by another person, except where due reference is made in the text of the report.

NING HOI CHEUNG

PUBLICATIONS

Part of the material in this research report was presented at the Annual Meeting of the International Association for Dental Research, Australian and New Zealand Division, August 1982, as indicated below:

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CHAPTER 1

INTRODUCTION

CHAPTER 1

In 1970, Carlsson and co-workers suggested that the demand for removable partial dentures (RPDs) would increase in subsequent years (Carlsson et al, 1970). Such a statement has been supported by several authors in the last decade or so. For example, Fereday (1970) found that the number of metal partial dentures provided in England and Wales had risen from twenty-one thousand in 1966 to thirty-one thousand two years later, and the number of 'plastic' partial dentures made in 1968 was even larger, over eight hundred and fifty thousand.

Hickey and Boucher (1972), and Young (1974) pointed out that an estimated thirty to thirty-five million Americans were either wearing or in need of complete dentures and estimated that several times as many patients required partial dentures. Levin (1975) indicated that more than fifty percent of the people in the United Kingdom were either partially or completely edentulous. MacEntee and Williamson (1980) cited statistics provided in the 1977 Nutrition Canada, Dental Report, which showed that "41% of the Canadian population over 19 years of age were edentulous in one or both jaws, 44.9% had less than seven teeth in the maxilla, 30.3% had less than seven teeth in the mandible and 20.4% were wearing a fixed or removable partial denture".

Gillings and co-workers in 1967 conducted a survey of patients to obtain information regarding the extent and effect of denture

wearing in the Australian community, particularly in the state of New South Wales. They considered the data obtained would help to evaluate patients' denture status and needs and therefore lead to areas where dental services could be bettered. Both completely and partially edentulous patients were surveyed in relation to such factors as the extent of prosthodontic replacement of missing teeth, the ages, types and conditions of the prostheses as well as the nature of the tissue associated with these prostheses. They found that 26% of patients who were considered by the examining dentists to have missing teeth which needed to be replaced by full or partial dentures, were not wearing dentures. Further, approximately 20% of those patients who were wearing partial dentures had had them for more than 10 years and 35% of these people felt that their dentures needed remaking or relining.

Parker et al (1983), in an interview-type survey in Adelaide, South Australia, indicated that around 35% of the sample investigated had natural dentitions with the loss of one or more teeth, but not all, and that only 43% of these people were provided with RPDs. Further, although most people felt that their partial dentures were satisfactory, 40% of these dentures were more than 10 years old.

Douglass (1983) conducted a telephone survey of private dental practitioners in the U.S.A. and collected data regarding the dental services performed by these dentists. His findings indicated that the number of patients about 60 years of age had increased, and that more teeth were being retained in the adult population, as a consequence of decreased periodontal disease and caries. Thus,

while fewer adults were edentulous, he concluded that there was a considerable need for prosthodontic services and therefore an increase in demand for the services was to be expected in future years.

It has been proposed that while the demand for complete dentures will decrease in future, the need for RPDs will increase, particularly in the older age groups in the community (Carlsson et al, 1970). Such a trend probably reflects changing attitudes to preventive measures, earlier and better conservative and periodontal treatment and a more positive community attitude towards the preservation of natural teeth. As well, the number of older persons in the population has increased as a result of the prolonging of man's life span (Henderson, 1974; Margolese et al, 1980). Therefore, it seems logical that prosthodontic education should ensure that dentists are prepared for this changed demand for their services (Young, 1974; Frantz, 1975; Basker and Davenport, 1978; Collis et al, 1982).

Several studies have shown that although dental schools around the world teach RPD prosthodontics in different ways, their teaching was aimed at the preservation of remaining tissues rather than the meticulous, but 'mechanical', restoration of what was missing (Fish, 1964; Bowman, 1970; Quinn, 1971; Barsby and Schwarz, 1979; Collis et al, 1982). Such an approach has been adopted in the Dental School, the University of Adelaide (Parker, 1981). However, results from several studies have indicated that it would be unwise to presume that what was taught to undergraduate students concerning RPD

prosthodontics, would ensure that they practised in this manner after graduation (Atkinson and Elliott, 1969; Frantz, 1973, 1975; Barsby and Schwarz, 1979; Schwarz and Barsby, 1978, 1980; Basker and Davenport, 1978; Collis et al, 1982).

Schwarz and Barsby conducted a postal survey of dentists who qualified in the United Kingdom between 1957 and 1977 to gather information regarding a wide range of activities involved in the provision of partial dentures. They concluded that there were differences between what was taught in dental schools and what was practised in general dental practice and that some RPD prosthodontic procedures were abandoned at an early stage in dental practice (Schwarz and Barsby, 1978, 1980; Barsby and Schwarz, 1979).

Some of the reasons suggested by Schwarz and Barsby (1980) to account for the disparity between what was taught in the dental school and what was practised by graduates were:

a. insufficient emphasis in the teaching of these procedures,

b. infrequent use of certain procedures in dental practice, e.g. the greater use of acrylic resin dentures relative to those with metal bases results in infrequent preparation of rest seats,

c. rationalization of the value of certain procedures by practitioners based on feedback from technicians and patients - success might be measured in relation to patient satisfaction and whether further treatment becomes necessary within a short time,

d. the economic pressures of practice which might discourage the use of various procedures,

e. lack of clinical freedom for newly qualified graduates working in practices as assistants or associates.

It has been shown that the disparity revealed by Schwarz and Barsby is not restricted to RPD prosthodontics alone, but occurred in other fields of dentistry as well (Murphy et al, 1972; Walker, 1972; Silversin et al, 1978; Leeper, 1979). Several of these authors have suggested this occurred because dental students were not given the opportunity to understand what their future roles and functions in society would be as individuals as well as professionals. It was also proposed that undergraduate students were inadequately prepared to cope with practice administration, economics, ergonomics and jurisprudence.

Many authors have indicated that in order to produce a satisfactory result when rendering an RPD service, it is essential that the dentist derives an integrated treatment plan based on proper patient assessment, including medical and dental histories and a comprehensive clinical examination complemented by radiographs, articulated study models and microbiological examination if required (Carlsson et al, 1970).
An efficient patient education programme and an effective recall system each six to twelve months also help to ensure the long term success of the partial denture treatment (Carlsson et al, 1970, 1976; Derry and Bertram 1970; Nakazawa, 1977; Zarb and Mackay, 1980).
Sound clinical procedures that include the taking of accurate master

impressions, correct jaw relation records, adequate designs for prostheses, careful assessment of trial and final dentures complemented by precise laboratory work, also affect the successful outcome of prosthodontic treatment.

Several studies have shown clearly that there were considerable variations in the concepts of dentists towards the design of suitable partial dentures. Frantz (1973, 1975) conducted one such survey in which dentists were provided with study models and the patient's dental history, and were asked to design a maxillary RPD. He found that there were considerable differences in the designs suggested and, perhaps more importantly, that numerous respondents were unable to provide adequate reasons for the designs they presented. Although this might reflect insufficient or inadequate training, there are so many conflicting opinions in the literature about what constitutes acceptable design principles, and very little research data to support these opinions, it is perhaps not surprising that the responses of these practitioners were confused.

Information concerning the concepts and attitudes of dental practitioners in South Australia towards RPD prosthodontics was unavailable and hence it was decided to proceed with a survey to collect and analyze such data. The specific aims of the study were to:

a. collect data from general practitioners about their concepts of RPD prosthodontics,

b. determine whether factors could be identified which influenced these concepts,

c. ascertain whether respondents were satisfied with their undergraduate education and to what extend they felt this influenced their practice of prosthodontics.

It was decided that data collection would be by means of a questionnaire, rather than interview, as this ensured the anonymity of respondents and avoided the difficulty of one practitioner observing and discussing the clinical procedures carried out by another. It was recognized that a postal survey had a number of shortcomings because of the difficulty of formulating questions which were unambiguous and which could be adequately analyzed. Further, previous studies indicated that postal surveys tended to result in low response rates (MacEntee and Williamson, 1980; Gerke and Smales, 1981).

As will be shown subsequently, the questionnaire was divided into several parts and questions were formulated which it was felt would best indicate the attitudes of respondents towards the practice of RPD prosthodontics. This approach was adopted after discussion with Mr R.A. Cannon, Director, Advisory Centre for University Education, the University of Adelaide, as it was felt that questions aimed at deriving information about what practitioners actually do were likely to either cause offence or result in inaccurate replies. Hence, in the main, this study is about attitudes and concepts rather than what is actually practised. The extent to which attitudes and concepts might be related to clinical practice was not evaluated specifically.

Data obtained were analyzed using a commercially available package (Statistical Package for the Social Sciences, 1982). Initially, responses were analyzed by frequency, but as will be explained later, profiles and subgroups of questions were formulated and cross-tabulated with several variables. Four profiles or groups of questions are analyzed in this report and the influences of the decade in which respondents graduated and the type and location of their practices are discussed.

This research report is divided into several chapters. The first serves to introduce the subject and review the literature while the second covers the methodology used. The next five chapters include the results of the survey and the analyses performed, and the concluding chapter provides a general discussion of the project undertaken, as well as some comments on its limitations and possible future investigations. A bibliography is included and the questionnaire used is attached as an appendix.

CHAPTER 2

METHODOLOGY

CHAPTER 2

In this Chapter the methodology used to gather and analyze data relating to the concepts and attitudes of general practitioners towards RPD prosthodontics will be described. A copy of the questionnaire used to derive these data is included in Appendix 1.

1. Questionnaire

The questionnaire, which was arranged in nine parts, contained 233 questions designed to gain information about the respondents and their attitudes towards the practice of RPD prosthodontics.

Part A of the questionnaire was designed to provide information about the respondents' qualifications, year of graduation, location and type of practice, dental disciplines of special interest, additional training and experience as a tutor. As well, some questions were included to ensure that respondents met the criteria of the survey, viz. that they were general dental practitioners and graduates of the University of Adelaide who possessed the degree of Bachelor of Dental Surgery (B.D.S.). Those questions relating to the special interests, experience and training of respondents were included so that persons who might have additional skills or interests in removable prosthodontics could be isolated and their responses evaluated. Similarly it was possible to isolate and evaluate the attitudes of respondents who graduated in different periods, as well as those who worked in different types of

practices or locations. The sex of the respondents was not sought because of the small number of female graduates in general dental practices in South Australia. Practitioners who did not include RPD prosthodontics in their practices were instructed not to proceed beyond Part A of the questionnaire.

The second part of the questionnaire sought to elicit the attitudes of practitioners to the importance of various aspects of the history and examination phase of treatment. Eighteen questions were asked concerning medical, social and dental history, oral hygiene and dietary habits, assessment of oral conditions and existing prostheses and radiographic records. Respondents were also asked to indicate what type of radiographs they usually required. For details of the questions asked and the method by which respondents were invited to respond see Appendix 1 (Part B of questionnaire). Part C contained twenty questions concerning the importance of various aspects of impression taking and cast production (see Appendix 1 for details). These questions related to study casts, their articulation and survey, the use of special trays for recording master impressions and the type of articulator most frequently used during the construction of an RPD. Respondents were asked to indicate which impression material they most frequently used for master impressions, why they selected this material and some details about the production of master casts. Fifteen questions concerned with the treatment of patients who required RPDs followed, in which the respondents' concepts of the various aspects of the procedures involved in the execution of the treatment plan were sought (see Appendix 1; Part D -

Treatment Planning). The fifth section was included to ascertain the importance placed by practitioners on the preparation of abutment teeth which are to receive an RPD. Only three questions were included as it was felt that, in the absence of specific details of design and accurate study casts, they should be restricted to the importance of rest seat preparation and modification of tooth surfaces.

Part F comprised twenty-five questions seeking information about the use of dental technicians, the method of communication between respondents and technicians and the materials most frequently used for constructing RPDs. The seventh section consisted of four questions concerning (a) the importance of occlusal adjustment at and after the insertion of RPDs and (b) regular recall visits. Those respondents who provided a regular recall service for patients who had RPDs constructed were asked to indicate the frequency of such recall visits.

Part H, the largest of the sections, comprised eighty-seven questions concerned with the design of two RPDs - one for the lower and one for the upper arch. Study casts of the two cases described were not supplied as the practitioners were instructed that the questions sought general responses and that there were no clinical factors to impede the designs. A bilateral free-end saddle partial denture was needed in the lower arch to replace premolars and molars (Kennedy Class I). Questions sought respondents' concepts of the form of support required, the nature of clasps and their reciprocation, the type of major

connector and the provision of indirect retention. Three enclosed saddles (Kennedy Class III, modification 2) required restoration by the upper partial denture. Practitioners were asked to signify the means by which they would derive support and retention, and which forms of major connector they would utilize.

The last section contained forty questions which were designed to derive respondents' opinions about their dental education in RPD prosthodontics. Practitioners were asked to indicate how their practice of RPD prosthodontics in the areas of treatment planning, designing and clinical procedures were influenced by various educational factors. In the event that they did not believe that their undergraduate education influenced their practice they were asked to indicate why.

Instructions for the use of the questionnaire were included on the front page. For most questions, systems whereby respondents could provide graded responses were utilized. These systems ranged from either 'extremely important' to 'of no importance' or from 'always' to 'never'. For several questions practitioners were provided with a choice of options and space was provided for written comments where appropriate.

Questionnaires were mailed to selected dentists with a covering letter explaining the nature and purpose of the survey (Appendix 2). A pre-paid, self-addressed envelope was enclosed for return of the questionnaire. Although participants were advised that they would be contacted if they failed to respond by a given date, the high response rate obtained negated the need for follow up.

2. Selection of Dentists

The Dentists' Register (1981) published by the South Australian Government was used to select those general practitioners who were to receive the questionnaire. Dentists known to be employed by the Government or the University of Adelaide, and those with interstate or overseas qualifications, as well as those whose names were added to the Register prior to 1950 or after 1980 were eliminated from the sample. The remaining four hundred and ten names were each assigned a number and, with the aid of a random number table, practitioners were selected to avoid possible bias. The sample selected, numbering two hundred, was used for the postal survey.

Each questionnaire was numbered and a list of practitioners and the number of the questionnaire posted to each practitioner was compiled to permit further contact if required. The purpose of the list was to facilitate the follow up of those practitioners who failed to respond. Respondents were not required to include their names on the forms and were assured that responses were confidential and anonymous.

3. Analysis of Data

As replies were received they were checked and those persons who did not meet the prescribed criteria were withdrawn. Responses were coded for analysis using the Statistical Package for the Social Sciences (Nie et al, 1975) installed on the C.D.C. Cyber 173 computer at the University of Adelaide.

The Chi-squared test was employed to determine statistical significance, a probability level of $P \leqslant 0.05$ indicated a significant difference between the groups of data tested. For convenience, the differences between observations are described in the text as either 'significant' (that is, $P \leqslant 0.05$) or 'not significant' (that is, $P \geqslant 0.05$).

In many instances respondents did not provide responses to questions asked, and in these circumstances a missing value was recorded. However, when percentage figures were calculated they were based on the number of actual responses for any question.

Clearly in a research report such as this, it was not possible to include all aspects of the survey and it was decided to restrict the presentation to an analysis of responses relating to the examination and treatment planning phase, the design of the two partial dentures and the section concerned with dental education.

As outlined in succeeding chapters, various groups of questions were selected which it was hoped would facilitate analysis of the data obtained and permit cross-tabulation according to factors such as the decade in which dentists graduated and the location and type of their practices.

CHAPTER 3

PERSONAL DATA CONCERNING RESPONDENTS

CHAPTER 3

One hundred and thirty of the two hundred questionnaires were returned (65%) without the need for a 'follow up' telephone call and, of these, ninety-eight (75%) were assessed as satisfying the criteria for acceptance in the survey. In view of this satisfactory response rate, it was decided that no attempt would be made to contact non-respondents. The majority of those responses rejected were provided by persons in government employment.

All persons whose responses were included in the data file were known to be:

a. graduates of the University of Adelaide possessing the degree of Bachelor of Dental Surgery,

b. in private, general practice,

c. to include removable prosthodontics in their practices.

In addition, all graduated between 1950 and 1979 inclusive.

In this Chapter, findings relating to some personal characteristics of the respondents will be presented. For details of questions asked see Appendix 1, Part A.

RESULTS

1. Qualifications of Respondents

As indicated above, all 98 practitioners possessed the B.D.S. qualification from the University of Adelaide. In addition, four

held the Fellowship of the Royal Australasian College of Dental Surgeons and three possessed other qualifications.

2. Decade of Graduation

It was decided to subdivide the respondents into three groups according to the decade in which they graduated. Twenty-one persons graduated in the 1950s (viz. 1950-1959 inclusive), twenty-seven in the 1960s (viz. 1960-1969) and fifty in the 1970s (viz. 1970-1979). In some instances comparisons were made between the responses of those who graduated in the first half of the 1970s (viz. 1970-1974 inclusive) with those who graduated in the second half. Twenty-seven respondents graduated in the latter half of the 1970s and twenty-three in the earlier period.

3. Location of Practice

Twenty-five respondents (26%) practised in the City of Adelaide, sixty (61%) in the suburbs of Adelaide or rural areas close to Adelaide (viz. within the 08 telephone zone, i.e. radius of approximately 30 km) and twelve (12%) in country areas of South Australia (viz. outside the 08 telephone zone). One practitioner failed to respond to the question. The distribution of dentists according to the location of their practices and the year of graduation are indicated in Figure 3.1. It was of interest that only one dentist in twenty-six of those who graduated in the 1960s compared with one in six of those who graduated in the 1950s and 1970s practised in rural areas.

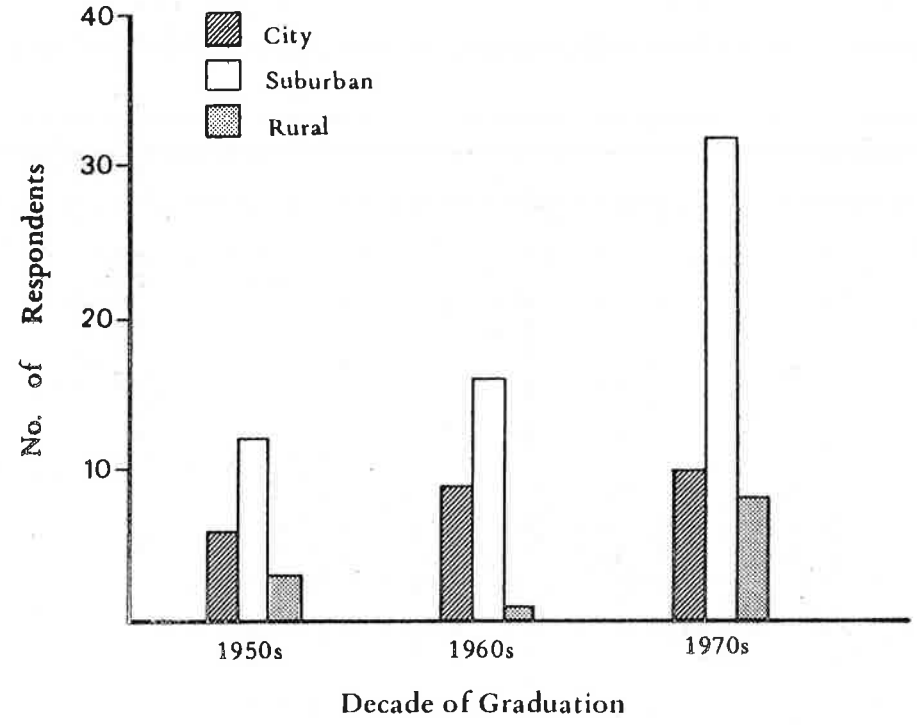


FIGURE 3.1 Locations of dentists' practices according to the decade in which they graduated.

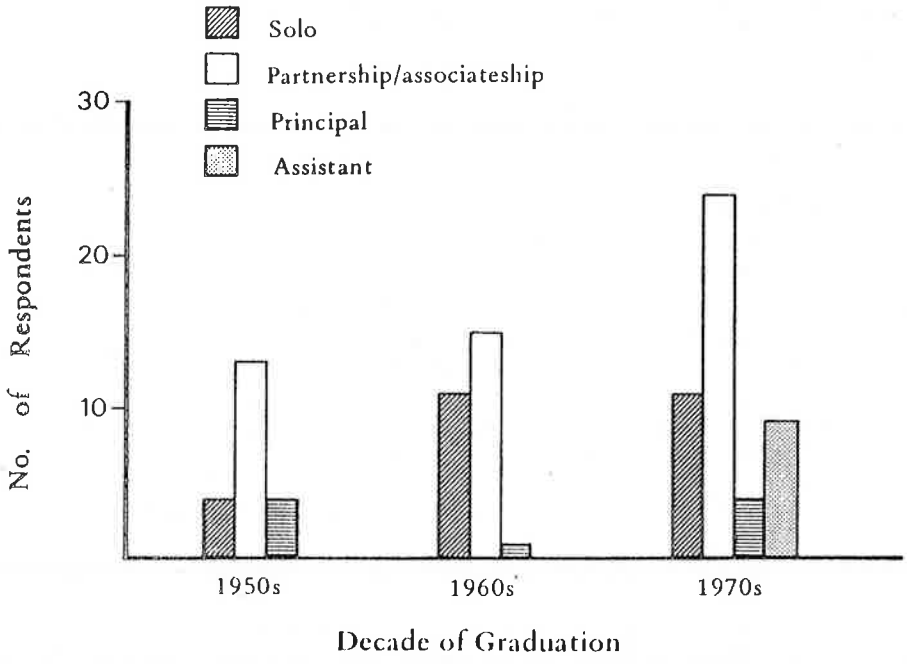


FIGURE 3.2 Types of practices according to the decade in which dentists graduated.

4. Type of Practice

The types of practices in which respondents had spent most time in the two year period leading up to the survey were categorized into four divisions, namely, solo, partnership or associateship, principal, and assistant (see Figure 3.2). Two respondents indicated that they worked in some other form of practice but did not specify its nature. Clearly, the majority of dentists worked in a partnership or associateship arrangement with one or more colleagues - 62% of graduates from the 1950s, 56% from the 1960s and 48% from the 1970s. It was also of interest that only the more recent graduates were employed as assistants. In fact, of the nine assistants who responded, seven graduated in the period 1975 to 1979.

5. Major Fields of Special Interest in Dental Practice

Respondents were asked to indicate up to two of the major disciplines of dentistry listed in the question in which they felt they had a special interest. Fifty-seven indicated that one of their major interests was conservative dentistry, while twenty-four included complete denture prosthodontics and the same number crown and bridge prosthodontics. Only twelve practitioners listed removable partial denture prosthodontics as a major field of interest. Other interests are shown in Table 3.1.

When the responses for each field of interest were calculated as a percentage of the total responses for each decade some interesting results emerged (see Table 3.1). In particular, when

TABLE 3.1 MAJOR FIELDS OF SPECIAL INTEREST

SPECIAL INTEREST	ALL RESPONDENTS	DECADE OF GRADUATION		
		1950s	1960s	1970s
Conser. Dent.	30 (57)	25 (9)	35 (21)	29 (27)
Complete Denture	13 (24)	28 (10)	8 (5)	10 (9)
RPD	6 (12)	13 (5)	3 (2)	5 (5)
Crown & Bridge	13 (24)	3 (1)	12 (7)	17 (16)
Endodontics	11 (20)	11 (4)	7 (4)	13 (12)
Preventive Dent.	12 (23)	11 (4)	13 (8)	12 (11)
Periodontics	6 (11)	3 (1)	10 (6)	4 (4)
Others	9 (17)	5 (2)	12 (7)	9 (8)

Interests of respondents, expressed as a percentage of the total number of responses from:

i. all respondents,

ii. respondents in each decade of graduation.

Numbers in brackets indicate number of respondents.

Note: 'Others' category included oral surgery, orthodontics and paedodontics.

the classical disciplines associated with adult restorative dentistry were analyzed, it was clear that graduates from the 1950s were interested more in removable prosthodontics (complete and partial) than those who graduated in the next two decades, who had a greater interest in crown and bridge prosthodontics.

6. Tutor in Removable Partial Denture Prosthodontics

Twelve of the respondents had tutored removable prosthodontics at the University of Adelaide, five graduated in the 1950s, four in the 1960s and three in the 1970s.

DISCUSSION

The high level of response to the questionnaire was particularly gratifying in view of the somewhat lower rates reported in previous studies. For example, Gerke and Smales (1981) who surveyed general practitioners in South Australia to their practices reported a response rate of 35%. The reasons for this difference are difficult to determine but might relate to the discipline of the present survey which does not appear to have been covered previously.

The decision to exclude all those who did not possess the degree of B.D.S. (Adelaide) was made so that the primary dental education of all respondents was known. Certainly, there were differences in the education provided during the thirty year period involved but it was felt that respondents from any given

period were more likely to have had similar backgrounds than persons from different dental schools.

The majority of respondents had not had additional formal education leading to higher degrees or diplomas; three had higher degrees unrelated to the discipline of Removable Partial Denture Prosthodontics and four possessed the Fellowship of the Royal Australasian College of Dental Surgeons. In regard to the Fellowship, perhaps it was not surprising that three of the four fellows were graduates from the 1970s, as the College was not established until the mid-1960s and did not become well recognized as an educational institution until the 1970s.

No attempt was made to send questionnaires to equal numbers of graduates from the three decades, and hence the number of respondents from the first two decades combined was approximately the same as the number from the 1970s. In relation to some other states in Australia, South Australia has an unusually large percentage of its population based in the capital city and a much smaller percentage dispersed in rural areas. Many of the rural towns are situated several hundred kilometres from Adelaide which has the only dental school in the State. It was of interest in this survey to determine whether the concepts, attitudes and practice of those dentists in rural areas differed from their city and suburban counterparts. Unfortunately the relatively small number of rural respondents made such an analysis difficult. As it is generally acknowledged that fewer opportunities are available for recent graduates to commence general practice in

Adelaide it was not surprising to find that a higher percentage of graduates from the 1970s (16%) were in country practices compared with graduates from the 1960s (4%).

Clearly the majority of dentists practised with colleagues, usually in partnership or associateship arrangements (53%). Graduates of longer standing were more likely to be in this form of practice than those from the 1970s who were more likely to be employed, whereas the number of dentists in solo practice who graduated in the 1960s was more than twice the number in each of the other two decades.

It was not the purpose of this survey to investigate the demographic distribution of dentists in South Australia and to provide reasons for the characteristics mentioned above. However, the separation of such groups does make it possible for various factors to be examined which might influence the attitudes and concepts of practitioners.

CHAPTER 4

HISTORY AND EXAMINATION PHASE IN REMOVABLE PARTIAL DENTURE PROSTHODONTICS

CHAPTER 4

Training students to collect and assess data concerning the attitudes, habits and general and oral status of patients who require RPDs forms a major component of the teaching in removable prosthodontics in this and most other dental schools (Parker, D.A.S., personal communication; Fish, 1964; Bowman, 1970; Quinn, 1971; Barsby and Schwarz, 1979; Collis et al, 1982). It is suggested that in order to produce a satisfactory partial denture, an integrated treatment plan must be formulated, based on proper patient assessment including medical, dental and social histories and a comprehensive clinical examination complemented by radiographs. Therefore, it was of interest in this study to ascertain the level of importance placed on the history and examination phase of patient management by general practitioners. To this end a series of questions was derived which sought dentists' attitudes to various aspects of the phases (see Appendix 1, Part B).

Responses were analyzed for each question asked and further evaluated by considering (a) a profile of questions and (b) smaller groups of questions (sub-groups) from within the profile. Responses were also analyzed to determine whether the decade of graduation, the location of the respondent's practice or the type of practice influenced the profile, sub-groups or individual questions.

RESULTS

1. Frequency of Responses to Individual Questions

The responses for each question asked concerning the history and examination phase in RPD prosthodontics are listed in Table 4.1. Most respondents placed greatest importance on the assessment of a patient's oral hygiene habits, oral status and attitudes, but did not place the same level of importance on those aspects relating to medical and social histories and the assessment of bone resorption and existing dentures.

Approximately one half of the respondents assessed the need for radiographic records as being 'very' or 'extremely' important. The types of radiographs usually required by practitioners are indicated in Figure 4.1.

2. Profile

Those questions which it was felt best represented the main features of this history and examination phase were arranged into a profile and the responses to them were analyzed further. For respondents to comply with the profile, it was necessary for their answers to all questions marked with dots in Table 4.1 to be 'extremely important' or 'very important'. In addition, respondents were required to 'usually require' either full mouth survey or regional periapical and bite-wing radiographs.

Four practitioners met the requirements of the profile by responding positively to all questions. Three of them were

TABLE 4.1 IMPORTANCE OF ASPECTS OF HISTORY AND EXAMINATION PHASE

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
● Written summary of medical history (by dentist)	1	18	52	23	6
Summary of social and family history	2	14	35	42	6
● Consultation with physician if patient has medical problem	12	33	34	20	1
● Assessment of patient's oral hygiene habits	62	35	3	0	0
Assessment of patient's dietary habits	24	30	37	8	2
● Assessment of patient's attitude to retention of remaining natural teeth	69	29	2	0	0
● Assessment of patient's attitude to dentures	57	35	8	0	0
● Assessment of periodontal status	70	28	2	0	0
● Assessment of pulpal status of remaining teeth	33	38	27	3	0
● Anaylsis of occlusion	44	36	16	3	0
● Assessment of bone resorption in edentulous areas	10	35	43	10	1
● Assessment of old prosthesis if present	12	37	40	8	2
Radiographic records	24	28	39	9	0

● Questions included in profile

The figure in each box represents the number of responses for that attribute expressed as a percentage of the total responses for the specified question.

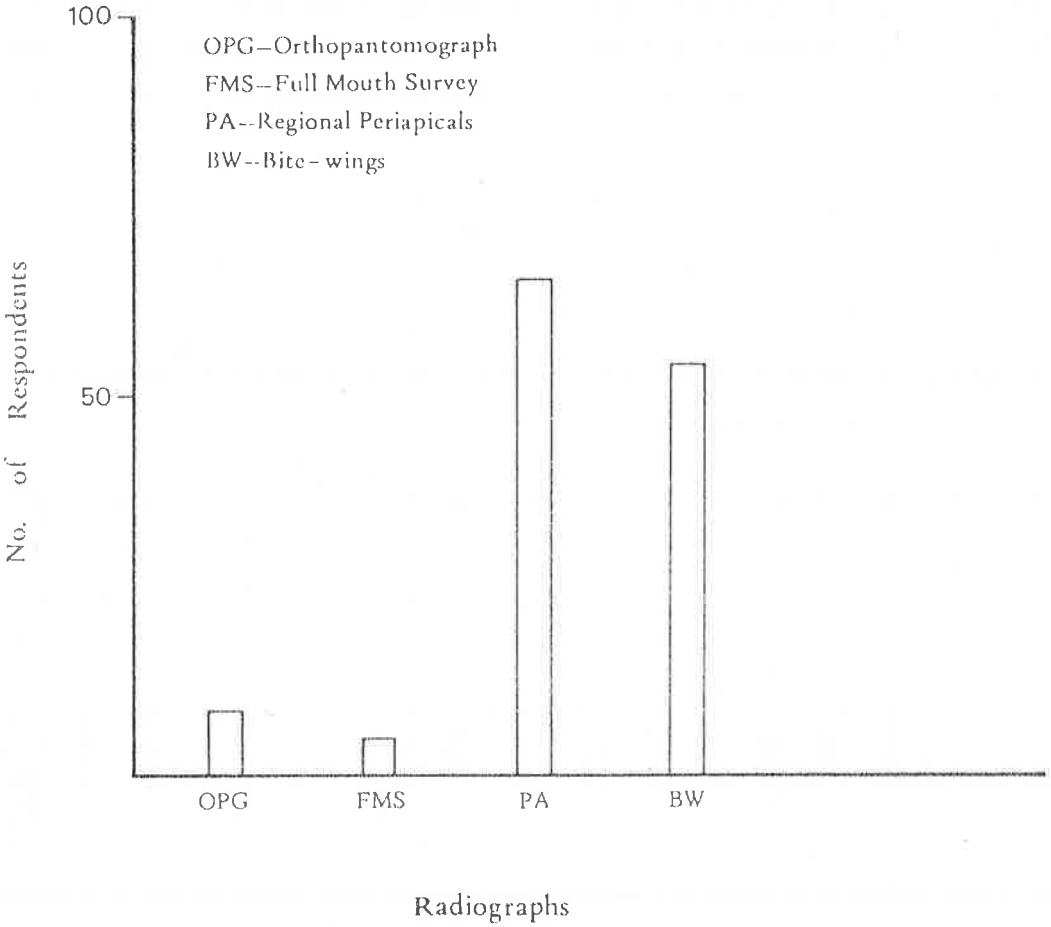


FIGURE 4.1 Types of radiographs "usually required" by practitioners for patients who require RPDs. Respondents were able to indicate more than one form of radiograph.

graduates from the 1970s, one from the 1960s and all four practised in the city or near city areas of Adelaide. Respondents were distributed evenly among the four types of practice investigated, namely, solo, partner/associate, principal and assistant.

3. Sub-groups and Individual Questions

Questions comprising the profile were divided into five sub-groups to represent the major areas of this phase. Details of the sub-groups, the questions constituting each sub-group and the percentage of respondents whose answers were positive are shown in Figure 4.2. A positive response was achieved for each question if the respondent assessed the importance of the attribute as 'extremely' or 'very' important or, for radiographs, if the designated type was 'usually' required. A positive response for each sub-group was obtained if all questions in the sub-group were positive except that for the radiographs sub-group a positive response was achieved if the practitioner 'usually' required either full mouth or regional periapical radiographs plus bite-wings.

a. All respondents

The responses for each sub-group and for each question in the sub-groups are indicated in Figure 4.2. Clearly, almost all respondents stressed the importance of assessing patients' attitudes to the retention of remaining teeth and to their existing dentures, but relatively few felt that a written

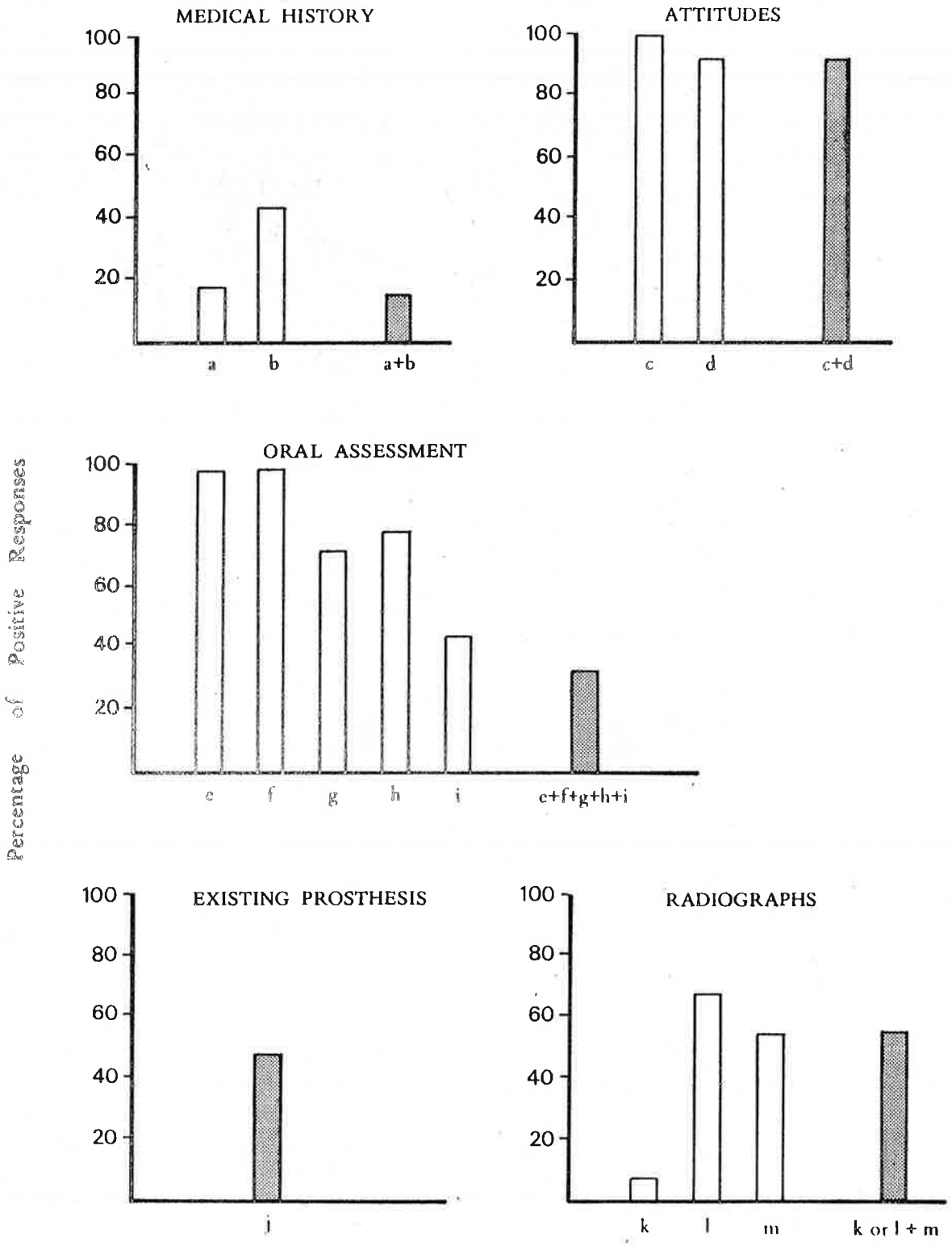
FIGURE 4.2

Percentage of positive responses from all respondents to questions constituting history and examination profile and its five constituent sub-groups. The percentage of positive responses for each question is given by the height of the open column and for each sub-group by the hatched column.

A positive response was achieved for each question if the respondent assessed the importance of the attribute as 'extremely' or 'very' important or, for radiographs, if the designated type was 'usually' required. A positive response for each sub-group was obtained if all questions in the sub-group were positive.
Note: For the radiographs sub-group either k or l (but not both) plus m had to be positive.

The letters used opposite represent the following questions:

a. written summary of medical history
b. consultation with physician if patient has medical problem
c. assessment of patient's attitude to retention of remaining natural teeth
d. assessment of patient's attitude to dentures
e. assessment of patient's oral hygiene habits
f. assessment of periodontal status
g. assessment of pulpal status of remaining teeth
h. analysis of occlusion
i. assessment of bone resorption in edentulous areas
j. assessment of old prosthesis if present
k. full mouth survey
l. regional periapicals
m. bitewings.


MEDICAL HISTORY
100
80
60
40
20
a
b
a+b
ATTITUDES
c
d
c+d
Percentage of Positive Responses
ORAL ASSESSMENT
e
f
g
h
i
c+f+g+h+i
EXISTING PROSTHESIS
j
RADIOGRAPHS
k
l
m
k or l + m

summary of the medical history was important and less than half felt it was important to consult with the patient's physician if a medical problem was known to exist.

Approximately one-third of responses relating to the oral assessment sub-group were positive. This result occurred mainly because of the lack of importance placed by practitioners on an assessment of bone resorption in the edentulous areas. As well, only about three-quarters of the responses to the two questions concerning occlusal analysis and assessment of pulpal status of remaining teeth were positive.

Less than half the respondents felt that assessment of existing prostheses were very important in their examination of patients requiring an RPD.

While nearly three-quarters of the practitioners usually required periapical radiographs of relevant teeth in their examination of patients requiring partial dentures, only fifty-three percent felt that bite-wings were necessary.

b. Effects of decade of graduation

The percentage of positive responses for each sub-group were analyzed according to the decade in which the respondents graduated (see Figure 4.3). A greater percentage of dentists who graduated in the 1970s provided positive responses to the medical history, oral assessment and existing prosthesis sub-groups. These differences were found to be significant

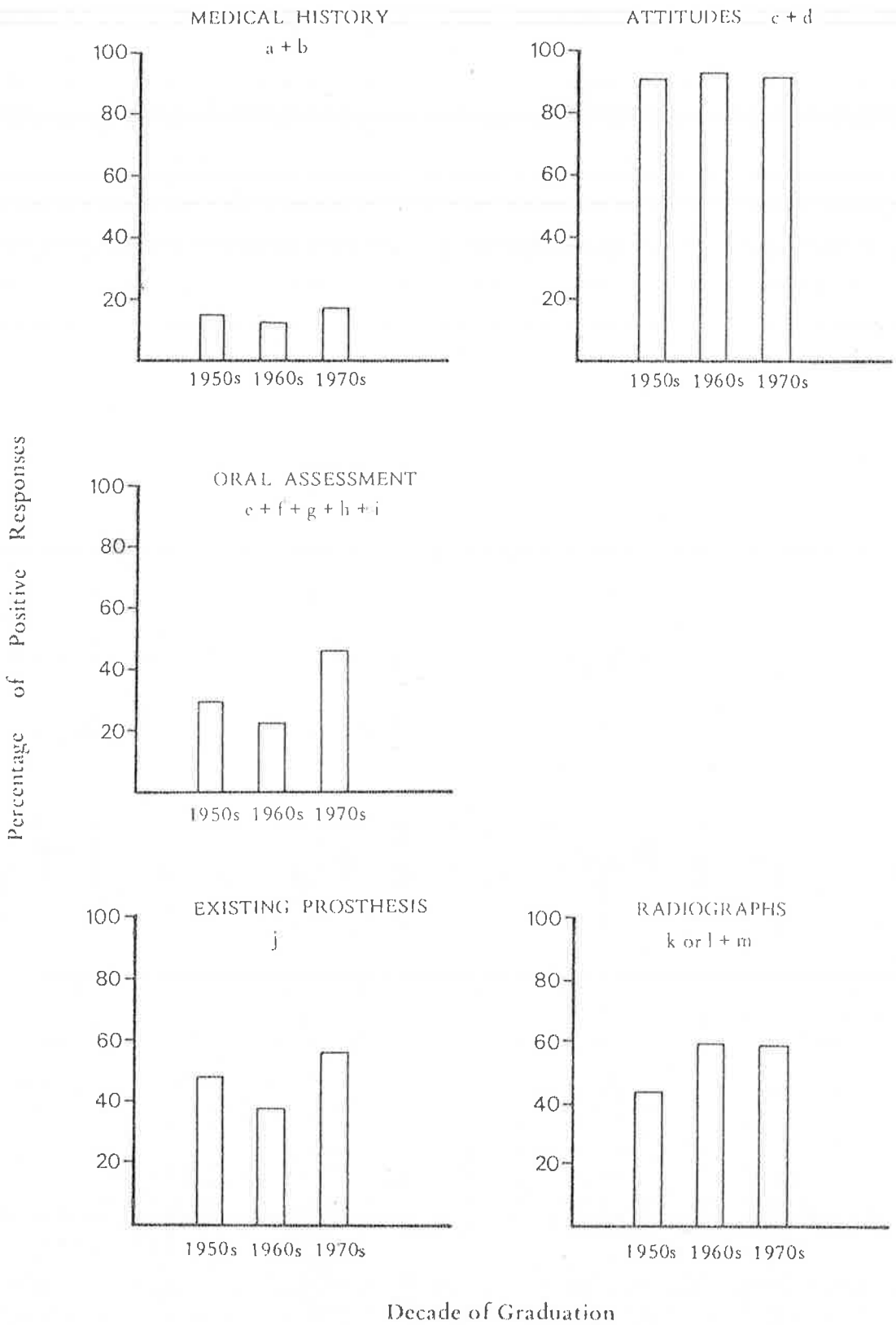


FIGURE 4.3 Percentage of positive responses to sub-groups which constituted history and examination profile according to decade of graduation. For details of sub-groups and questions included in each sub-group see Figure 4.2.

for the medical history and oral assessment sub-groups when the number of positive responses from the most recent decade was compared with that from the two preceding decades of graduates (Chi-squared analysis; $P \leqslant 0.05$). Practitioners who graduated in the 1950s also provided a greater percentage of positive responses for these sub-groups than their colleagues from the 1960s, although none of the differences was significant. While there was no difference between the attitudes of respondents, in any of the decades, to the importance of assessing patients' attitudes to their present dentures and to the retention of remaining natural teeth, graduates from the 1950s were less likely to require either periapical or bite-wing radiographs.

Although the Tables and Figures presented do not include an analysis of the effect of the decade of graduation on the responses to each question, it was found that the more recent group of graduates provided a higher percentage of positive responses to the following questions:

Written summary of medical history

Consultation with physician

Assessment of pulpal status

Analysis of occlusion *, † (see footnote)

Assessment of bone resorption † (see footnote)

Assessment of old prosthesis.

Chi-squared analysis revealed that the number of graduates who provided positive replies to these questions was significantly different ($P \leqslant 0.05$) for the decades:

* 1970s vs. 1950s plus 1960s
† 1970s vs. 1960s.

A much higher percentage of practitioners graduating in the 1970s usually required orthopantomographic (20% cf 6%) and full mouth survey 17% cf 3%) radiographs when compared to those who graduated in the two preceding decades.

c. Effect of location of practice

Sub-groups were analyzed according to whether dentists practised within the metropolitan and near metropolitan areas of Adelaide or in rural districts. Results are presented in Figure 4.4.

Consideration of the medical history sub-group indicated that a slightly higher percentage of practitioners in the country areas provided positive responses. However, when the two questions comprising the sub-group were analyzed individually there was no difference in the percentage of positive responses to the question concerning the written medical history, but a substantially greater percentage of rural practitioners stressed the importance of consulting physicians (73%) compared with 34% of those in Adelaide* practices.

Clearly there was a major difference between the responses of Adelaide and rural practitioners to the oral assessment sub-group. Chi-squared analysis showed this difference to be significant ($P \leqslant 0.05$). The percentages of rural practitioners who responded positively to four of the five

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* Adelaide will be used throughout this report to designate those practices within the City of Adelaide and the 08 telephone zone as indicated on p.3.2.

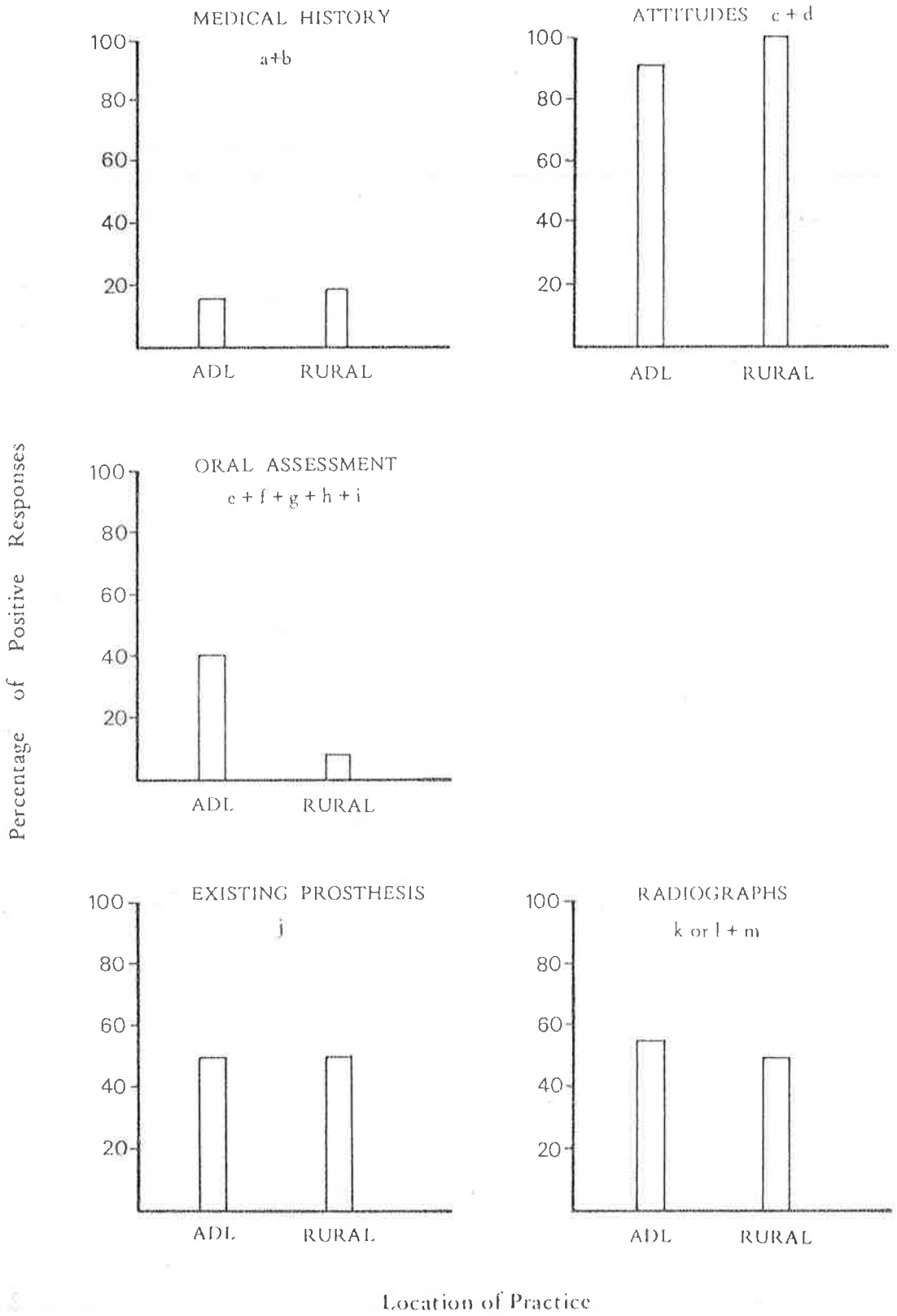


FIGURE 4.4 Percentage of positive responses to sub-groups which constituted history and examination profile according to location of practice. For details of sub-groups and questions included in each sub-group see Figure 4.2.

ADL - Adelaide

questions constituting the sub-group, namely, assessment of oral hygiene, periodontal and pulpal status and bone resorption, were found to be lower than for their metropolitan colleagues. This difference was especially marked for assessment of bone resorption (25% cf 49%).

Slightly greater use was made of radiographs (especially periapical) by the Adelaide practitioners. No country dentist required orthopantomographs.

d. Effect of type of practice

Results of the analysis concerning the type of practice in which respondents worked on the five sub-groups are presented in Figure 4.5. Although none of the differences was statistically significant, relatively more positive responses were provided by persons who practised in a partnership/ associateship arrangement for four sub-groups, and all questions in each of these sub-groups. In fact, the only questions in which this trend was reversed concerned the use of bite-wing radiographs, in which slightly more solo practitioners answered positively. The most marked differences were related to questions concerning the importance of a written medical history and assessment of bone resorption, in which the percentage of positive responses from persons in partnership was twice that from persons in solo practice.

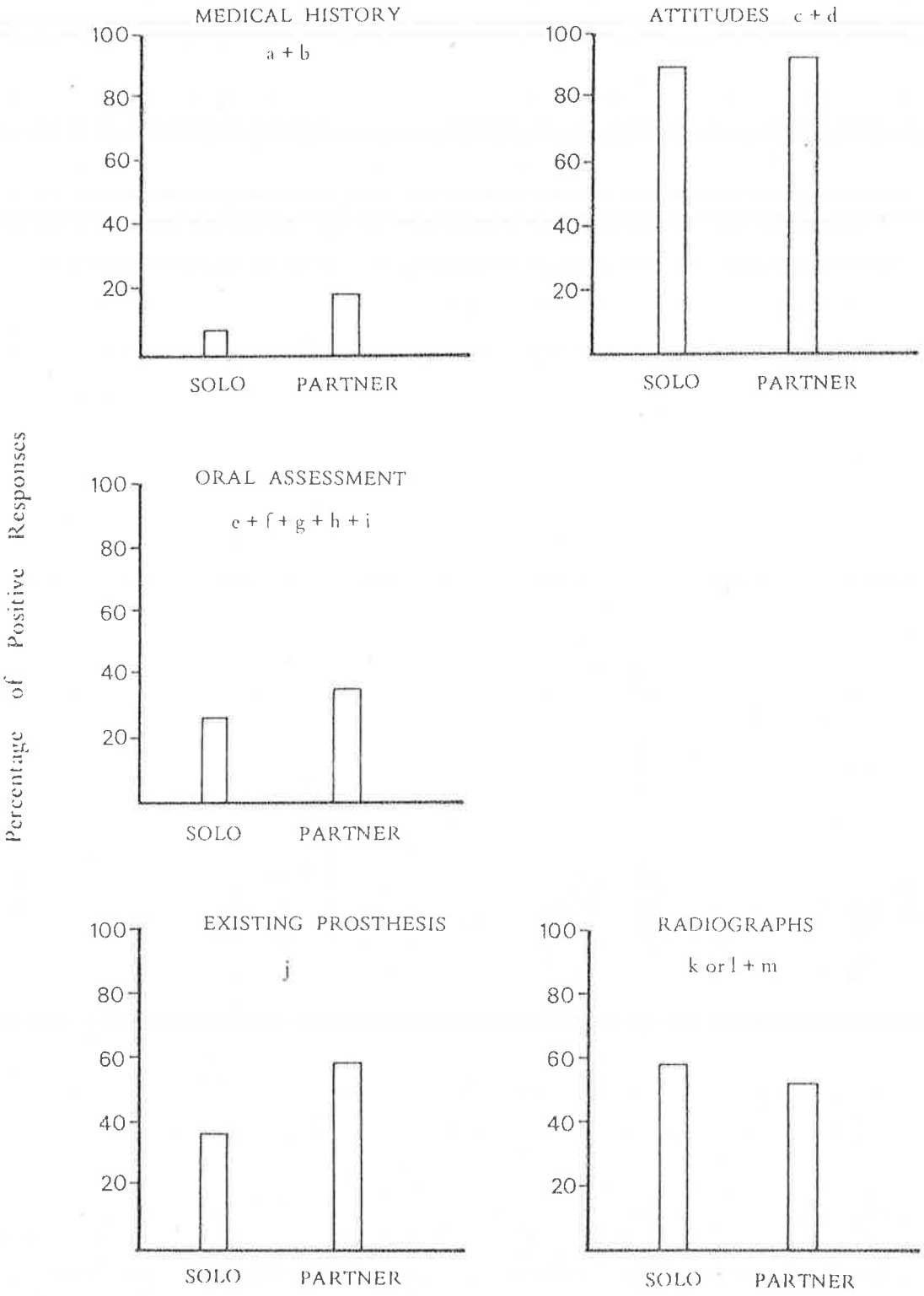


FIGURE 4.5 Percentage of positive responses to sub-groups which constituted history and examination profile according to type of practice. For details of sub-groups and questions included in each sub-group see Figure 4.2.

DISCUSSION

It was the purpose of the study reported in this Chapter to define the attitudes of dental practitioners in South Australia towards various aspects of the history and examination phase in RPD prosthodontics. Evaluation of the data provided by these practitioners was facilitated by determining whether their responses were in agreement with concepts presently taught in the University of Adelaide. When responses coincided they were designated positive. Individual questions and groups of questions were analyzed to determine the percentage of positive responses for all respondents and for various groups of respondents.

Obviously, the profile of questions selected did not provide a basis for comparison of attitudes between different groups of graduates as so few responded positively. It might be concluded that dentists in private practice did not have the same concepts about the importance of various aspects of the history and examination phase as adopted for this study, and which form the basis of the present teaching in RPD prosthodontics in the University of Adelaide. However, when the sub-groups and individual questions were analyzed, it became apparent why so few responded positively to the profile. For although over ninety percent of responses to the sub-group of questions related to 'assessment of patients' attitudes' were positive, only one-third of the responses in the 'oral assessment' sub-group and fifteen percent of responses to the sub-group relating to 'medical history' were positive. Thus it was the cumulative effect of negative

responses to questions and sub-groups which resulted in the paucity of positive responses to the profile.

For purposes of this discussion it will be assumed that, when at least 80% of practitioners responded positively to a question or group of questions, there was agreement that the attitude concerned was 'very' or 'extremely' important, or that it was 'usually' required. When the level of response was between 60 and 79%, or 20 and 39%, it will be assumed that there was a tendency for agreement, or disagreement respectively. While a response rate of less than 20% indicated that practitioners disagreed that the attitude was 'very' or 'extremely' important. It will be assumed that general practitioners were ambivalent when the rate of positive responses was between 40 and 59%. On this basis, practitioners were in agreement with the proposals that assessing patients' attitudes to dentures and the retention of remaining teeth, their oral hygiene habits and periodontal status were important and tended to agree about the need for occlusal analysis, and assessment of pulpal status, and 'usually' required periapical radiographs of the abutment teeth. As a group, dentists were ambivalent about the importance of consulting a patient's physician, when that patient had a medical problem, of assessing bone resorption in edentulous areas, assessing existing prostheses and requiring bite-wing radiographs. Clearly, respondents disagreed with the concept that it was important to record a written summary of a patient's medical history.

The question relating to the requirements for bite-wing radiographs was perhaps poorly phrased, as it is acknowledged that many patients who require RPDs do not have sufficient teeth to justify the taking of these radiographs. However, it was surprising that the four other questions referred to above failed to evoke a positive response from at least sixty percent of practitioners, in view of concepts advocated in the literature regarding the importance of assessing such features as existing prostheses and bone resorption.

It was of interest to determine whether any of the three variables examined in this study, viz. decade of graduation, location of practice and type of practice, affected the responses obtained for the four questions concerned. Of particular relevance were the findings that persons in partnership-type practices were twice as likely to consider that recording a written summary of a patient's medical history was 'very important' when compared with those in solo practices, that rural practitioners were nearly twice as likely to respond positively to the question relating to consultation with a medical practitioner when compared with their Adelaide colleagues, and that graduates from the most recent decade were approximately fifty percent more likely to respond positively to the question relating to a written medical history than those who graduated earlier. Multi-variant analysis was not performed on these parameters, however, results indicated that there were not disproportionate numbers of graduates from the most recent decade in the rural areas or in partnership practices relative to the two preceding decades

combined. Thus it is possible that the site or type of practice *per se* influenced the responses of practitioners, and that the differences perceived were not the results of an imbalance in the numbers of graduates from the most recent decade. Perhaps the reason why more rural practitioners consulted medicos, when patients presented with health problems, relative to their city colleagues was a result of the personal contact between professionals, which is commonly thought to be much greater in country areas. Similarly, it might be suggested that the inter-personal relationships in a partnership influenced the recording of written summaries of medical histories. Whether other differences in concepts reflect the impact of close professional relationships could not be determined, but some interesting findings emerged from that portion of the survey dealing with dental education which might support this proposal (see Chapter 7).

In regard to the question of radiographs it was not surprising that practitioners in country areas did not require orthopantomographs, as access to the necessary equipment is difficult. Whether the same argument can be used to explain the finding that fewer rural practitioners also required periapical radiographs is not known.

In summary, it is apparent that the concepts of dental practitioners and those taught to undergraduate students in the University of Adelaide were similar in regard to seven of the twelve questions which comprised that section of the questionnaire relating to the history and examination phase in RPD prosthodontics.

Analysis of the variables examined showed that those persons who graduated in the 1970s were most likely to have attitudes similar to those taught in the dental school, whereas those who graduated in the 1960s were least likely to possess these attitudes. Perhaps it is not surprising that the most recent group of graduates had similar concepts to those taught in 1982, but it is difficult to explain why graduates from the 1960s were least likely to respond positively. Although there were some differences in the attitudes of practitioners in rural areas relative to their city colleagues, there appeared to be reasonable agreement between the two groups. However, it was apparent that those in partnership-type practices were more likely to respond positively to the questions asked than those in solo practice. Part of the reason for this might be attributed to the greater percentage of graduates from the 1960s who practised alone, but perhaps dentists in solo practice have different personal traits to those with partners or associates.

CHAPTER 5

TREATMENT PLANNING

PHASE IN REMOVABLE

PARTIAL DENTURE PROSTHODONTICS

CHAPTER 5

Teaching in removable prosthodontics stresses the importance of adequate treatment planning prior to the commencement of restoration. Hence, it was felt that analysis of practitioners' concepts of the main aspects of treatment planning and treatment plans was important.

In this Chapter these aspects will be analyzed and the importance of those variables assessed in the preceding Chapter, namely, decade of graduation, location and type of practice will be discussed.

A profile of questions which comprised thirteen questions arranged in six sub-groups was derived which it was felt reflected the important characteristics of the treatment planning phase. Details of the questions asked are to be found in Parts C, D and G of the questionnaire included in Appendix 1.

RESULTS

1. Frequency Distribution of Responses

The responses provided by practitioners for most questions asked relating to the treatment planning phase are indicated in Tables 5.1 and 5.2.

Two further questions were analyzed which were not included in these Tables. The first related to whether or not dentists possessed or had access to a surveyor; 56% of practitioners

TABLE 5.1 IMPORTANCE OF STUDY CASTS AND RECALL VISITS

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
• Study casts	20	41	30	7	2
• Articulation of study casts	15	35	28	19	3
• Survey of study casts	27	35	21	13	4
• Regular recall visits	26	49	19	6	0

• questions included in profile

Figures represent the number of persons who replied in each category as a percentage of all responses for the question concerned.

TABLE 5.2 IMPORTANCE OF ASPECTS OF TREATMENT PLANNING PHASE

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
● Written treatment plan	11	19	34	28	8
● Discussion of the treatment plan with the patient	68	26	2	4	0
● Detailed diagram of the RPD design	23	39	24	10	4
● Provision of a temporary RPD if treatment to be prolonged	0	19	41	31	9
● Stabilization of healthy periodontal condition before construction of RPD	63	30	5	2	0
● Endodontic treatment (if necessary) of abutment teeth before construction of RPD	67	25	5	2	0
● Completion of all restorations before construction of RPD	54	34	7	3	2
Completion of only those restorations related to the RPD before its construction	46	8	15	14	18
● Denture to be left out of mouth at night	35	23	30	12	0
● Instruction in oral hygiene	69	27	4	0	0
Instructions should be:					
Verbal	48	39	7	0	0
Audio-visual	3	14	22	32	29
Practical, e.g. toothbrushing	50	36	12	2	0
Printed leaflet	13	12	31	23	20

● Questions included in profile

The figures represent the number of responses for the attribute expressed as a percentage of the total responses for the specified question.

responded positively. The second concerned the frequency with which patients who were to receive an RPD would be recalled by practitioners who provided such a service; 19% felt that patients should be recalled between 3 and 6 months, 73% between 6 and 12 months and 6% between 12 and 18 months.

In regard to Table 5.2, it should be mentioned that there was a large number of respondents (24%) who failed to respond to the question concerning the completion of only those restorations related to the RPD before its construction. Further, there were 28, 8 and 15% of practitioners respectively who failed to respond to the 'audio-visual', 'practical' and 'printed leaflet' provisions of questions concerning instructions to patients.

2. Profile

Questions included in the profile are indicated in Tables 5.1 and 5.2. For a respondent to meet the profile it was necessary for all questions to be assessed as 'extremely' or 'very' important.

Only one person responded positively to all questions in the profile; that person graduated in the 1970s, was employed in a partnership/associateship in a non-rural practice.

3. Sub-groups and Individual Questions

The thirteen questions utilized in the profile were arranged into six sub-groups for further analysis. The percentage of

positive responses for each question and sub-group was calculated as described previously (see p 4.3).

a. All respondents

The percentage of positive responses from all practitioners for each question and sub-group is indicated in Figure 5.1. Not shown in the Figure was the finding that 93% of those dentists who felt that surveying of study casts was at least 'very important' claimed that they possessed or had access to a surveyor.

b. Effect of decade of graduation

The effects of the decade in which practitioners graduated on the percentage of positive responses for the sub-groups in the phase of treatment planning are shown in Figure 5.2.

Clearly, a greater percentage of those dentists who graduated in the 1970s responded positively to the sub-groups relating to study casts, treatment plan, mouth preparation, recall of patients and denture use, however only the latter was shown to be statistically significant. Moreover, analysis of the individual questions showed that, with one exception (viz. that relating to the provision of temporary RPDs) relatively more graduates from the last decade responded positively. For example, positive responses were provided by over 80% of graduates from the 1970s regarding study models, by approximately 70% to the questions relating to diagrams of designs and the non use of dentures at night and by 40% to

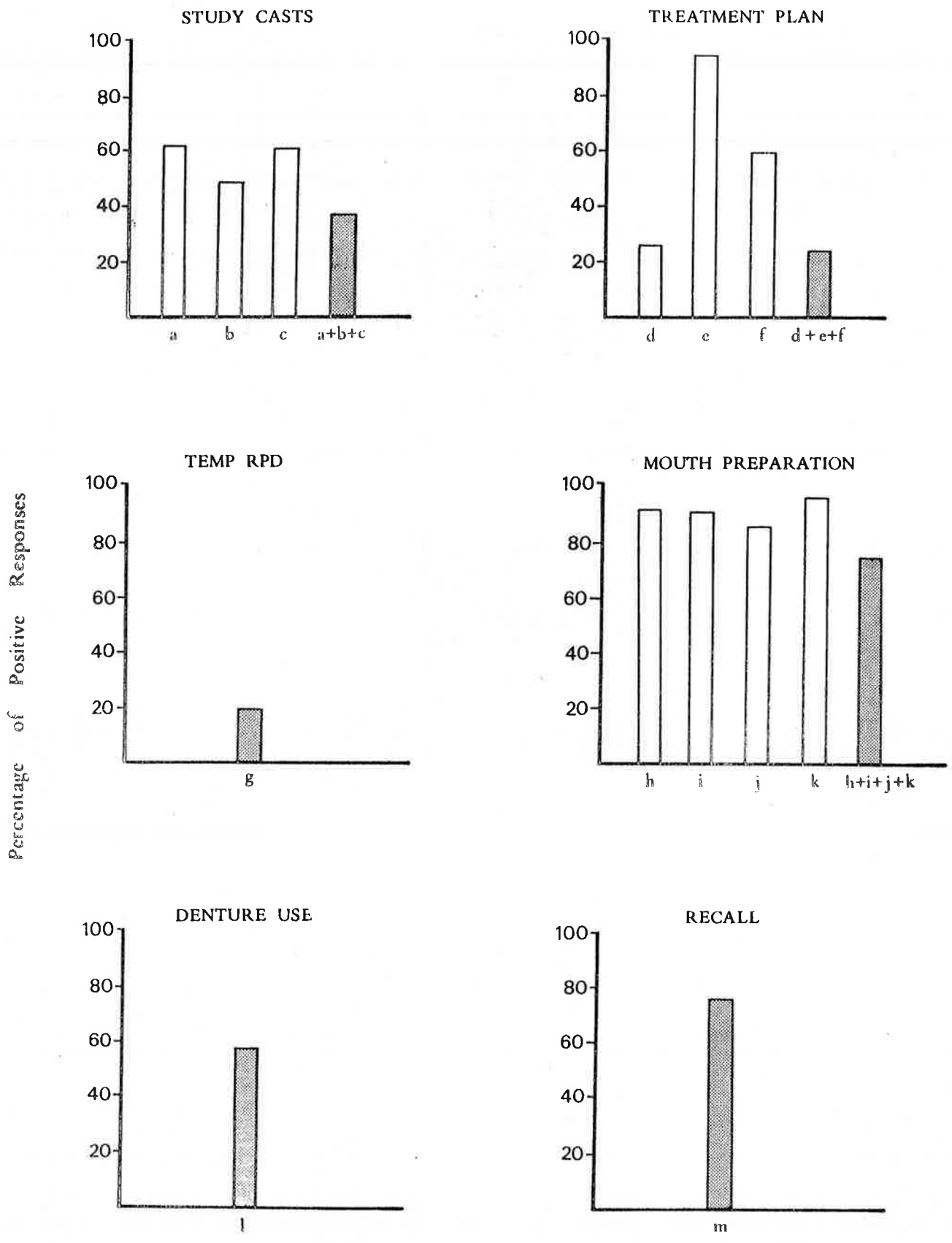
FIGURE 5.1

Percentage of positive responses from all respondents to questions constituting the treatment planning profile and its eight constituent sub-groups. The percentages of positive responses for each question are given by the height of the open column and for each sub-group by the hatched column.

A positive response was achieved for each question if the respondent assessed the importance of the attribute as 'extremely' or 'very' important. A positive response for each sub-group was obtained if all questions in the sub-group were positive.

The letters used opposite represent the following questions:

a. study casts
b. articulation of study casts
c. survey of study casts
d. written treatment plan
e. discussion of treatment plan with patient
f. detailed diagram of design
g. provision of a temporary RPD if treatment to be prolonged
h. stabilization of healthy periodontal condition before construction of RPD
i. endodontic treatment (if necessary) of abutment teeth before construction of RPD
j. completion of all restorations before construction of RPD
k. instruction in oral hygiene
l. denture to be left out of mouth at night
m. regular recall visit.


STUDY CASTS
100
80
60
40
20
a
b
c
a+b+c
TREATMENT PLAN
100
80
60
40
20
d
e
f
d+e+f
TEMP RPD
100
80
60
40
20
g
MOUTH PREPARATION
100
80
60
40
20
h
i
j
k
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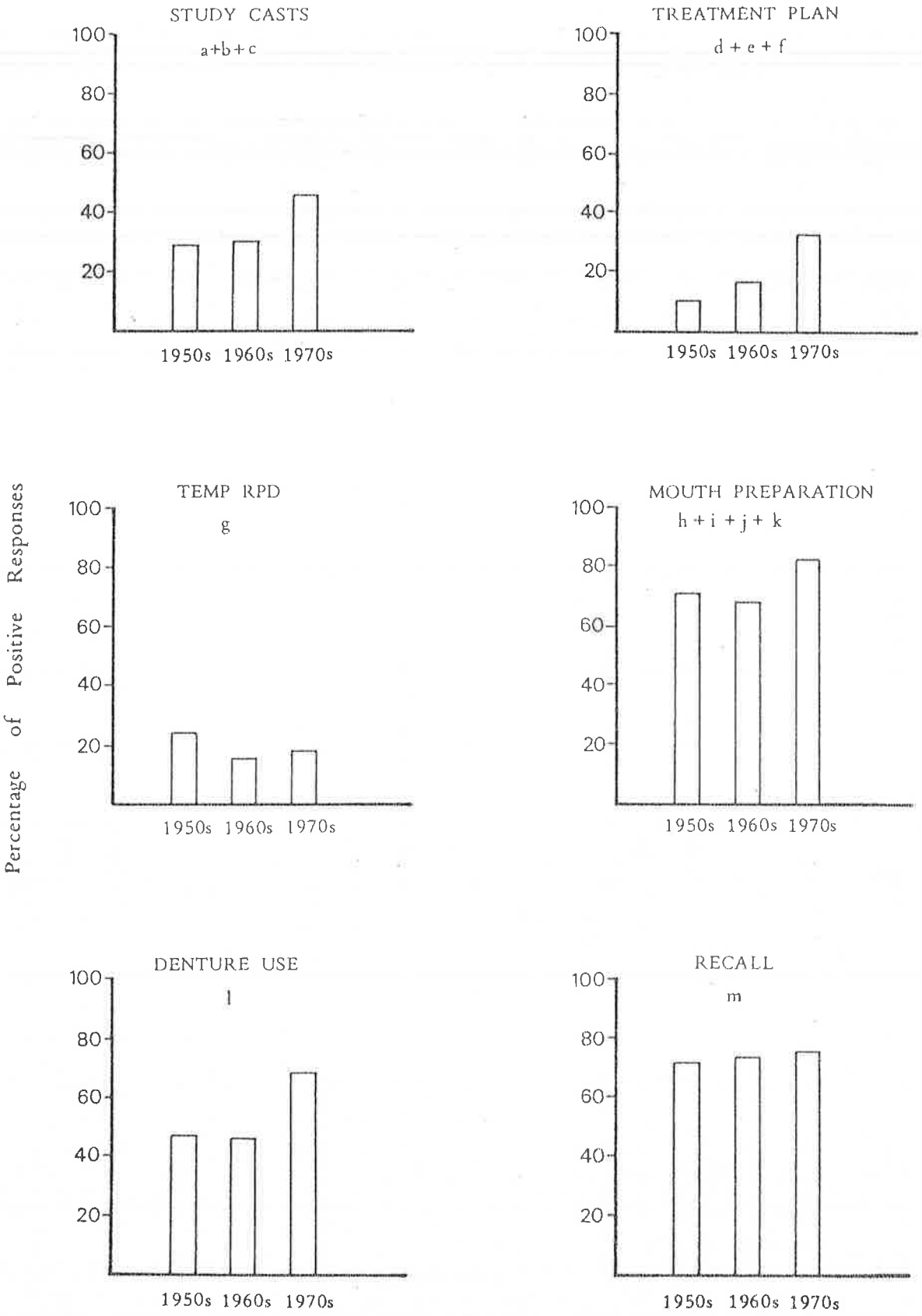

FIGURE 5.2 Percentage of positive responses to sub-groups which constituted the treatment planning profile according to decade of graduation. For details of sub-groups and questions included in each sub-group see Figure 5.1.

the provision of written treatment plans compared with 38%, 48%, 47% and 14% respectively for those who graduated in the 1950s. Chi-squared tests indicated that the percentage of positive responses was significantly higher for the questions relating to the importance of study models, articulation of study models and written treatment plans.

Although the question was not included in the profile of questions, significantly more graduates from the 1950s claimed that they possessed or had access to surveyors in comparison to graduates from each of the other two decades.

c. Effect of location of practice

When the attitudes of respondents from rural areas were compared with those from city and suburban (Adelaide) practitioners there were few differences and none was significant statistically (see Figure 5.3). In only two questions, namely, the importance of removing dentures from the mouth at night and the provision of a detailed design for the removable partial denture, was the difference in the percentage of positive responses for the two groups more than 20%. More Adelaide respondents stressed the importance of the first question and more rural respondents the second.

d. Effect of type of practice

Figure 5.4 indicates the differences in the attitudes of dentists in solo practices when compared to those in

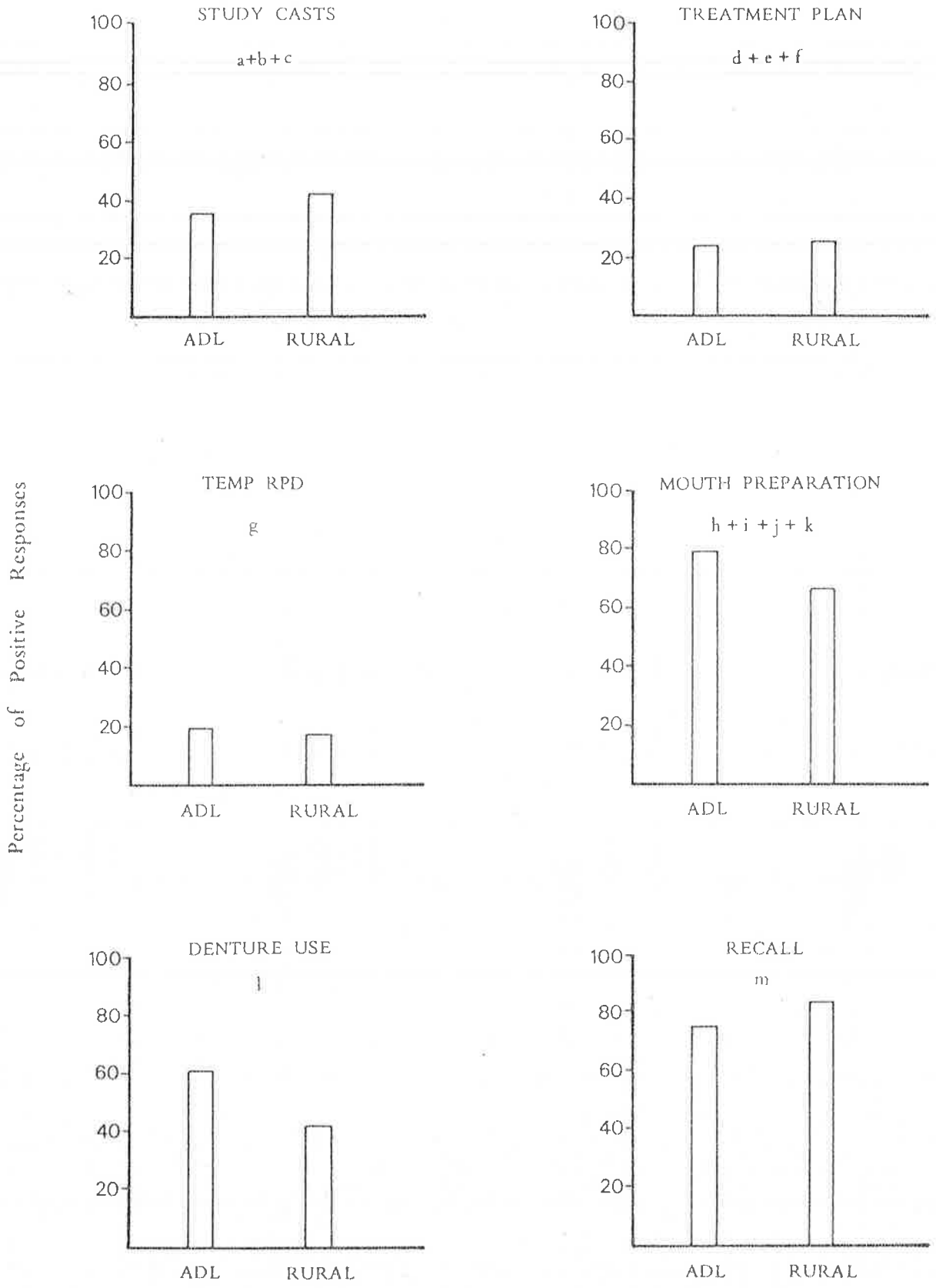

FIGURE 5.3 Percentage of positive responses to sub-groups which constituted treatment planning profile according to location of practice. For details of sub-groups and questions included in each sub-group see Figure 5.1.

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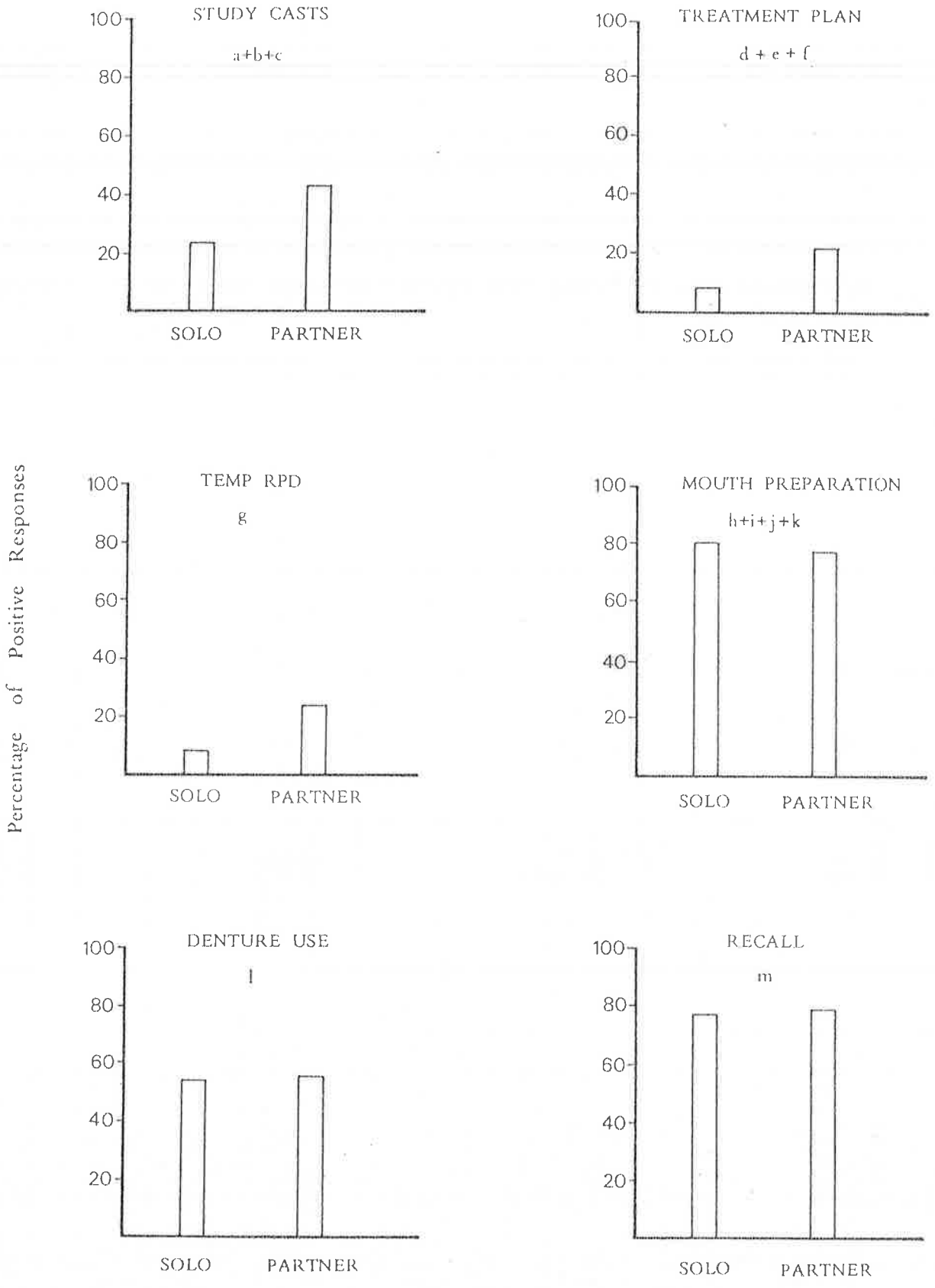


FIGURE 5.4 Percentage of positive responses to sub-groups which constituted treatment planning profile according to type of practice. For details of sub-groups and questions included in each sub-group see Figure 5.1.

partnership. A considerably higher percentage of those in the partnership-type of practices provided positive responses to the sub-groups relating to 'study casts', 'treatment plan' and 'temporary RPD'. Although not included in the figure, three individual questions were mainly responsible for these higher percentages, viz. those relating to articulation of study casts, written treatment plans and provision of temporary RPDs. Of these, the only significant difference between the percentage of positive responses from dentists in the two types of practice related to written treatment plans.

DISCUSSION

In the present Chapter, data concerning the attitudes of dentists towards various aspects of treatment planning were collected and analyzed using the method outlined in Chapter 4. It might be argued that some of the questions asked related to treatment rather than treatment planning, however in this instance it was decided that, as they provided information about the importance of treatment sequences, they would be included in this Chapter. Concepts relating to study casts were also included as it is felt that they form an integral part of treatment planning.

Data were analyzed also to determine whether there were differences in the concepts of younger graduates, practitioners in rural areas and those in solo practices relative to dentists who graduated prior to 1970, practised in Adelaide or in partnership-type practices.

As noted in the preceding Chapter, the use of a multiple question profile did not provide a useful basis for comparing the attitudes of different groups of graduates. Although only one dentist satisfied the criteria of the profile the concepts of practitioners were not as divergent from those taught in the undergraduate curriculum as might be imagined. For nine of the thirteen questions, respondents tended to agree or agreed with the importance of the attribute and for only two questions was there disagreement or a tendency to disagree (for definition of these terms see p 4.9).

Those concepts which most dentists perceived as having considerable importance in the context of treatment planning related to the sequencing of treatment such that mouth preparation would be completed prior to construction of prostheses. The need to discuss putative treatment plans with patients was strongly advocated, although the lack of emphasis on the importance of written treatment plans and detailed designs for partial dentures might raise a question as to the effectiveness of such discussions. However, as no attempt was made to define what was meant by a written treatment plan it is conceivable that the question was misinterpreted. Of the remaining questions, it was surprising that so few respondents felt that the provision of a temporary partial denture was important, if treatment was to be prolonged. Perhaps this response reflects no more than the scope of treatment undertaken by general practitioners and the relatively short period required to complete most treatments. Unfortunately, there are no figures available to indicate the duration of treatment for patients who require partial dentures.

Slightly more than sixty percent of respondents conceded the importance of obtaining study models and surveying them, however less than half stressed the importance of articulating such models and only slightly more than one-third responded positively to all three questions. These results, when coupled with the data concerning the importance of detailed diagrams of designs for RPDs, support the concept that dentists do not place appropriate emphasis on the design and construction of partial dentures. However, as more than ninety percent of persons who stressed the importance of surveying study casts claimed that they possessed, or had access to, surveyors, it is possible that a substantial group of practitioners personally design partial dentures for their patients. This assertion is supported by the finding, in the present study, that 47% of dentists claimed that they 'always' designed RPDs themselves.

Clearly, the studies of workers such as Addy and Bates (1977, 1979) and El Ghamrawy (1976) relating to the relationship between plaque and partial dentures has not been heeded by those persons who feel it is unimportant to remove such dentures from the mouth at night; or is it that these practitioners are unaware of recent developments. Also, it was surprising that as many as twenty-five percent did not provide a regular recall service for patients who had received RPDs.

It was of interest to see whether or not recent graduates responded to the questions in the same manner as their older colleagues. As demonstrated in Figure 5.2 graduates from the

1970s were more likely to respond positively to all sub-groups, except that relating to the provision of temporary dentures when treatment was to be prolonged, and although not shown in the figure, relatively more graduates from this decade responded positively to all questions except that relating to the temporary RPD. Thus it was apparent that the attitudes of younger graduates more closely paralleled those accepted for this study and, hence, those currently taught in the University of Adelaide.

Although differences in concepts between dentists in rural and Adelaide practices were not marked, there were some interesting variations even though the small number of respondents from rural areas made interpretation difficult. The most outstanding variation occurred with the question relating to the provision of designs for RPDs, in which 83% of rural practitioners responded positively, compared with 60% of their Adelaide colleagues. It is possible that this reflected the need for country practitioners to utilize city-based commercial dental laboratories for the production of partial dentures, but confirmation of this could not be obtained in the present study. Other questions, in which there was at least 20% variation in the proportion of positive responses between the two groups, concerned written treatment plans, the non-use of dentures at night and the importance of oral hygiene. In all instances relatively more practitioners in Adelaide responded positively. Although there was little difference between the responses of Adelaide and rural-based dentists for each of the single questions which comprised the study cast

sub-group, the variation in the percentages of positive responses for the group as a whole resulted because more practitioners in the country, who stressed the importance of obtaining casts, also stressed the importance of articulating and surveying such models.

It was noted previously (p 4.7) that dentists in partnership-type practices were more likely to record written summaries of medical histories than those in solo practices. Hence, it was not surprising to find that more than three times as many dentists with partners recorded written treatment plans. This trend was not reflected in the question relating to the provision of a detailed design of the RPD, although a smaller percentage of persons in solo practices responded positively to the question concerning the importance of discussing treatment plans with patients (85% cf 96%). There were no differences in the responses from dentists in these groups in regard to the questions of denture use and the provision of a recall service. Similarly, there were only minor variations in responses to the questions which comprised the mouth preparation sub-group. However, marked differences were noted in regard to the question of the provision of temporary dentures and to the sub-group relating to study casts. The latter result occurred because relatively more persons in partnership-type practices responded positively to the question relating to the articulation of study casts (56% cf 35%).

In summary, it has been shown that the attitudes of dental practitioners are at variance with those adopted for this study of treatment planning in regard to articulation of study casts, the provision of written treatment plans and temporary prostheses and to a lesser extent the non-use of dentures at night. Younger graduates demonstrated attitudes closer to those accepted for the study as was found in the preceding Chapter. Some differences were noted between rural and non-rural practitioners; the most obvious might reflect the need for rural-based dentists to utilize the services of city-based laboratories. Persons in partnerships/associateships were more likely to provide positive responses than those in solo practice, especially in regard to concepts which might facilitate the transfer of information.

CHAPTER 6

DESIGN OF REMOVABLE PARTIAL DENTURES

CHAPTER 6

Numerous surveys have indicated the diversity of opinions regarding suitable designs for removable partial dentures (Frantz, 1973, 1975; Basker and Davenport, 1978). Indeed, the standard textbooks provide a plethora of designs for the various components of RPDs. Unfortunately, there is little evidence in the literature to support most of the claims made and it is the responsibility of teachers and practitioners to develop criteria which they believe fulfil their needs and those of their patients. Hopefully, this situation will be improved in the future as research endeavours continue.

In the present survey, general practitioners were asked to indicate their attitudes towards the support, retention and design of various components of partial dentures. Part H of the questionnaire (see Appendix 1) indicates the method used and the questions asked to gather data for this part of the survey. Basically, dentists were provided with some facts relating to the oral tissues of two patients for whom it was decided to construct partial dentures. The first involved a bilateral free-end saddle lower partial denture (PL), replacing premolars and molars. The second related to a Kennedy Class III modification 2 upper arch for which it was expected that a tooth supported partial upper denture (PU) would be designed. Practitioners were told that, unless a statement was made to the contrary, all questions

related to RPDs which had frames cast in base-metal alloys. Questions usually asked respondents what they would actually do, and hence responses were given on a graded scale from 'always' to 'never'.

RESULTS

PART I LOWER REMOVABLE PARTIAL DENTURE

Practitioners were asked to consider the design for a bilateral free-end saddle PL to replace all pre-molars and molars (see Appendix 1, Part H).

1. Frequency Distribution of Responses

The responses of practitioners to the questions asked are listed in Tables 6.1 to 6.4 inclusive. Actual numbers rather than percentages have been presented in view of the rather high number of persons who failed to respond to individual questions. Most of the responses will be considered in the succeeding sections concerned with sub-groups and questions and will not be analyzed further here. However, as the sub-groups only contained one question relating to clasps and did not include the question concerning the types of indirect retainers, it is pertinent to review these aspects now. When the lower canines acted as abutments, most dentists usually utilized clasps on the PL, and although the majority used gingival approaching clasp forms, approximately one-quarter used an occlusal clasp

TABLE 6.1 SUPPORT FOR PARTIAL LOWER DENTURE

Support from:	ALWAYS	USUALLY	SOMETIMES	NEVER
Soft tissues only	2	13	23	49
Teeth only	1	0	4	78
Soft tissues and teeth	45	31	11	3
Saddles with:				
Maximal extensions	55	36	1	0
Coverage of retromolar pads	35	37	21	3
Soft tissue displacement using:				
Pressure impression technique	14	34	23	24
Relining the completed R.P.D.	4	5	45	33
"Split-Cast technique" to alter the relationships of the saddle to the abutment teeth	1	2	8	70
Minimal displacement of soft tissues:	8	28	32	28
Provision of:				
Cingulum rests	14	58	23	1
Incisal rests	0	0	74	19
No rests	0	4	26	58

Figures represent the number of responses for each category.

TABLE 6.2 RETENTION OF PARTIAL LOWER DENTURE

	ALWAYS	USUALLY	SOMETIMES	NEVER
No clasps:	3	1	33	60
Clasps on $\overline{3/3}$:				
Occlusal approaching form	0	27	64	4
Gingival approaching form	1	53	41	1
Cast clasps:				
Cobalt-chromium or similar alloy	44	40	7	5
Gold alloy	2	0	35	47
Wrought clasps:				
Cobalt-chromium or similar alloy	4	13	23	43
Gold alloy	3	5	27	47
Stainless steel	12	13	33	33
Reciprocation:				
Lingual plate	9	52	31	4
Lingual figure extension or arm	4	18	52	13

Figures represent the number of responses for each category.

TABLE 6.3 MAJOR CONNECTOR DESIGN AND INDIRECT RETENTION FOR PARTIAL LOWER DENTURE

Major connector:	ALWAYS	USUALLY	SOMETIMES	NEVER
Lingual plate	1	36	52	6
Lingual bar	4	35	51	4
Lingual bar with continuous clasp	0	9	42	38
"Stress-breaking" action	1	7	29	54
Indirect retention:				
Extension of reciprocating components	3	18	47	15
Cingulum rests	6	30	49	4
Incisal rests	0	3	57	29
Continuous clasp	0	7	42	39
Lingual plate	1	29	57	5

Figures represent the number of responses for each category.

TABLE 6.4 SUPPORT AND RETENTION FOR PARTIAL LOWER DENTURE IF ABUTMENT TEETH ARE $\overline{4/4}$

Clasps:	ALWAYS	USUALLY	SOMETIMES	NEVER
Gingival approaching	0	27	61	7
Occlusal approaching	7	45	44	1
Occlusal rests on:				
Mesial of $\overline{4/4}$	13	40	32	9
Distal of $\overline{4/4}$	6	34	46	9
Occlusal approaching clasps engaging:				
Disto-buccal undercuts of $\overline{4/4}$	2	31	50	9
Mesio-buccal undercuts of $\overline{4/4}$	5	46	41	2

Figures represent the number of responses for each category.

(Table 6.2). When the denture frame was to be cast in a base-metal or similar alloy, 46% always required clasps to be cast in the same material, while 13% always used stainless steel. In regard to the use of indirect retention most respondents 'always' or 'usually' provided indirect retention for the RPD by the use of cingulum rests, a lingual plate or extension of the reciprocating components (Table 6.3).

2. Profile

Questions used to derive the profile relating to the design of the PL are indicated in Figure 6.1. For a respondent to satisfy the requirements of the profile it was necessary for responses to all questions to be positive. In this instance 'positive' denoted a response of 'always' or 'usually'.

No respondents satisfied the requirements of the profile. It should be noted that 23 persons failed to respond to one or more questions in the profile which caused their responses to be rejected.

3. Sub-groups and questions

Seven sub-groups comprising only one or two questions were analyzed. Details of the sub-groups and questions used are shown in Figure 6.1. Positive responses were obtained as indicated above, except that for the support sub-group either question needed a positive response and for the saddles sub-group both questions needed to be positive for the sub-group to be positive.

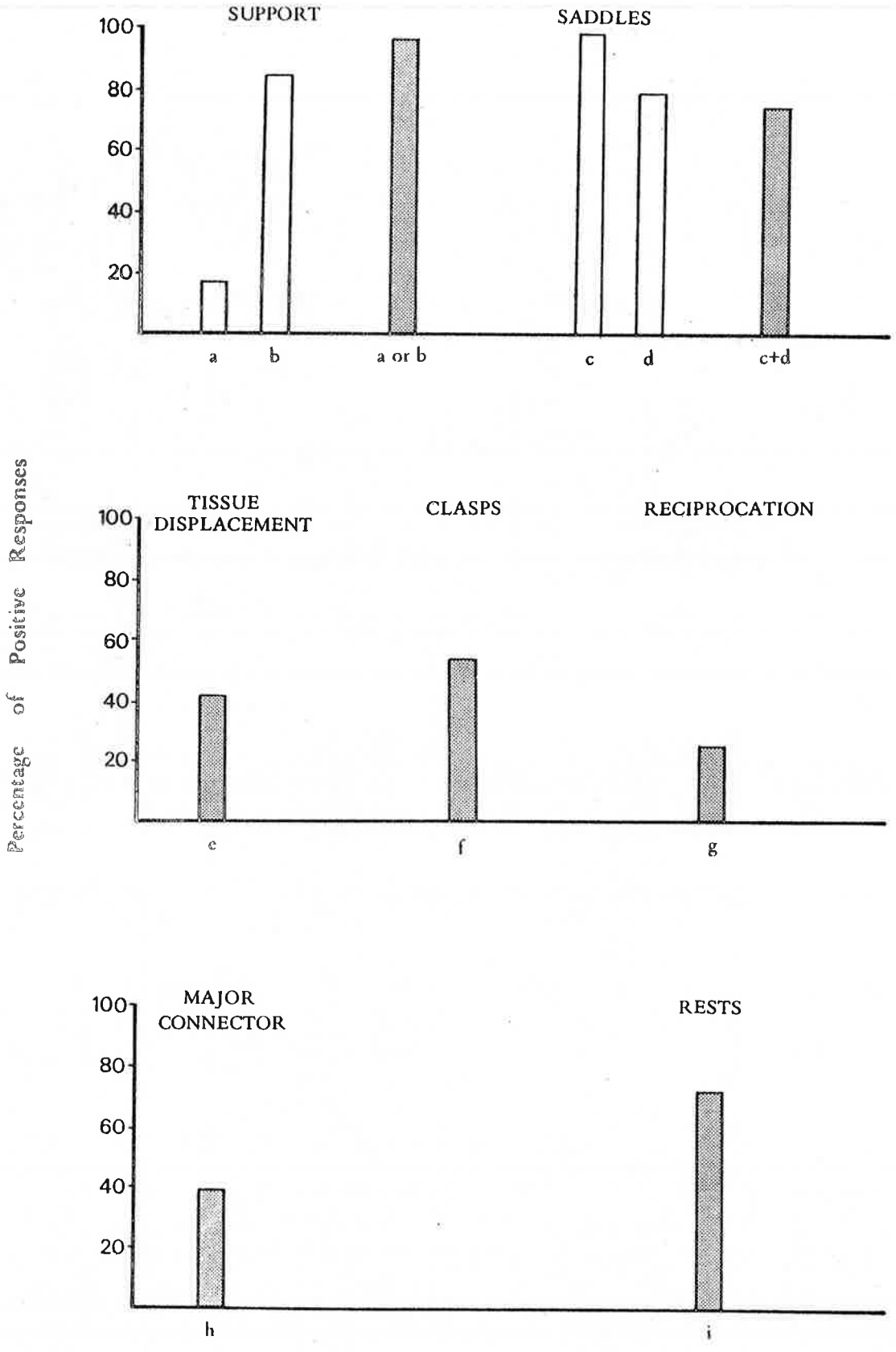
FIGURE 6.1

Percentage of positive responses from respondents to questions constituting lower design profile and its seven constituent sub-groups. The percentage of positive responses for each question is given by the height of the open column and for each sub-group by the hatched column.

A positive response was achieved for each question if the respondent indicated the frequency as 'always' or 'usually'. A positive response for each sub-group was obtained if all questions in the sub-group were positive.

The letters used opposite represent the following questions:

a. support for prosthesis derived from soft tissues only
b. support for prosthesis derived from soft tissues and teeth
c. saddles provided with maximal extension
d. saddles provided with coverage of retromolar pad
e. attempt not to displace the soft tissues over the saddles
f. $\overline{3/3}$ provided with gingival approaching form of clasp
g. action of clasps reciprocated with lingual finger extension or arm
h. lingual bar as major connector
i. provided with cingulum rests.


SUPPORT
SADDLES
100
80
60
40
20
a
b
a or b
c
d
c+d
Percentage of Positive Responses
TISSUE DISPLACEMENT
CLASPS
RECIPROCATION
100
80
60
40
20
e
f
g
MAJOR CONNECTOR
RESTS
100
80
60
40
20
h
i

Questions and sub-groups were also analyzed according to the decade in which the respondent graduated and the location and type of practice.

a. All respondents

In regard to the question of support for the PL, most of the respondents who provided an answer derived support from the teeth and soft tissues and the majority 'always' or 'usually' attempted to displace the soft tissues of the saddle regions (Table 6.1). The latter was usually achieved by the use of a pressure impression technique (51%) rather than relining the completed RPD (10%), or using a 'split-cast' technique for relating the saddles (4%). Although 98% provided saddles on the partial denture with maximum extensions, only 78% covered the retromolar pads and hence only 75% met the requirements of the sub-group (Figure 6.1).

The percentage of positive responses for questions relating to all aspects of the design of the metal component parts of the PL are included in Figure 6.2. To enable comparison, those questions which formed the profile are also included where appropriate. The majority of respondents indicated that they would use gingival approaching clasps on the lower canines constructed in base-metal alloy, if cast, and stainless steel, if wrought. Reciprocation would be provided by the use of a lingual plate in this region. Practitioners were evenly divided about whether they would

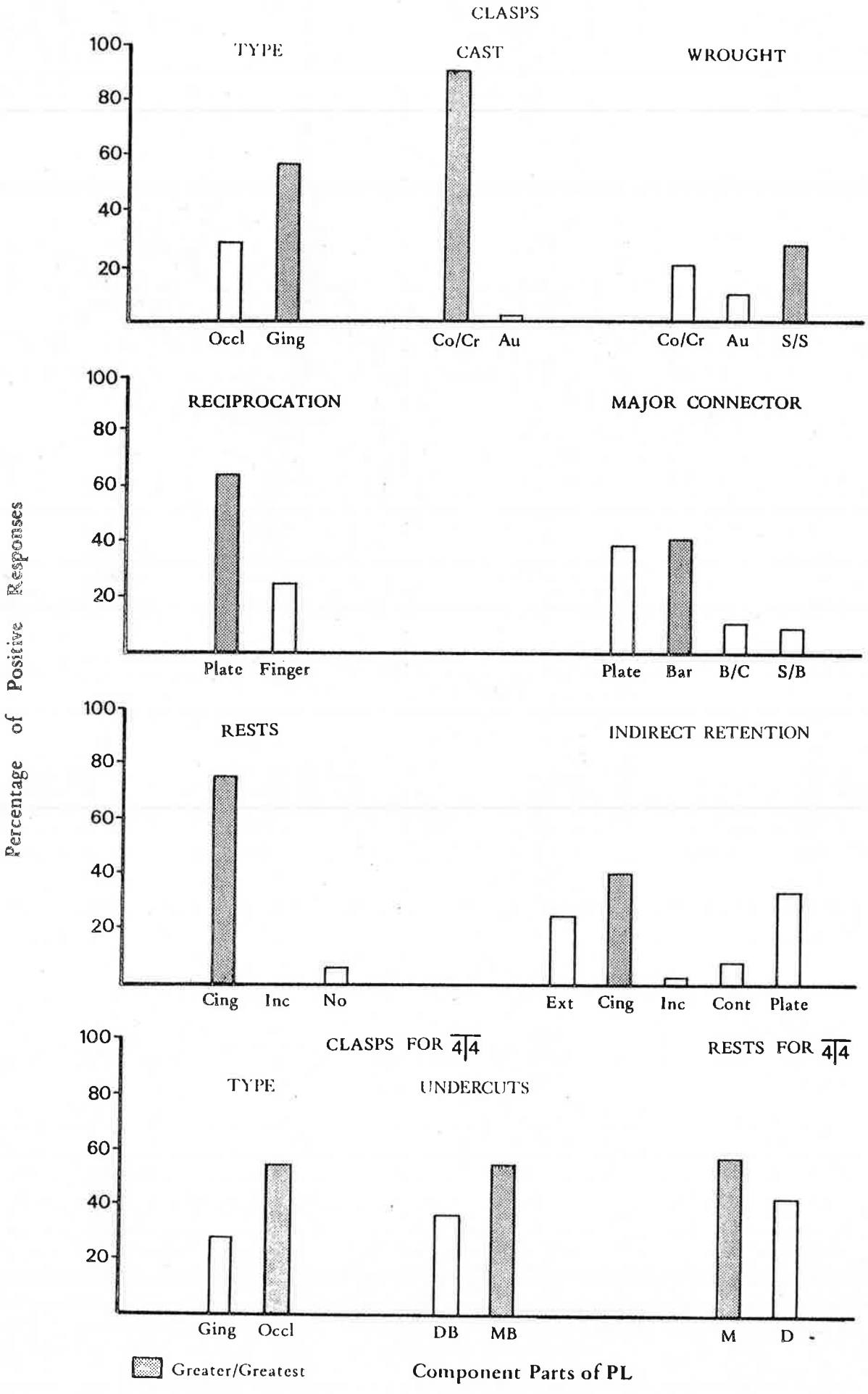
FIGURE 6.2

Percentage of positive responses to questions regarding component parts of partial lower denture (PL). The percentage of positive responses for each question is given by the height of the column.

A positive response was achieved for each question if the respondent indicated the frequency as 'always' or 'usually'.

The letters used opposite represent the following:

Occl	-	occlusal
Ging	-	gingival
Co/Cr	-	cobalt-chromium alloy
Au	-	gold alloy
S/S	-	stainless steel
B/C	-	bar with continuous clasp
S/B	-	'stress-breaking' action
Cing	-	cingulum rest
Inc	-	incisal rest
No	-	no rest
Ext	-	extending the reciprocating component
Cont	-	continuous clasp
DB	-	disto-buccal
MB	-	mesio-buccal
M	-	mesial
D	-	distal.


CLASPS
TYPE
CAST
WROUGHT
100
80
60
40
20
Occl
Ging
Co/Cr
Au
Co/Cr
Au
S/S
RECIPROCATION
MAJOR CONNECTOR
Plate
Finger
Plate
Bar
B/C
S/B
RESTS
INDIRECT RETENTION
Cing
Inc
No
Ext
Cing
Inc
Cont
Plate
CLASPS FOR 4|4
RESTS FOR 4|4
TYPE
UNDERCUTS
Ging
Occl
DB
MB
M
D
Percentage of Positive Responses
Greater/Greatest
Component Parts of PL

use a bar or a plate for the major connector. Cingulum rests were preferred for the provision of support and indirect retention.

If the abutment teeth were first premolars, instead of canines, occlusal clasps which engaged MB undercuts were preferred by the majority of practitioners and rests, if provided, were more likely to be placed on the mesial aspect of the occlusal surface of the premolars.

b. Effect of decade of graduation

Results of the analyses of the sub-groups according to the decade of graduation are shown in Figure 6.3. In regard to the question of displacement of soft tissues under the saddles of the PL, significantly more graduates from the 1950s indicated that they 'always' or 'usually' attempted not to displace the soft tissues when compared with graduates from each of the other two decades. Also, significantly more dentists from the 1970s and 1960s used cingulum rests on the canines, when compared with graduates from the earlier decade.

Questions which were not included in the profile were analyzed, as well, by decade of graduation and the results relating to the various component parts of the PL are presented in Figure 6.4. The questions used in the sub-groups are also included where relevant. Interpretation of these data was difficult and, hence, it was decided to prepare composite

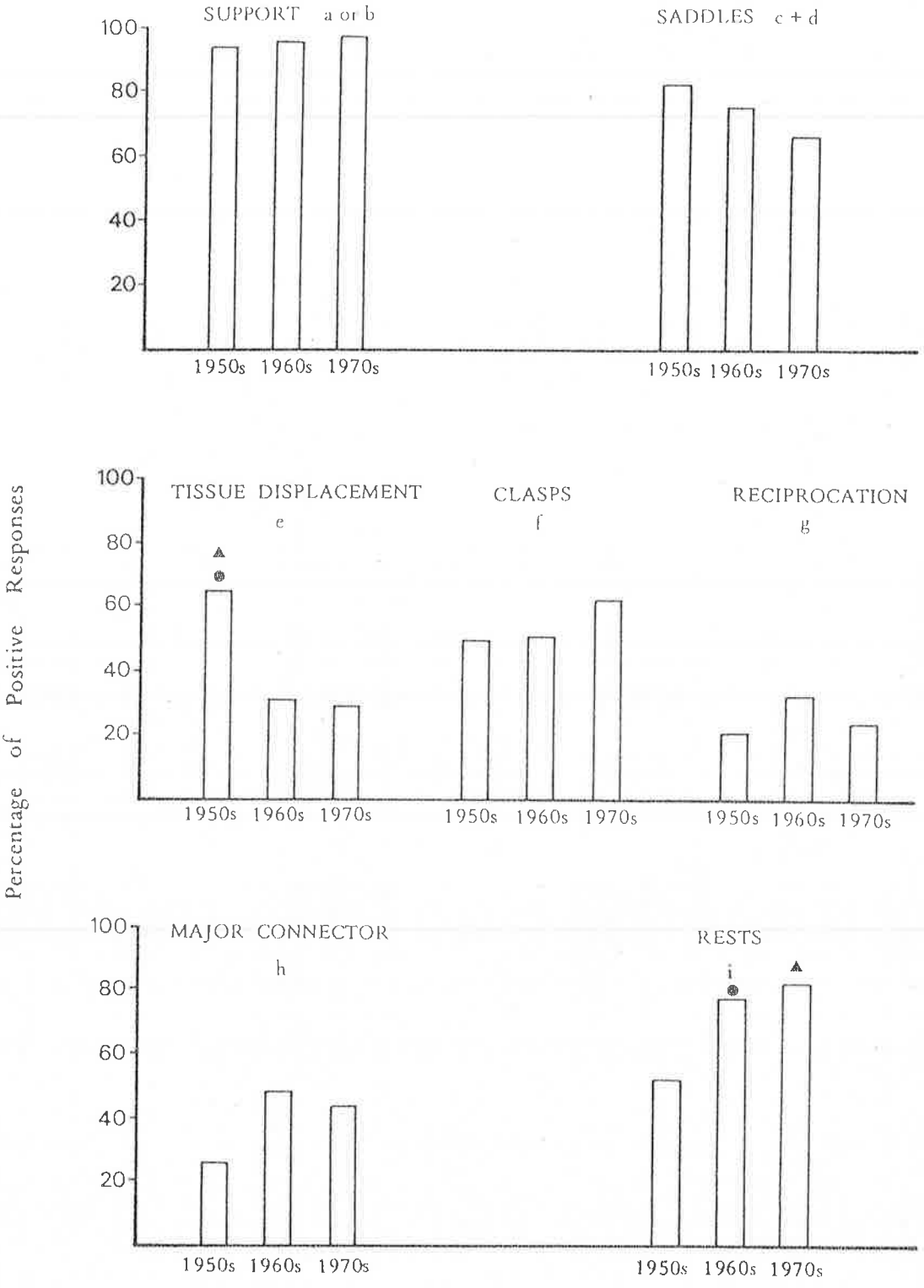


FIGURE 6.3 Percentage of positive responses to sub-groups which constituted lower design profile according to decade of graduation. For details of sub-groups and questions included in each sub-group see Figure 6.1.

Chi-squared : $P \leq 0.05$ ● 1950s v 1960s; ▲ 1950s v 1970s

FIGURE 6.4

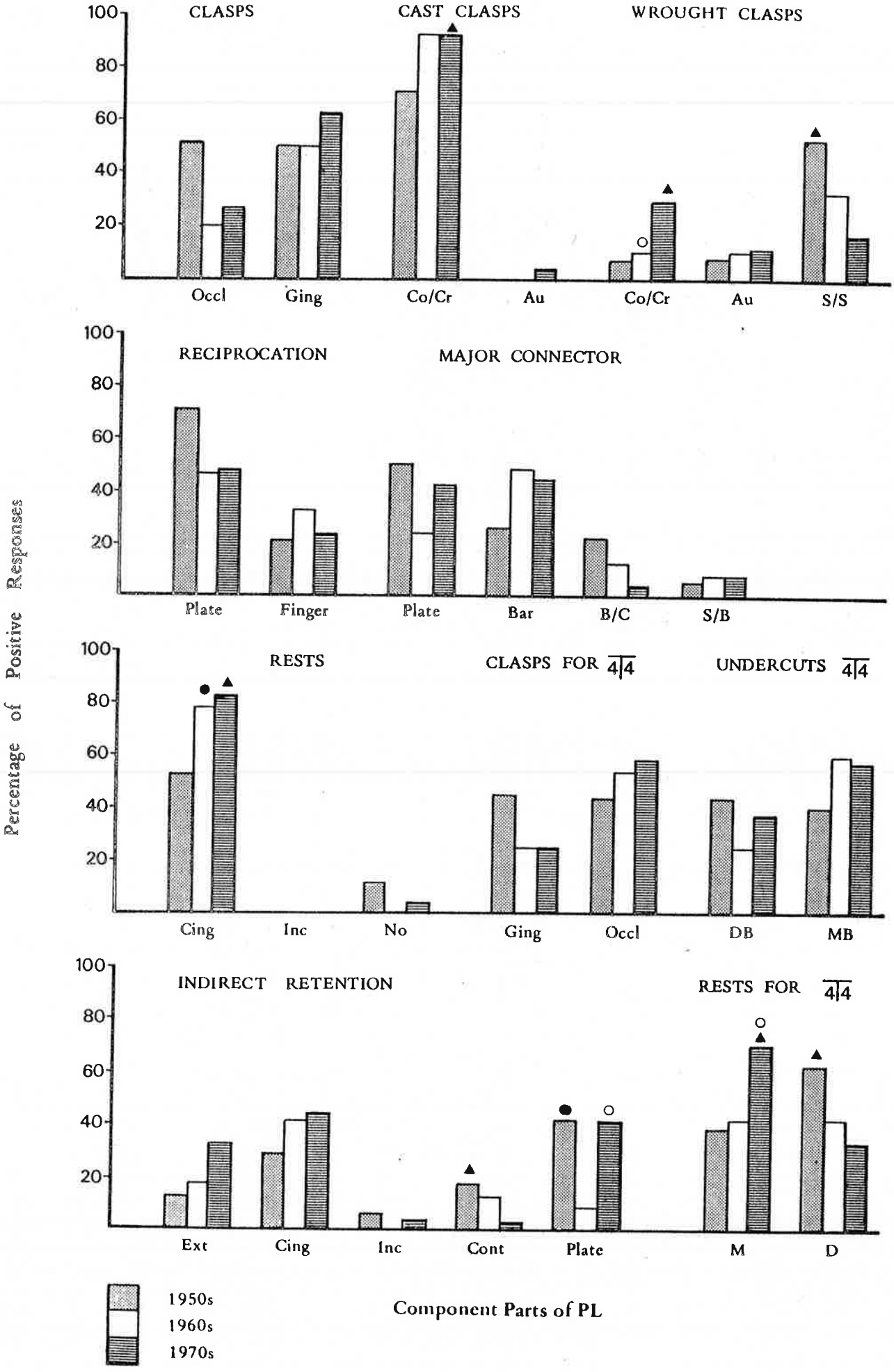
Percentage of positive responses to questions regarding component parts of lower partial denture according to decade of graduation. For details of abbreviations see Figure 6.2.

Chi-squared : $P \leqslant 0.05$

● 1950s v 1960s

○ 1960s v 1970s

▲ 1950s v 1970s


CLASPS
CAST CLASPS
WROUGHT CLASPS
100
80
60
40
20
Occl
Ging
Co/Cr
Au
Co/Cr
Au
S/S
RECIPROCATION
MAJOR CONNECTOR
Plate
Finger
Plate
Bar
B/C
S/B
RESTS
CLASPS FOR 4|4
UNDERCUTS 4|4
Cing
Inc
No
Ging
Occl
DB
MB
INDIRECT RETENTION
RESTS FOR 4|4
Ext
Cing
Inc
Cont
Plate
M
D
Percentage of Positive Responses
1950s
1960s
1970s
Component Parts of PL

designs for the PL based on an analysis of the responses provided by respondents in each decade. For each component of the PL, the design was indicated by the higher or highest percentage of positive responses, provided this figure was at least twenty percent higher than the lower or the second highest figure. Where this difference was less than twenty percent it was assumed that there was an equal preference. Results are presented in Table 6.5.

c. Effect of location of practice

The influence of the location in which dentists practised on the sub-groups in shown in Figure 6.5. There were no 'significant' differences between the responses of Adelaide practitioners when compared with colleagues in rural areas. Similar analysis revealed that, with one exception, those questions outside the profile also showed no difference between the percentage of positive responses for the two groups tested. The one exception related to the relining of the completed RPD, where a greater number of rural practitioners 'never' relined the completed PL to displace the soft tissues lining the saddles.

Figure 6.6 highlights the use made of the various component parts of the PL by dentists in rural and Adelaide practices. Composite designs were prepared in a similar way to that described above, to outline the various components 'usually' or 'always' selected by rural and Adelaide-based practitioners. Results are presented in Table 6.6.

TABLE 6.5 COMPONENTS PREFERRED BY PRACTITIONERS ACCORDING TO DECADE OF GRADUATION

COMPONENT	DECADE OF GRADUATION		
	1950s	1960s	1970s
WITH $\overline{3/3}$ AS ABUTMENTS			
Clasp form:			
occlusal or gingival	=	gingival	gingival
Clasp material:			
cast or wrought	cast	cast	cast
if cast	CoCr	CoCr	CoCr
if wrought	SS	SS	SS
Reciprocation:			
plate or finger	plate	plate	plate
Connector:			
plate or bar	plate	bar	=
Rests:			
cingulum or incisal	cingulum	cingulum	cingulum
Indirect retention:			
plate or cingulum rest	plate	cingulum rest	=
WITH $\overline{4/4}$ AS ABUTMENTS			
Clasp form:			
occlusal or gingival	=	occlusal	occlusal
Retentive undercut:			
mesio-buccal or disto-buccal	=	MB	MB
Rests:			
mesial or distal	D	=	M

CoCr - cobalt-chromium alloy
SS - stainless steel
= - equal preference (see p 6.6)

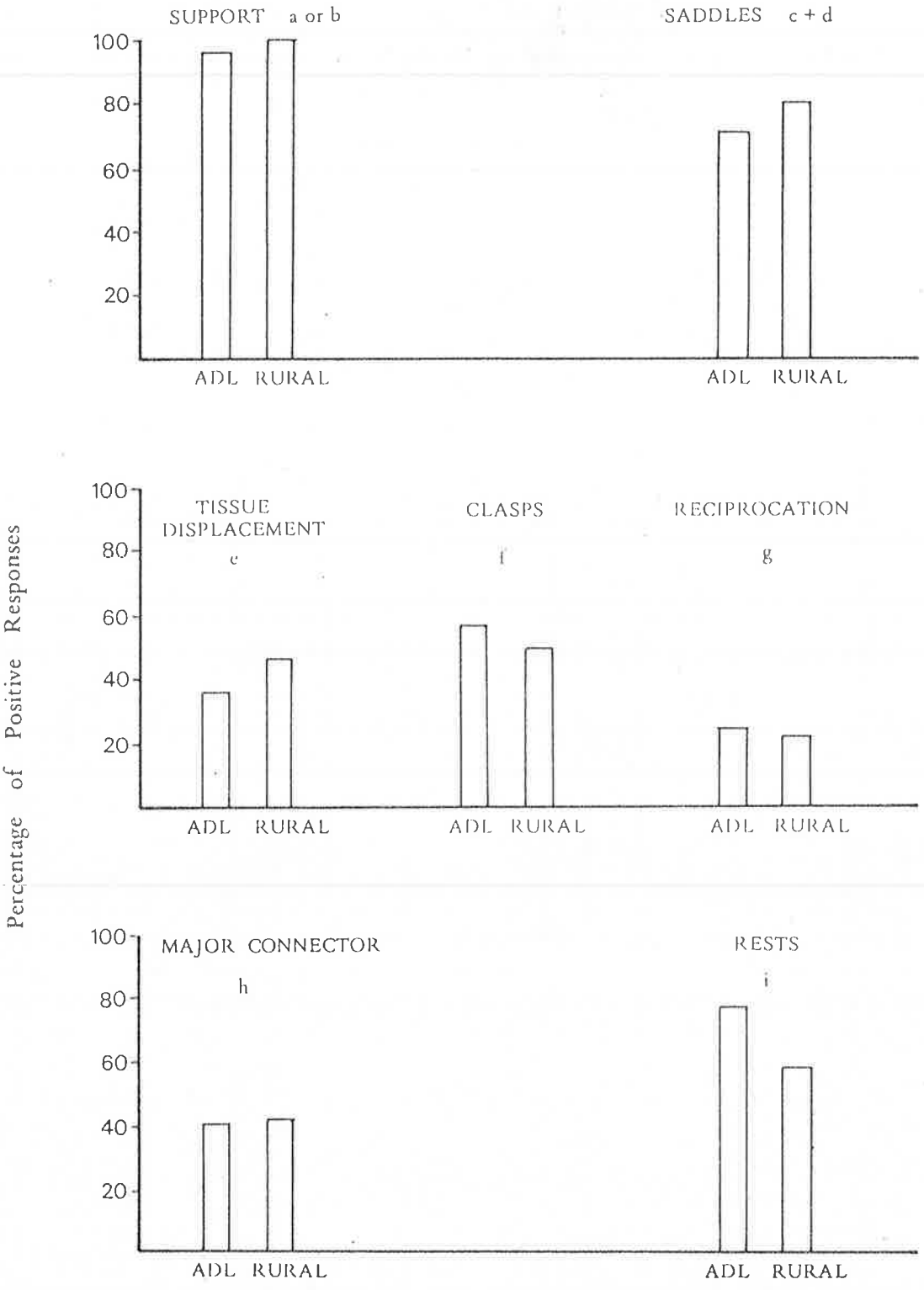


FIGURE 6.5 Percentage of positive responses to sub-groups which constituted lower design profile according to location of practice. For details of sub-groups and questions included in each sub-group see Figure 6.1.

ADL - Adelaide

FIGURE 6.6

Percentage of positive responses to questions regarding component parts of lower partial denture according to location of practice. For details of abbreviations see Figure 6.2.

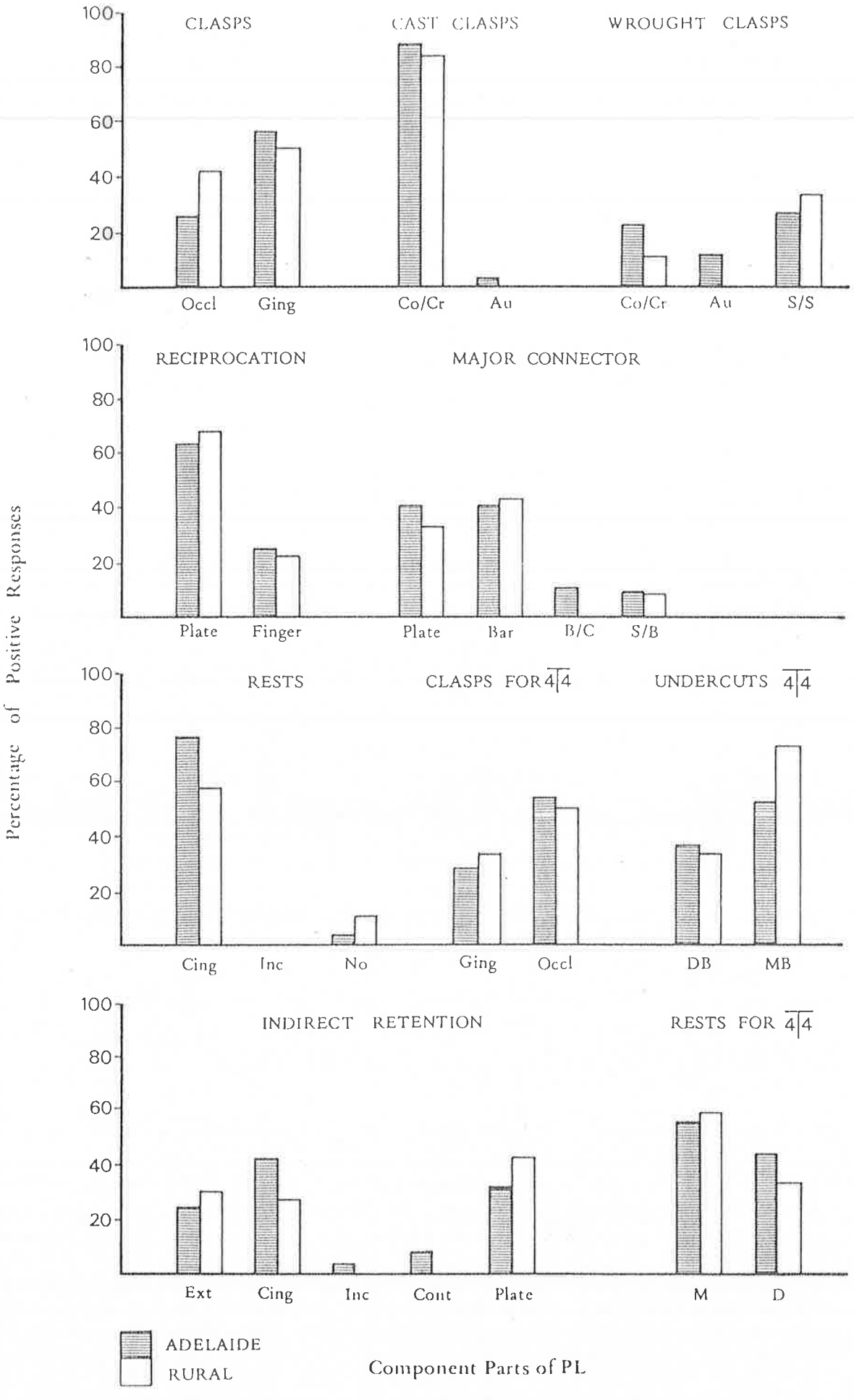

Percentage of Positive Responses
100
80
60
40
20
CLASPS
CAST CLASPS
WROUGHT CLASPS
Occl
Ging
Co/Cr
Au
Co/Cr
Au
S/S
RECIPROCATION
MAJOR CONNECTOR
Plate
Finger
Plate
Bar
B/C
S/B
RESTS
CLASPS FOR 4|4
UNDERCUTS 4|4
Cing
Inc
No
Ging
Occl
DB
MB
INDIRECT RETENTION
RESTS FOR 4|4
Ext
Cing
Inc
Cont
Plate
M
D
ADELAIDE
RURAL
Component Parts of PL

TABLE 6.6 COMPONENTS PREFERRED BY PRACTITIONERS ACCORDING TO LOCATION OF PRACTICE

COMPONENT	LOCATION OF PRACTICE	
	ADELAIDE	RURAL
WITH $\overline{3/3}$ AS ABUTMENTS		
Clasp form:		
occlusal or gingival	gingival	=
Clasp material:		
cast or wrought	cast	cast
if cast	CoCr	CoCr
if wrought	SS	SS
Reciprocation:		
plate or finger	plate	plate
Connector:		
plate or bar	=	plate
Rests:		
cingulum or incisal	cingulum	cingulum
Indirect retention:		
plate or cingulum rest	cingulum rest	plate
WITH $\overline{4/4}$ AS ABUTMENTS		
Clasp form:		
occlusal or gingival	occlusal	occlusal
Engage undercut:		
mesio-buccal or disto-buccal	MB	MB
Rests:		
mesial or distal	M	M

CoCr - cobalt-chromium alloy
SS - stainless steel
= - equal preference (see p 6.6)

d. Effect of type of practice

Figure 6.7 indicates the percentage of positive responses for each sub-group provided by practitioners in solo and partnership/associateship practices. Statistical analysis revealed that the difference between the percentages of positive responses from the two groups was significantly different for the sub-group relating to the use of a lingual bar major connector.

The percentages of positive responses for all questions relating to the design of the PL frame are indicated in Figure 6.8. Other questions, outside the profile, which showed significant differences when tested were:

i. use of lingual plate major connector

ii. use of lingual plate for indirect retention

iii. use of distal occlusal rests on $\overline{4/4}$.

Persons in partnership practices used lingual plates more commonly than solo practitioners, whereas dentists in solo practice were more likely to use distal occlusal rests on lower first premolars.

Using the method outlined on page 6.6, a resumé was prepared of the designs preferred by dentists in solo and partnership practices for each component of the PL (see Table 6.7).

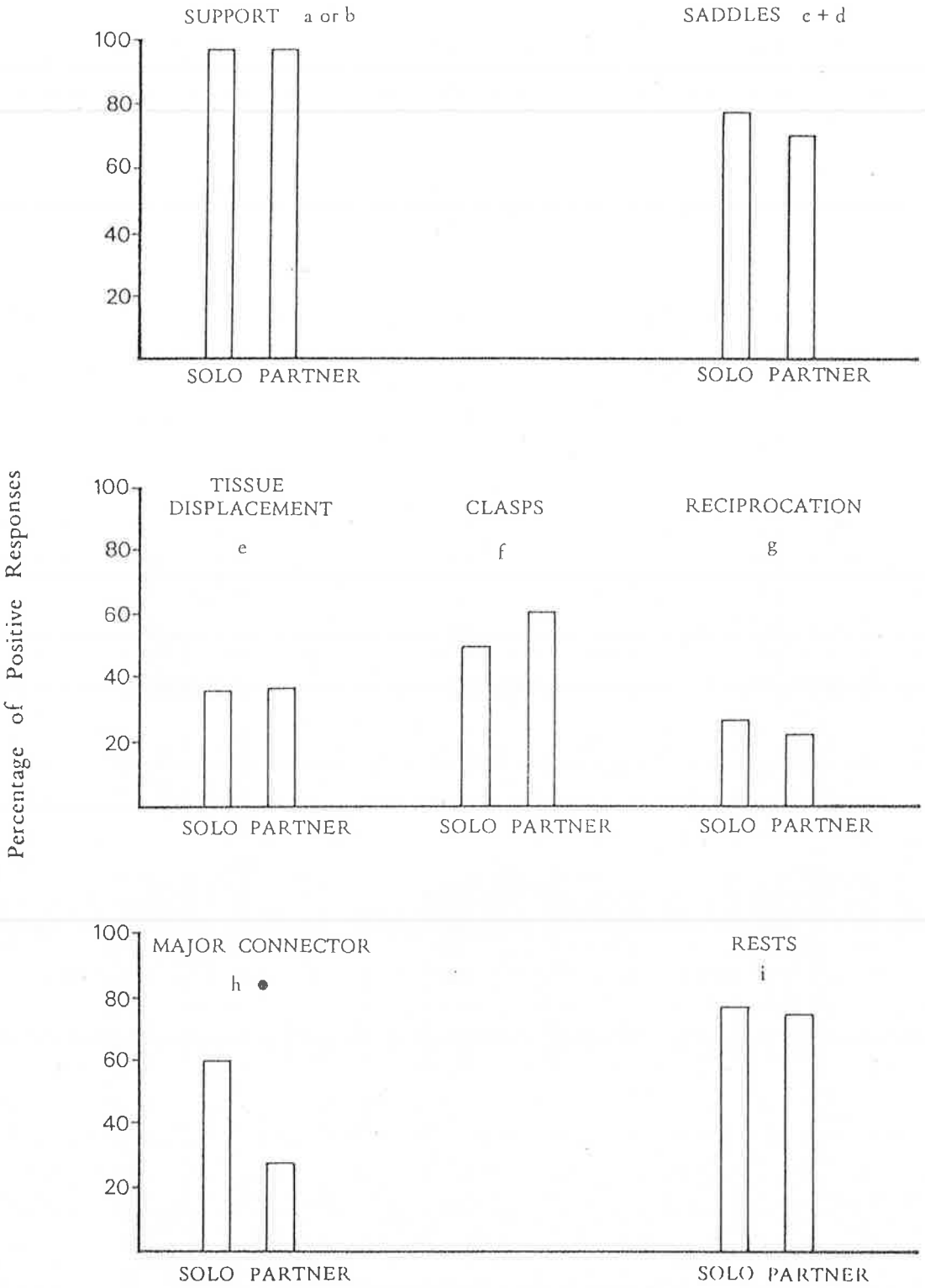


FIGURE 6.7 Percentage of positive responses to sub-groups which constituted lower design profile according to type of practice. For details of sub-groups and questions included in each sub-group see Figure 6.1.

● - Chi-squared : $P \leqslant 0.05$

FIGURE 6.8

Percentage of positive responses to questions regarding component parts of lower partial denture according to type of practice. For details of abbreviations see Figure 6.2.

● Chi-squared : $P \leqslant 0.05$

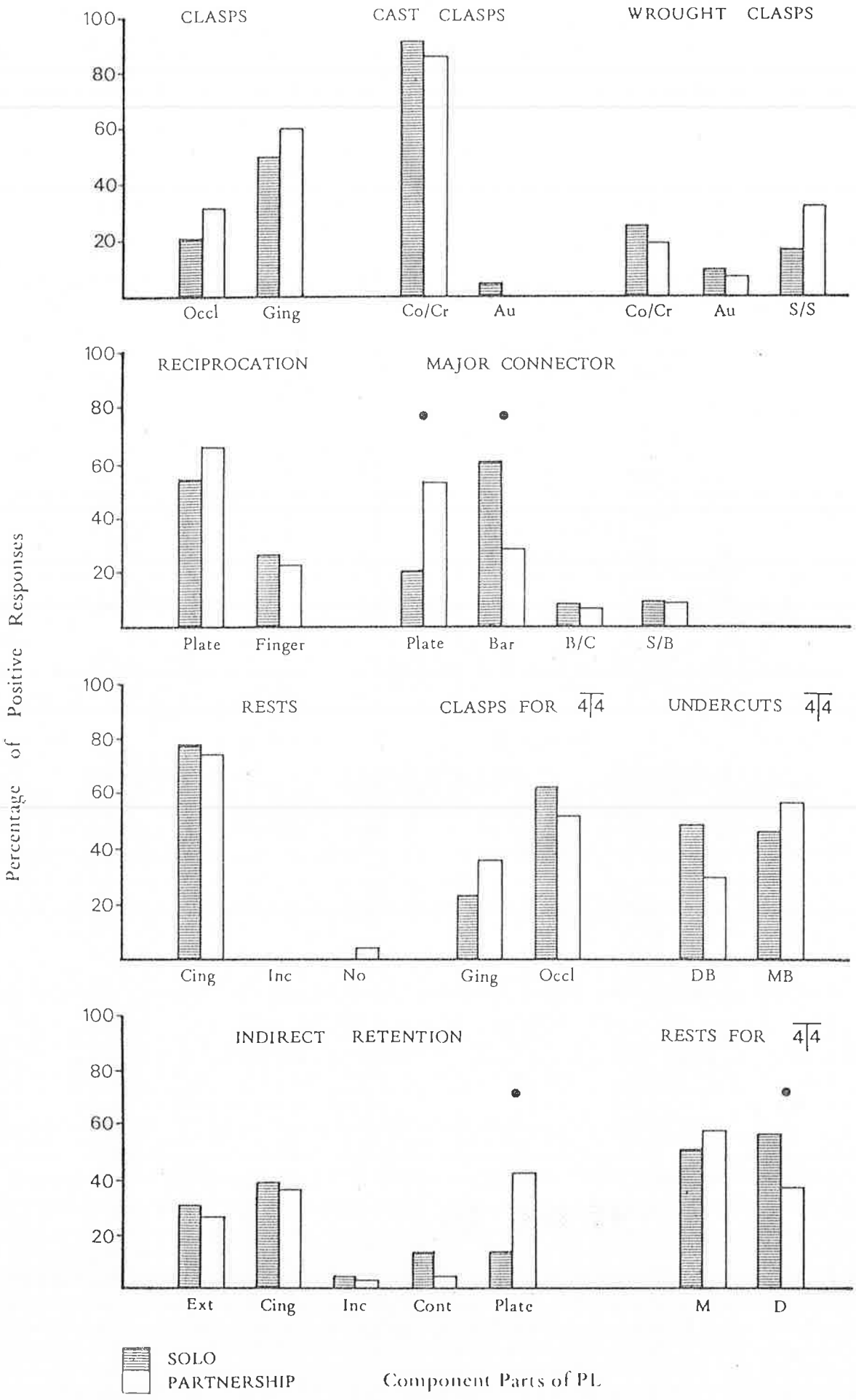

CLASPS
CAST CLASPS
WROUGHT CLASPS
100
80
60
40
20
Occl
Ging
Co/Cr
Au
Co/Cr
Au
S/S
RECIPROCATION
MAJOR CONNECTOR
Plate
Finger
Plate
Bar
B/C
S/B
RESTS
CLASPS FOR 4|4
UNDERCUTS 4|4
Cing
Inc
No
Ging
Occl
DB
MB
INDIRECT RETENTION
RESTS FOR 4|4
Ext
Cing
Inc
Cont
Plate
M
D
Percentage of Positive Responses
SOLO
PARTNERSHIP
Component Parts of PL

TABLE 6.7 COMPONENTS PREFERRED BY PRACTITIONERS ACCORDING TO TYPE OF PRACTICE

COMPONENT	TYPE OF PRACTICE	
	SOLO	PARTNER
WITH $\overline{3/3}$ AS ABUTMENTS		
Clasp form:		
occlusal or gingival	gingival	gingival
Clasp material:		
cast or wrought	cast	cast
if cast	CoCr	CoCr
if wrought	CoCr	SS
Reciprocation:		
plate or finger	plate	plate
Connector:		
plate or bar	bar	plate
Rests:		
cingulum or incisal	cingulum	cingulum
Indirect retention:		
plate or cingulum rest	cingulum rest	=
WITH $\overline{4/4}$ AS ABUTMENTS		
Clasp form:		
occlusal or gingival	occlusal	occlusal
Engage undercut:		
mesio-buccal or disto-buccal	DB	DB
Rests:		
mesial or distal	M	M

CoCr - cobalt-chromium alloy
SS - stainless steel
= - equal preference (see p 6.6)

PART II UPPER REMOVABLE PARTIAL DENTURE

Respondents were requested to answer questions relating to the design of an upper partial denture (Kennedy Class III, modification 2). The questions asked are indicated in Appendix 1, Part H.

1. Frequency Distribution of Responses

The responses of dentists to each of the questions asked are presented in Tables 6.8 to 6.10. The actual number of responses is shown as, in some questions, there were numerous missing values. Most of the questions asked were included in the profile and sub-groups and responses obtained will be presented later in this Chapter.

Clearly, most respondents derived support for the PU at least in part from the teeth; only one gained support from the soft tissues alone (Table 6.8). Most respondents indicated that they would prefer to place occlusal rests adjacent to the posterior saddles, viz. on the right (97%) and left (97%) second molars and on the distal aspects of right first premolar (77%) and left canine (69%). However, the means by which the anterior saddle might be supported on the abutment teeth were less definite.

The forms of clasps most commonly used by respondents for each of the teeth nominated in the survey are indicated in Table 6.9. For canines, the gingival approaching type was 'always' or 'usually' required by 71% of practitioners, while

TABLE 6.8 SUPPORT FOR PARTIAL UPPER DENTURES

Support from:	ALWAYS	USUALLY	SOMETIMES	NEVER
Soft tissues only	0	1	24	57
Teeth only	5	18	20	43
Soft tissues and teeth	26	40	19	5

Location of rests:	7/	4/	3/	/1	/2	/3	/7
Mesial	96	37	25	14	0	12	93
Distal	5	70	21	5	2	67	6

Figures represent the number of responses for each category.

TABLE 6.9 RETENTION FOR PARTIAL UPPER DENTURES

Clasp form used if following teeth clasped:	ALWAYS	USUALLY	SOMETIMES	NEVER
3/3 gingival approaching	7	63	23	3
occlusal approaching	1	16	61	13
4/ gingival approaching	1	28	52	11
occlusal approaching	5	57	31	1
7/7 gingival approaching	3	4	31	48
occlusal approaching	34	52	7	3
/2 gingival approaching	21	19	12	34
occlusal approaching	1	4	15	60
/1 gingival approaching	14	24	9	36
occlusal approaching	2	6	18	55

Preferred clasps:	7/	4/	3/	/1	/2	/3	/7
	96	90	14	2	0	87	96

Figures represent the number of responses for each category.

TABLE 6.10 MAJOR CONNECTOR FOR PARTIAL UPPER DENTURE

Major connector:	ALWAYS	USUALLY	SOMETIMES	NEVER
Palatal bar	2	18	44	19
Palatal plate (with minimal coverage of gingivae)	3	23	46	17
"Horse-shoe" shaped plate	3	26	39	13
"Full-coverage" plate	0	3	22	55
"Ring/Skeleton"	0	21	22	29

Figures represent the number of responses for each category.

the majority of dentists preferred to use an occlusal approaching form on the premolars (65%) and molars (87%).

The number of respondents who used each of the different types of major connectors is indicated in Table 6. 10. Few dentists usually used a 'full-coverage' plate, but a substantial proportion used each of the other four types, most preferring the 'horse-shoe' shaped plate connector.

2. Profile

A profile of questions was formulated which appeared to depict the essential design features for this upper partial denture (see Figure 6.9). For practitioners to meet the criteria of the profile their responses to all questions had to be 'always' or 'usually', except for the questions relating to their preference of teeth for clasps and rests. For the question relating to clasps, an answer was assessed as positive if 4/7 were clasped, providing that no other teeth were clasped except 7/3. Clasping of one or both of the latter two teeth was optional. The type of clasp used was also specified. A positive answer for the questions concerning rests was obtained if mesial rests were nominated for 7/7, distal rests for 4/3 and either, but not both, mesial rests for 3/1. Two respondents complied with the criteria set in the profile. One graduated from the 1950s and one from the 1960s and, while both practised in Adelaide, one was in 'solo' practice and one a 'principal'.

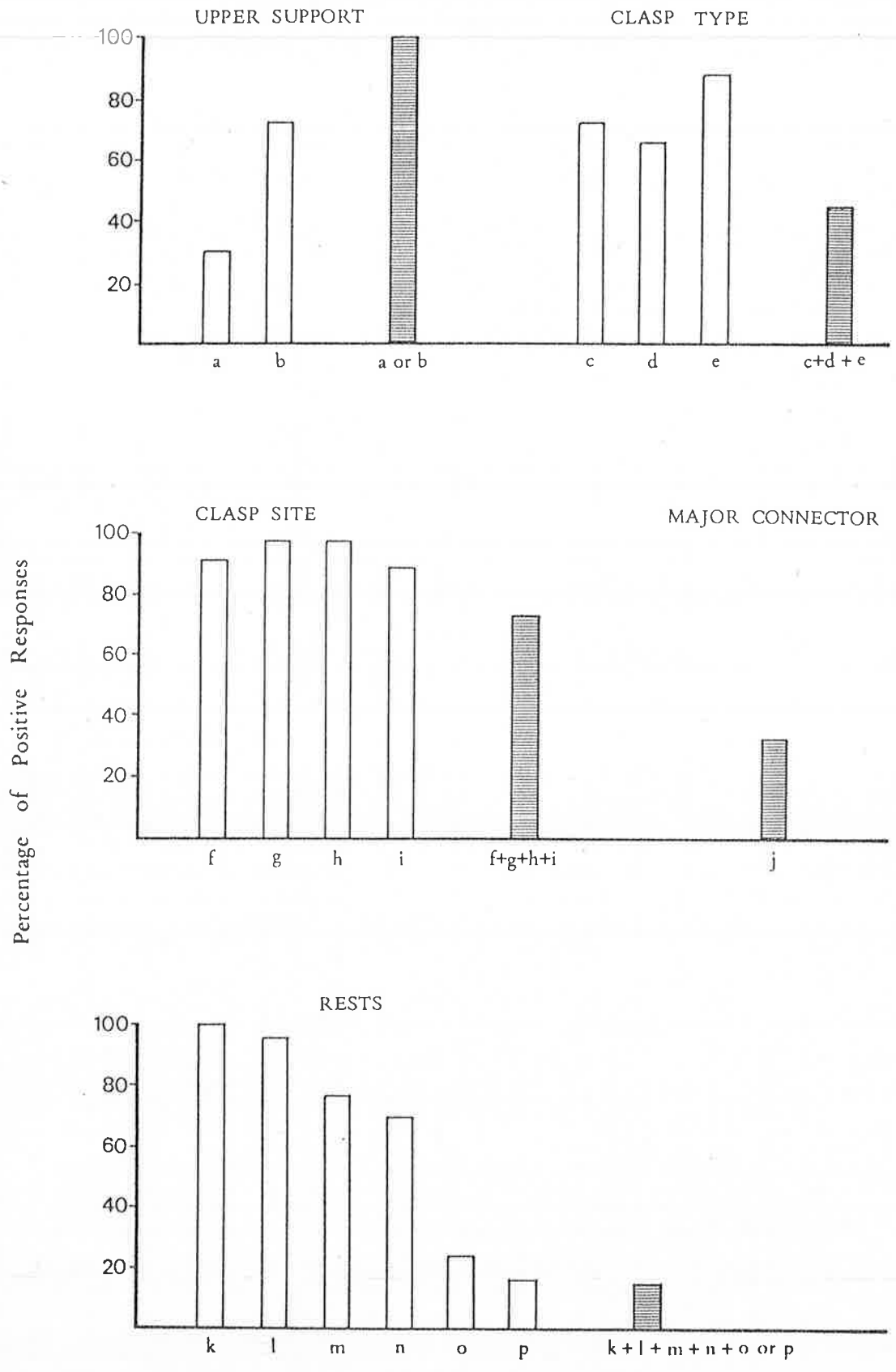
FIGURE 6.9

Percentage of positive responses from all respondents to questions constituting upper design profile and its five constituent sub-groups. The percentage of positive responses for each question is given by the height of the open column and for each sub-group by the hatched column.

A positive response was achieved for each question if the respondent indicated the frequency as 'always' or 'usually'. A positive response for each sub-group was obtained if all questions in the sub-group were positive.

The letters used opposite represent the following questions:

a. support for prosthesis derived from teeth only
b. support for prosthesis derived from soft tissues and teeth
c. /3 provided with gingival approaching clasp
d. 4/ provided with occlusal approaching clasp
e. 7/7 provided with occlusal approaching clasp
f. clasp site - 4/
g. clasp site - /7
h. clasp site - 7/
i. clasp site - /3
j. palatal plate (with minimal gingival coverage) as major connector
k. rest placed on mesial 7/
l. rest placed on mesial /7
m. rest placed on distal 4/
n. rest placed on distal /3
o. rest placed on mesial 3/
p. rest placed on mesial /1


UPPER SUPPORT
CLASP TYPE
CLASP SITE
MAJOR CONNECTOR
RESTS
Percentage of Positive Responses
100
80
60
40
20
a
b
a or b
c
d
e
c+d + e
f
g
h
i
f+g+h+i
j
k
l
m
n
o
p
k + l + m + n + o or p

3. Sub-groups and Questions

Questions which constituted the profile were grouped into five sub-groups to denote the major design features for this upper partial denture. Details of the sub-groups, the questions comprising each sub-group and the percentages of positive responses provided by the respondents are shown in Figure 6.9. A positive answer for each sub-group was obtained if all questions in it were answered positively. The method by which questions were assessed as positive or not was outlined on p 6.9.

a. All respondents

The percentages of positive responses for all questions and sub-groups are shown in Figure 6.9. Clearly, the respondents 'always' or 'usually' derived support for the prosthesis from either teeth alone or soft tissues and teeth (98%). Less than half the respondents used the designated forms of clasps for the teeth specified (44%), but the majority preferred to clasp the nominated abutment teeth. Only one-third of the respondents 'usually' used a palatal plate major connector and even fewer placed rests on the nominated teeth (15%).

b. Effect of decade of graduation

The percentages of positive responses for each sub-group were evaluated according to the decade in which the respondents graduated (see Figure 6.10). Chi-squared

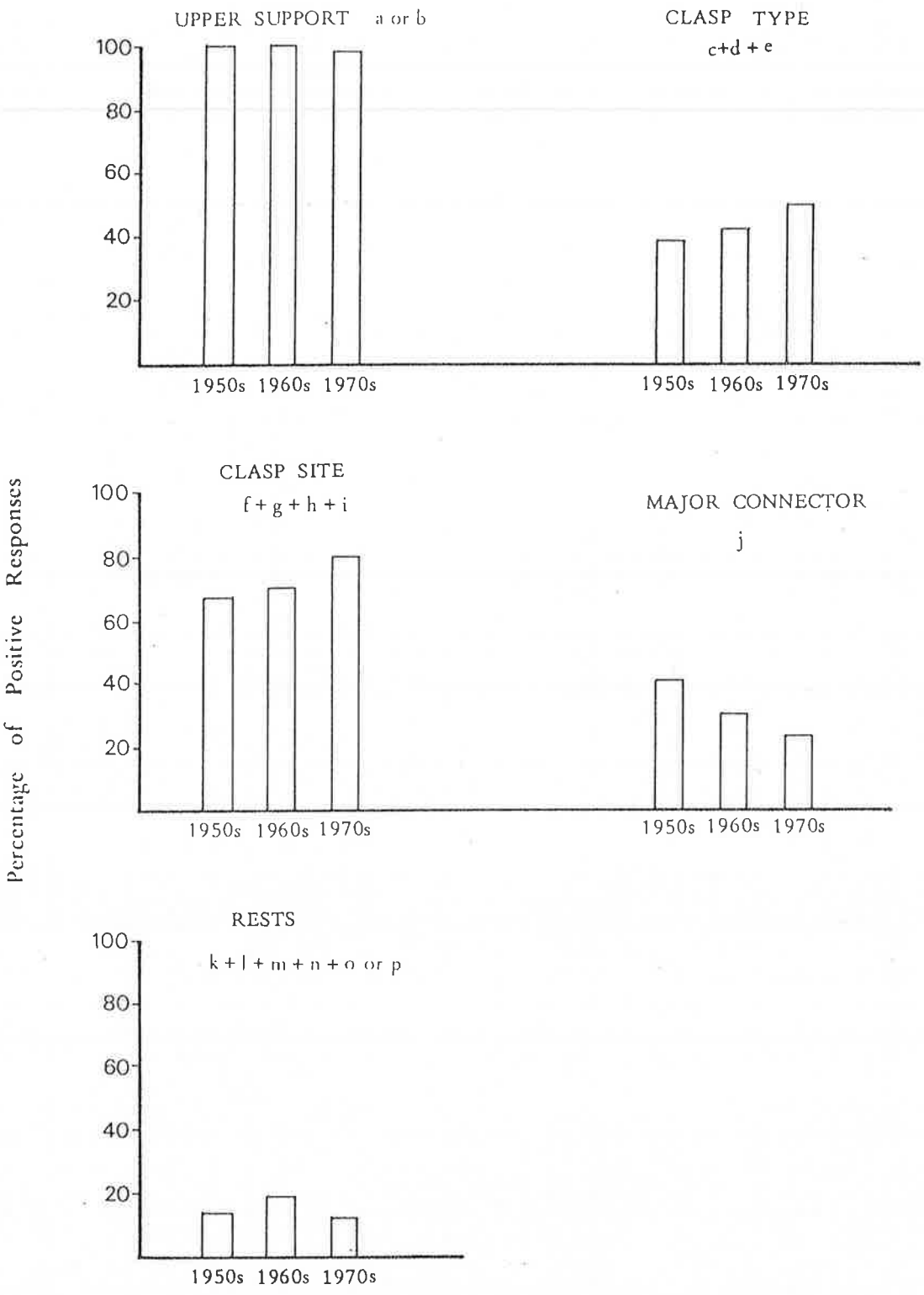


FIGURE 6.10 Percentage of positive responses to sub-groups which constituted upper design profile according to decade of graduation. For details of sub-groups and questions included in each sub-group see Figure 6.9.

analysis failed to demonstrate significant differences between the responses in any of the sub-groups. However, a greater percentage of recent graduates (1970s) tended to respond positively to the questions concerning clasps, while a higher percentage from the 1950s met the criteria pertaining to the major connector. In regard to the question of the placement of rests, a higher percentage of graduates from the 1960s provided positive answers.

Analysis of the individual questions which constituted the sub-groups revealed that there were differences between the responses of graduates from the various decades. These differences are outlined in Table 6.11. A higher percentage of graduates from the 1970s used occlusal and gingival approaching clasps on 4/ and /3 respectively, when compared with graduates from the earlier decades, and were less likely to place a distal rest on 4/ but more likely to place the rest mesially than graduates from other decades. The latter two differences were significant. None of the groups had a strong preference for a particular major connector.

c. Effect of location of practice

Results of the analysis of the sub-groups according to the location of respondents' practices are shown in Figure 6.11. In general, the country practitioners tended to have a higher percentage of positive responses than their Adelaide colleagues, but differences were not statistically

TABLE 6.11 USE OF COMPONENTS BY PRACTITIONERS ACCORDING TO DECADE OF GRADUATION

COMPONENT			DECADE OF GRADUATION				
			1950s		1960s		1970s
Clasps:							
SITE	TYPE		SITE	TYPE	SITE	TYPE	SITE TYPE
7/	Occlusal		100	95	100	83	100 96
4/	Occlusal		85	60	85	67	98 72
/3	Gingival		85	76	98	64	90 87
/7	Occlusal		100	95	100	83	100 96
Rests:							
7/ D			100		100		95
4/ D			90		81		58
/3 D			71		70		67
/7 M			95		100		94
3/ M			19		26		28
/1 M			19		19		10
4/ M			5		40		50
Major connector:							
palatal bar			32		20		16
palatal plate (minimal coverage)			32		32		22
"horse-shoe" shaped			18		28		35
"ring/skeleton"			9		20		27

Figures represent the percentage of practitioners who would use the component nominated.

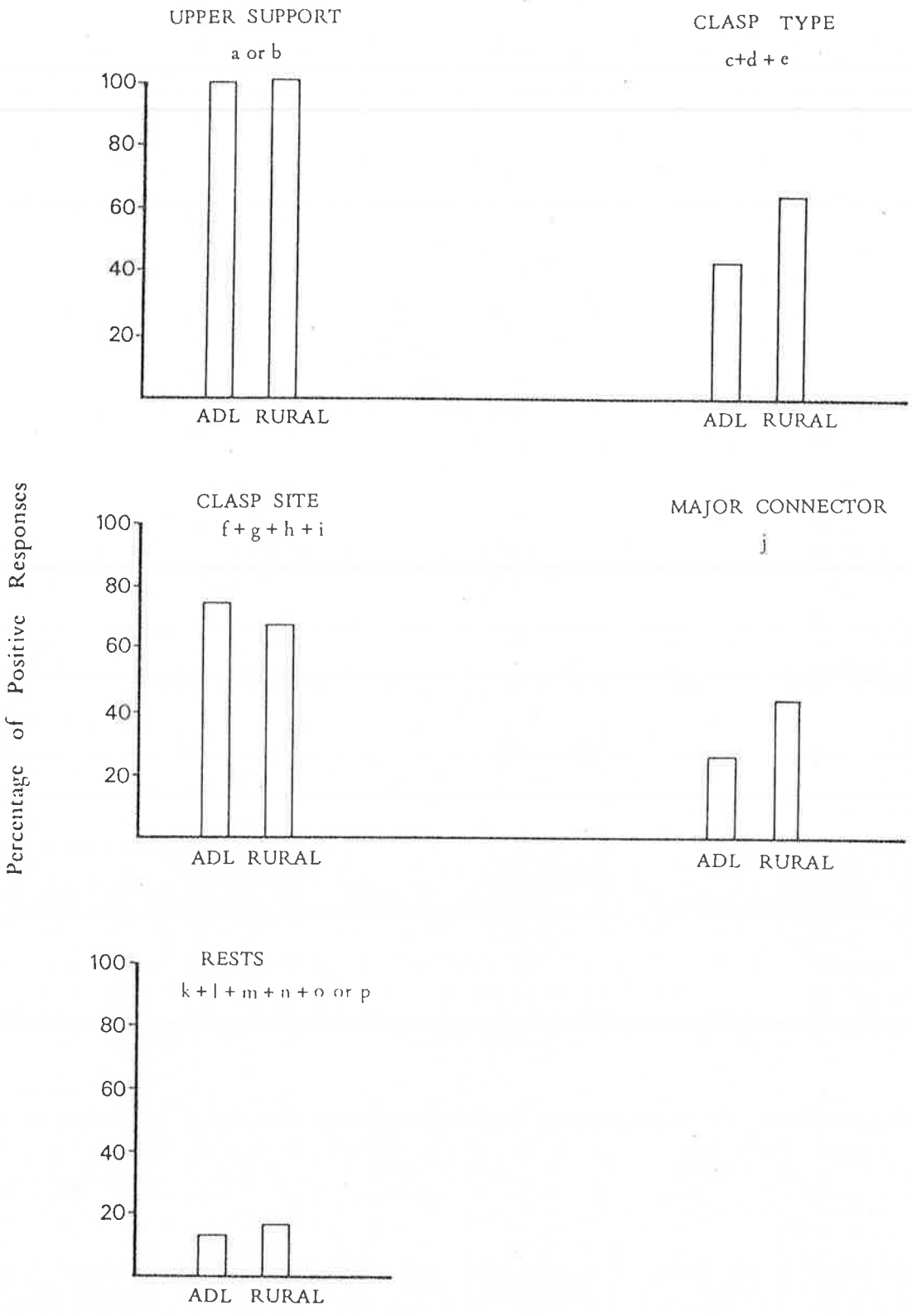


FIGURE 6.11 Percentage of positive responses to sub-groups which constituted upper design profile according to location of practice. For details of sub-groups and questions included in each sub-group see Figure 6.9.

ADL - Adelaide

significant. Minor differences were apparent in the preferences of the two groups for clasps, rests and major connector (Table 6.12), but none was significant.

d. Effect of type of practice

Although some differences were noted in the percentage of positive responses between persons in solo and partnership-type practices to the sub-groups and questions which constituted most of the sub-groups, none was significant (Figure 6.12; Table 6.13).

DISCUSSION

It was the purpose of the present study to determine how dentists in general practice designed various components of upper and lower partial dentures. The literature relating to the suitability of various designs for such RPDs is confusing and invariably based on clinical experience rather than documented research findings. In the last few years, various publications have indicated that prostheses should be designed which are simple and which minimize the risk of plaque accumulation on the natural teeth and the denture (Derry and Bertram, 1970; El Ghamrawy, 1976; Addy and Bates, 1977).

As noted in previous Chapters, attempts to derive profiles of questions to simplify analyses were not successful, partly because of the cumulative effect of the number of questions involved, but probably also because the concepts presently advanced have changed considerably in the last few years.

TABLE 6.12 USE OF COMPONENTS BY PRACTITIONERS ACCORDING TO LOCATION OF PRACTICE

COMPONENT	LOCATION OF PRACTICE			
	SOLO		PARTNER	
Clasps:	SITE	TYPE	SITE	TYPE
7/ O	98	89	100	91
4/ O	91	65	100	73
/3 G	89	73	83	75
/7 O	98	89	100	91
Rests:				
7/ M	98		100	
4/ D	71		75	
/3 D	71		50	
/7 M	94		100	
3/ M	25		33	
/1 M	14		17	
4/ M	37		50	
Major connector:				
palatal bar	24		17	
palatal plate (minimal coverage)	25		33	
"horse-shoe" shape	31		25	
"ring/skeleton"	22		17	

Figures represent the number of responses for each category.

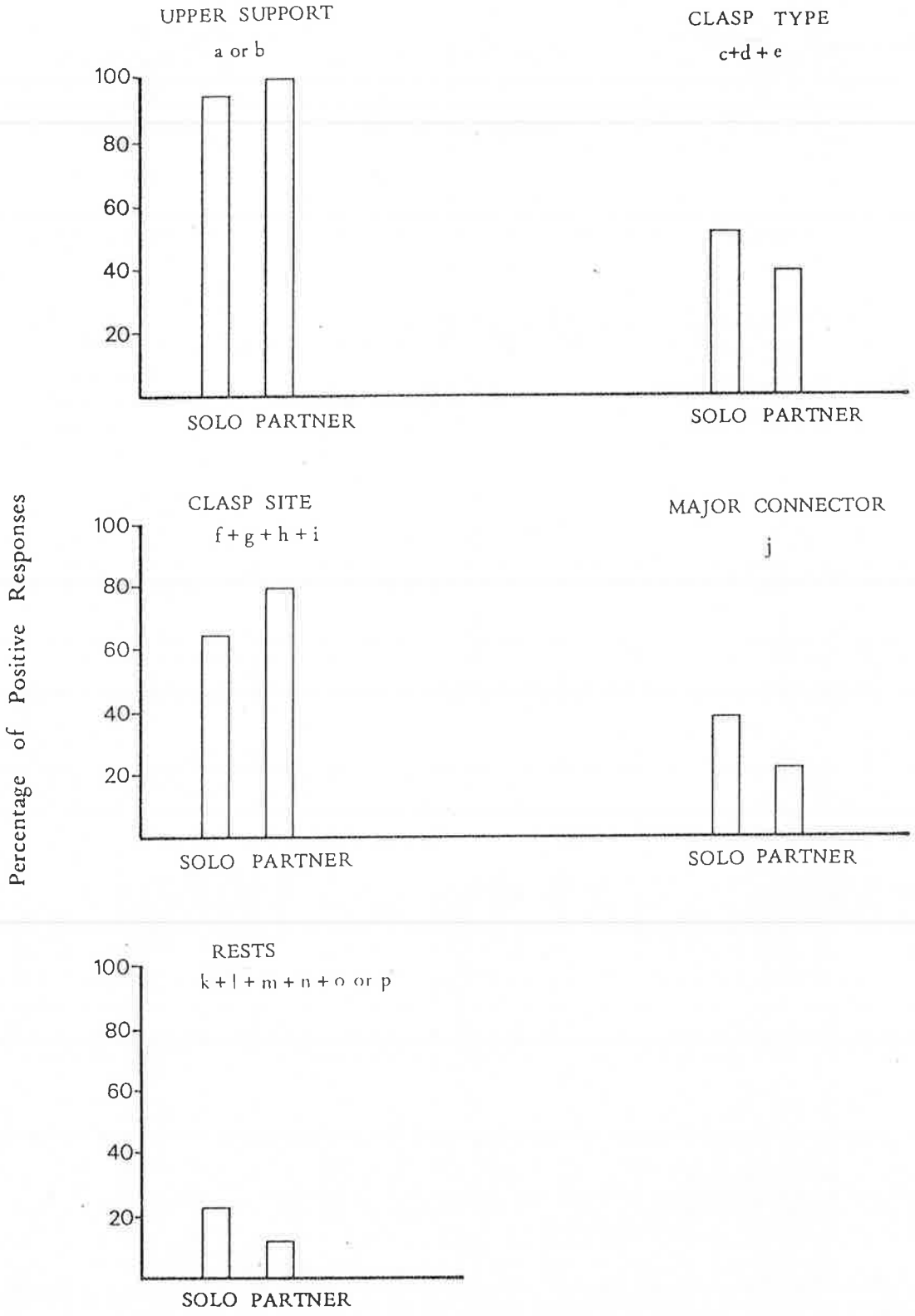


FIGURE 6.12 Percentage of positive responses to sub-groups which constituted upper design profile according to type of practice. For details of sub-groups and questions included in each sub-group see Figure 6.9.

TABLE 6.13 USE OF COMPONENTS BY PRACTITIONERS ACCORDING TO TYPE OF PRACTICE

COMPONENT	TYPE OF PRACTICE			
	SOLO		PARTNER	
Clasps:	SITE	TYPE	SITE	TYPE
7/ O	100	84	96	90
4/ O	89	72	92	59
/3 G	89	77	90	71
/7 O	100	84	96	90
Rests:				
7/ M	100		100	
4/ D	81		65	
/3 D	54		73	
/7 M	100		96	
3/ M	27		21	
/1 M	19		12	
4/ M	39		40	
Major connector:				
palatal bar	19		23	
palatal plate (minimal coverage)	35		21	
"horse-shoe" shape	31		31	
"ring/skeleton"	15		21	

Figures represent the number of responses for each category.

In regard to the lower partial denture, generally accepted concepts of support were comprehended, although it was suprising that approximately one-quarter of those who designed the saddles with maximum extensions did not 'usually' cover the retromolar pads. One questions then whether the concept of maximal extensions for such RPDs was comprehended. In regard to the displacement of the soft tissues of these saddles, it was apparent that the majority of dentists favoured the concept that soft tissues over the saddles should be displaced, most commonly using a pressure impression technique. It is doubtful, however, whether this concept of soft tissue displacement was appreciated, as questions relating to the use of impression materials (Appendix 1, Part C) indicated that respondents most frequently used alginate (46%), mercaptan rubber base or silicone (26%) and polyether (20%) impression materials. It is unlikely that the viscosity of these materials displaced the tissues to the extent required by the classical displacement techniques. Analysis of the impression materials used by those who responded positively to the question relating to the use of pressure impression techniques to displace the soft tissues revealed that 39% used alginate and 56% the three elastomers described above. However, it must be noted that the questions relating to impression materials were not asked in relation to a specified RPD and might not reflect the materials used when recording impressions for free-end saddle PLs. These results were surprising as students throughout the 1960s and 1970s at least were taught to displace soft tissues of the saddles by one of the three classical techniques. Thus it would appear that influences

other than undergraduate teaching determined the attitudes of practitioners in this regard.

Consideration of the design features for the PL replacing premolars and molars revealed that respondents usually provided cingulum rests on the canines for support and indirect retention, cast base-metal alloy gingival approaching clasps on the abutment teeth, with reciprocation through a lingual plate. There was equal support for lingual bar and plate major connectors and very few favoured the use of stress-broken connectors. As indicated by the questions comprising the profile, present teaching in the dental school emphasises the use of finger-shaped cingulum rests and a lingual bar major connector, but this was not always the case in the past.

When the design requirements for the PL were altered by the presence of first premolars, respondents modified their preferences for clasps to occlusal forms which engaged mesio-buccal undercuts and rests placed either on the mesial or distal aspects of the occlusal surfaces. Whilst there is some evidence to suggest that occlusal approaching clasps on free-end saddle PLs should engage disto-buccal undercuts, and that rests should be placed mesially and not distally (Kratochvil, 1963; Robinson, 1970; Derry and Bertram, 1970), this is by no means conclusive and it is recognized that there are indications for the use of gingival approaching clasp forms on premolars.

The questions relating to indirect retention did not specify whether practitioners modified the design, so far described, to

provide indirect retention, however it was apparent from the number of responses in the 'sometimes' or 'never' categories that most people did not provide indirect retainers *per se*.

In conclusion, dentists appeared to design relatively simple lower partial dentures to replace premolars and molars, with preferences for cast base-metal alloy gingival approaching clasp forms, cingulum rests, lingual plate reciprocation and an equal preference for lingual bar and plate major connectors. When first premolars were present, occlusal approaching clasps were preferred and occlusal rests, placed mesially or distally, were utilized. Although the majority of practitioners claimed that they displaced the soft tissues over the saddles, some doubt was expressed about at least the degree of displacement.

In previous Chapters it was apparent that there were differences in the attitudes of the most recent group of graduates relative to those who graduated in the two earlier decades, however in this study such differences were less marked and it could not be said that graduates from the 1970s were more likely to respond positively to the questions comprising the profile.

There were no differences between the groups in regard to the questions about support, although relatively fewer graduates from the 1970s responded positively to the question concerning coverage of the retromolar pads and, hence, did not comply with the requirements of the sub-group concerning the extension of saddles. Clearly, graduates from the 1950s were less likely to actively displace the soft tissues of the saddles than later graduates.

Evidence for this was provided from the findings that more dentists from this decade usually did not attempt to displace the tissues and, also, because fewer usually used any of the common displacement techniques.

The designs favoured by graduates from the three decades for the various components of the PL are summarized in Table 6.5. Dentists from all three groups preferred clasps cast in base-metal alloy, lingual plates providing reciprocation and cingulum rests. Whereas graduates from the 1960s and 1970s preferred gingival approaching clasps on the canines, those from the 1950s were equally divided in their support for the two basic clasp forms. The major connector design most commonly used by each of the three groups varied; a plate was preferred by those from the 1950s, a bar by those from the 1960s and either a plate or a bar by those from the 1970s. It is interesting to speculate that the selection of a major connector was linked to decisions about indirect retention as it appeared that those groups which favoured lingual plates for connectors also favoured them for indirect retention, whereas those which used a lingual bar favoured a cingulum rest for indirect retention.

As noted earlier there were few differences between the responses of graduates who practised in Adelaide compared with those in rural districts. It was shown in Figure 6.5 that more rural practitioners provided positive responses to the questions relating to non-displacement of soft tissues covering the saddles and the need for maximal extensions of the saddles of the RPD.

The attitude of rural practitioners to the non-displacement of the soft tissues was reflected as well in their responses to the questions relating to the techniques available for tissue displacement, in which more respondents 'never' used pressure impression techniques, relined completed RPDs or used the 'split-cast technique'.

Characteristics of the designs for the PL selected by the two groups are summarized in Table 6.6 and indicate only slight differences in the types of components preferred. Whereas the non-rural practitioners preferred to use gingival approaching clasps on the canines and were equally divided about the use of bar or plate type major connectors, rural-based dentists preferred plate connectors and were divided about the use of occlusal and gingival approaching clasps.

Except for the use of lingual bar major connectors and the placement of distal occlusal rests on premolars by those practitioners in solo practice, there were few differences between the responses of those in this group and those in partnership-type practices. It is difficult to provide any reason for these differences.

Analysis of the answers provided to the questions relating to the PU again revealed that the profile served little purpose except to highlight the fact that the concepts of the author varied from those of general practitioners; more useful information was gained by analyses of smaller groups of questions.

Classically, support for bounded saddles is provided by the abutment teeth and not by the soft tissues and, hence, it was surprising that so few derived support solely from the teeth and so many never used the teeth solely for support. However, it should be noted that the concepts of teeth or tissue support alone are probably rather less clearly delineated than most authors acknowledge, so that many of those dentures which are described as tooth-supported have an element of tissue support and vice versa. It is conceivable that respondents viewed the RPD as being tooth-supported posteriorly, but tissue-supported for the anterior saddle. Evidence to support the latter contention was provided by the finding that so few used rests on either of the abutment teeth for the anterior saddle. Nevertheless, it was decided that the sub-group relating to concepts of support would be positive if respondents answered positively to either of the questions relating to tooth-support, viz. tooth support only or tooth and tissue support.

In assessing the design for the metal PU it was decided to analyze four components; placement of rests and clasps and the types of clasps and major connectors used. Therefore, it was decided that the RPD should be supported by mesial occlusal rests on both molars, a distal occlusal rest on the premolar and cingulum rests on the left canine and one of the two anterior abutment teeth. Only approximately one person in seven provided positive answers to this sub-group, for although nearly all utilized rests on the molars and about three-quarters placed

them as required on the premolar and left canine very few utilized the anterior abutments for support. The present study did not seek justification for the design selected and, hence, it was not possible to determine whether this reluctance to use the anterior abutments for support was related to fears that the use of rests on anterior teeth cause them to tilt (Potter et al, 1967).

Deciding on a configuration for clasping proved to be rather difficult; however, it was eventually decided that the 74/37 should be clasped. Clearly, many other combinations are possible and it might be argued that diagonal clasping of the posterior saddles, with frictional 'grips' on the anterior saddle, would simplify the design. That so many met the requirements of the sub-group was perhaps a reflection of the tendency to overclasp prostheses, as it was apparent that 80% of respondents clasped all four abutments mentioned about. It was of interest that nobody used the diagonal clasping principle suggested by Derry and Bertram (1970) and very few indicated a preference for 'other' forms of clasps, such as proximal 'grips' on the mesial surfaces of 3/1, to assist retention of the anterior saddle.

Approximately one-half of the respondents satisfied the conditions of the sub-group relating to the types of clasps used on 74/37, namely, occlusal approaching on all but /3, which was to have a gingival approaching form. A somewhat surprisingly large number of dentists used occlusal-type clasps on /3 and gingival-approaching clasps on 4/.

In regard to the preferred major connector, four of the five main forms suggested received support and, although it was encouraging that more than half 'never' used full-coverage plate connectors, it was clear that one in four still preferred the 'horse-shoe' form which covers most if not all of the palatal gingivae. Over 40% used bar-type connectors, either as a bar or in the form of a 'ring', despite the finding of Potter et al (1967) that the thinner plate type of major connector occupying the mid-palatal region is preferred for comfort.

Whereas the concepts of dentists who graduated in the 1970s in regard to treatment planning aspects of removable partial denture prosthodontics more closely paralleled those currently taught in the dental school than those who graduated in either of the two earlier decades, such a difference was not observed in regard to the design of the PU.

Although the results presented in regard to the type of support envisaged indicated that there was no difference in responses between the three decades, twice as many dentists who graduated in the 1950s required tooth support alone, when compared with the other groups. However, this trend was not supported by the findings of the study in regard to the provision of rests, in that those who graduated in the 1950s were less likely to place appropriate rests, especially for the anterior saddle.

Graduates from the 1960s were more likely to clasp the nominated teeth, but less likely than those in the later decade

to provide the nominated clasp form for each of the teeth specified. Similarly, the preference of those in this group for minimal coverage palatal plate major connectors was matched by those from the 1950s, but somewhat exceeded the percentage of the most recent graduates who usually used such a connector.

Despite a limited number of notable differences between the responses of those practitioners in rural and non-rural areas to questions discussed in the previous Chapter, it was apparent that the attitudes of the two groups of dentists in regard to treatment planning were generally similar. This trend continued in regard to the design of the PU, where there were no significant differences in the percentages of positive responses to any of the sub-groups or questions. However, it was noted that more rural practitioners tended to respond positively to a greater number of questions, especially in regard to clasps and the form of the major connector. There is no apparent reason for these differences.

Although there were some marked differences in the attitudes of persons in solo relative to those in partnership-type practices in regard to the treatment planning phase in removable partial denture prosthodontics, there were no significant differences in regard to the design of the PU. However, it was apparent that more persons in solo practices tended to respond positively to the sub-groups.

In summary, this study indicated that the concepts of practitioners regarding suitable designs for the two partial dentures nominated were widely divergent and encompassed most of

those described in the classical texts. Further, it was clear that concepts of support for the dentures and minimizing plaque accumulation were not appreciated. Whilst differences existed between the designs favoured for each of the components of the dentures by the various groups of dentists examined, no one group provided integrated designs which were closer to those expected of the undergraduate dental students in the University of Adelaide.

CHAPTER 7

DENTAL EDUCATION

CHAPTER 7

One of the stated objectives of this study was to examine the influence of education on the practice of removable partial denture prosthodontics. As it is likely that various factors, which might be termed educational in a broad sense, have determined the manner in which general practitioners perceive and perform their clinical duties, it was of interest to determine which of these practitioners felt had influenced their practice of RPD prosthodontics in the area of treatment planning, design of prostheses and clinical procedures. Practitioners who felt that their undergraduate education had not influenced their practice of removable prosthodontics were asked to indicate why. The questions asked are outlined in Appendix 1, Part I.

RESULTS

1. Educational factors in RPD prosthodontics

General practitioners were asked to indicate which educational factors they believed had most influenced their practice of RPD prosthodontics in three areas, namely: treatment planning, design of prostheses and clinical procedures. Seven educational factors were listed and an opportunity was provided for respondents to provide another of their choosing if they wished. Dentists were asked to nominate up to three factors for each of the areas outlined above. Results are presented in Table 7.1. As only four

TABLE 7.1 IMPORTANCE OF SIX EDUCATIONAL PROCESSES ON TREATMENT PLANNING, DESIGN AND CLINICAL PROCEDURES

EDUCATIONAL INFLUENCE	PHASE OF RPD PROSTHODONTICS		
	TREATMENT PLANNING	DESIGN	CLINICAL PROCEDURES
Undergraduate course	73	71	69
Association with dentists	46	49	62
Membership of study groups	14	9	13
Continuing education courses	49	44	43
Reading of literature	40	38	41
Association with dental technicians	21	58	17

Numbers represent the percentage of practitioners who responded in each category.

persons who responded to the survey possessed a Fellowship or Diploma and as only between five and seven persons used the "other" classification, these factors were omitted from the table.

Clearly, most practitioners felt that their undergraduate course was important in all three areas of RPD prosthodontics. Associations with other dentists were perceived as being important influences, especially in regard to clinical procedures, as were relationships with dental technicians in regard to designing partial dentures.

a. Effect of decade of graduation

The above characteristics were analyzed according to the decade in which the dentists graduated and the results are presented in Figure 7.1. Of the order of eighty percent of those who graduated in the latter two decades felt that their undergraduate course was one of the most important influences on their practice of RPD prosthodontics, in all three areas examined. However, their colleagues from the 1950s did not express the same feelings (for Chi-squared tests of significance see Table 7.2). By far the largest percentage of dentists who graduated in the 1950s felt that continuing education courses were one of the three most important influences on their practice of removable prosthodontics. As well, it was obvious that a higher percentage of these graduates felt that reading the literature and membership of study groups were influential, whereas graduates from the 1970s stressed the importance of their association with other

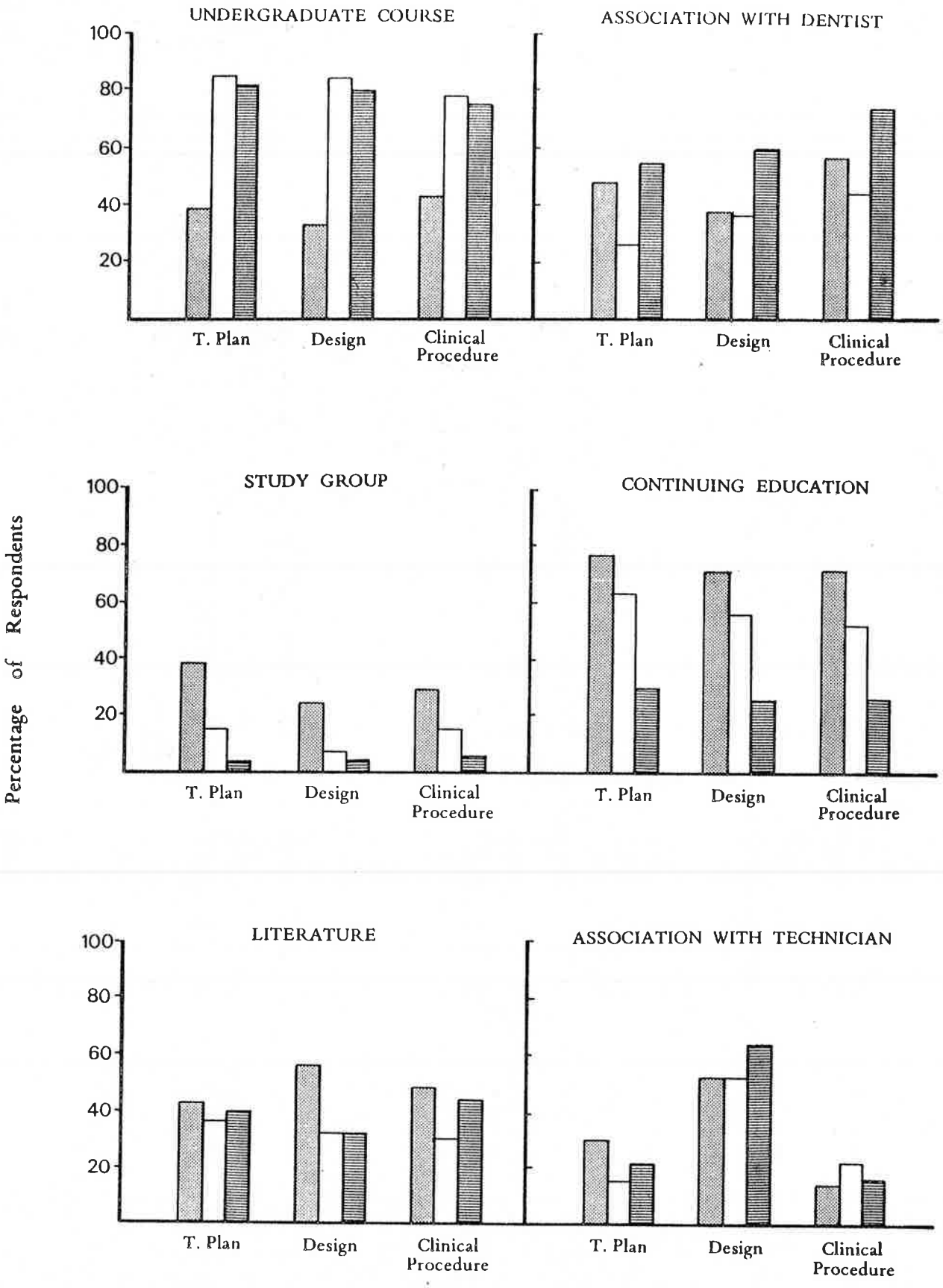


FIGURE 7.1 Respondents' concepts of the importance of six educational processes on their practice of RPD prosthodontics in the areas of treatment planning, design and clinical procedure according to the decade in which they graduated.

TABLE 7.2 TESTS OF SIGNIFICANCE

EDUCATIONAL INFLUENCE	PHASE OF RPD PROSTHODONTICS		
	TREATMENT PLANNING	DESIGN	CLINICAL PROCEDURE
Undergraduate course	* + @	* + §	* + @
Association with dentists	# § @		# @
Membership of study group	+ @	+	+
Continuing education course	+ #	+ #	+ #
Reading of literature		+	
Association with dental technicians			

Symbols used indicate that there were significant differences between the number of practitioners in the groups represented who indicated that an educational factor had influenced the particular phase of RPD prosthodontics.

Decade of graduation:

* 1950s vs 1960s

\+ 1950s vs 1970s

\# 1960s vs 1970s

Location of practice:

§ Adelaide vs rural

Type of practice:

@ Solo vs partner/associate

dentists. While continuing education courses were cited as being most important for the graduates from the 1950s and 1960s, clearly the most recent group of graduates did not have the same opinion. The relationship between dentists, from all decades, and dental technicians in regard to designing of RPDs was also apparent.

b. Effect of location of practice

It was of interest to determine whether the location of dentists' practices influenced their concepts of the importance of the educational processes. Results of this analysis are presented in Figure 7.2 and Table 7.2.

Some interesting trends were noted. However, as indicated previously the number of rural practitioners included in the survey was very small and results need to be viewed with caution. A higher percentage of Adelaide practitioners placed emphasis on the influence of their undergraduate education in the areas of design and clinical procedures. Clearly, a higher percentage of rural practitioners stressed the importance of their relationships with other dentists, but it was also clear that study groups did not exert an important influence on their practice of prosthodontics. Continuing education courses were cited by a higher percentage of rural practitioners as being important influences.

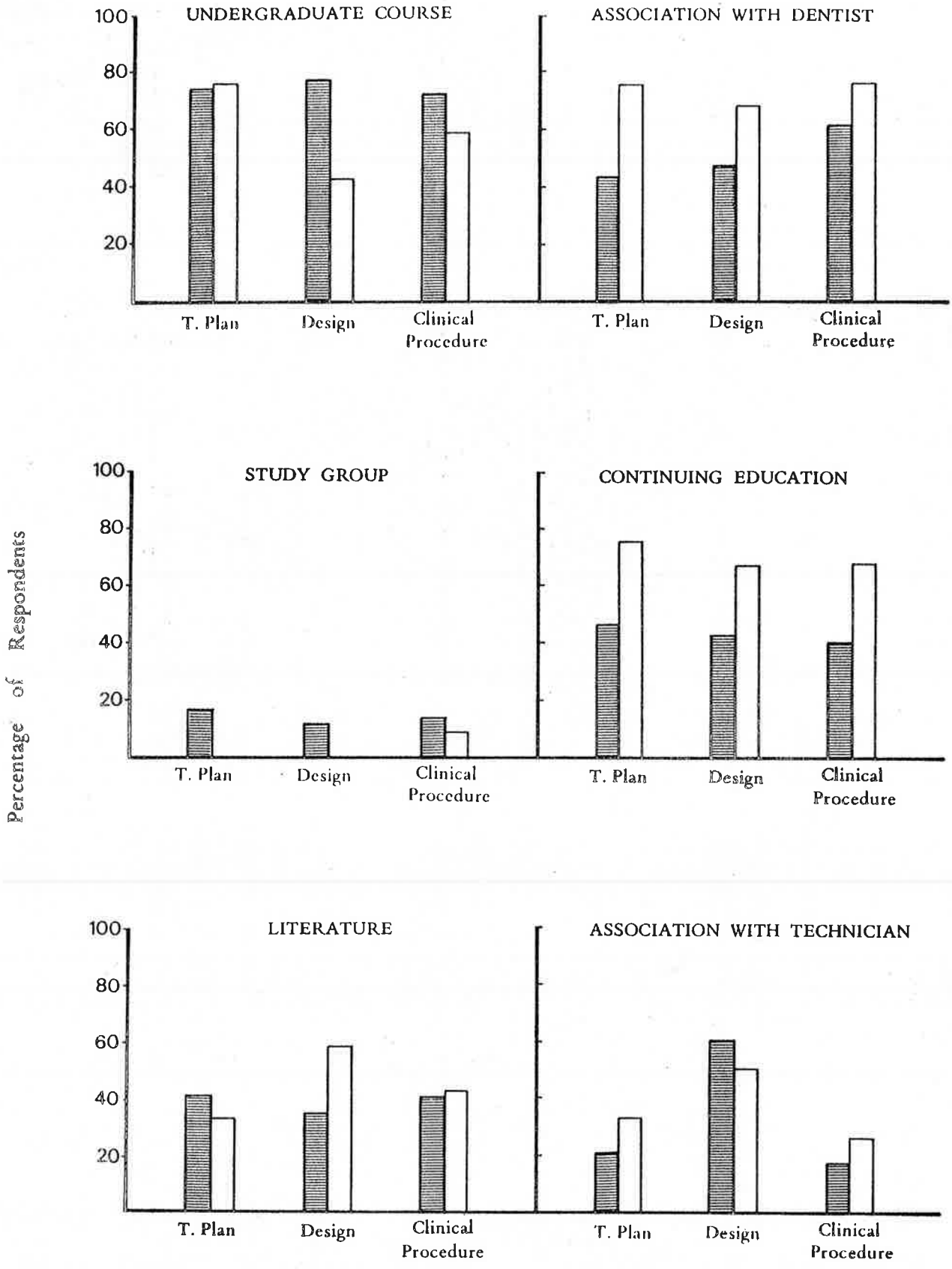


FIGURE 7.2 Respondents' concepts of the importance of six educational processes on their practice of RPD prosthodontics in the areas of treatment planning, design and clinical procedure according to location of their practices.

c. Effect of type of practice

There were some pronounced variations in the responses of graduates in "solo" practice when compared with those in a "partnership/associateship" relationship (Figure 7.3 and Table 7.2).

In the areas of treatment planning, design and clinical procedures, relatively fewer persons in "partnership" stressed the importance of their undergraduate courses when compared to dentists in "solo" practice. However, a higher percentage stressed the importance of their association with other dentists and their membership of study groups.

2. Undergraduate Education

Those graduates who felt that their undergraduate education had not significantly influenced their practice of RPD prosthodontics were asked to indicate why. Details of the questions asked can be found in Appendix 1, Part I, question 2. Respondents were able to specify more than one aspect. Results are presented in Table 7.3.

Thirty-eight percent of all respondents specified that they felt they had had insufficient experience at graduation and smaller numbers felt that the procedures taught were unsuitable for private practice (17%) or that teaching was unsatisfactory (15%). A supplementary question to clarify what was wrong with the teaching proved to be misunderstood as most of the comments were identical with the options provided in question 2. Most respondents again

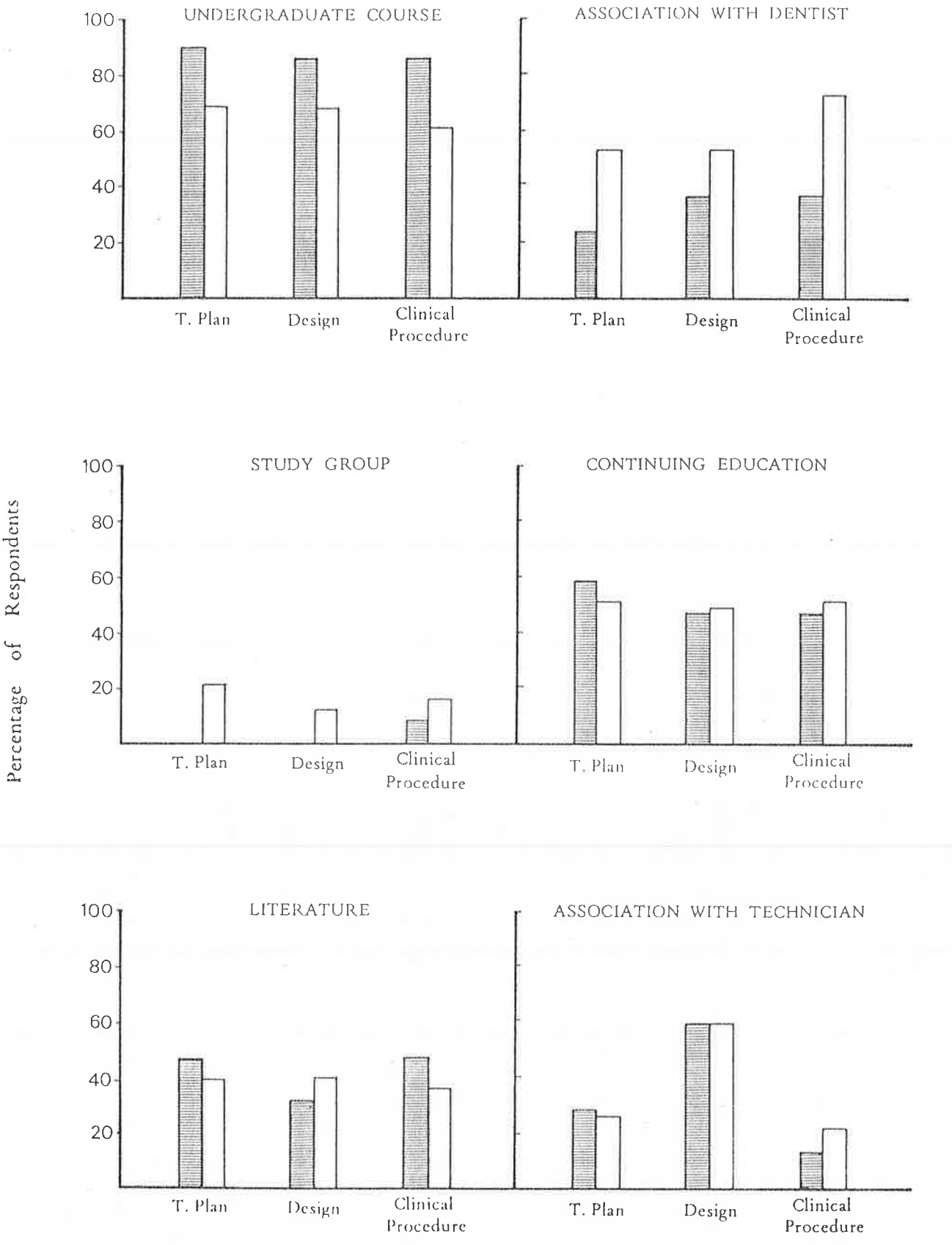


FIGURE 7.3 Respondents' concepts of the importance of six educational processes on their practice of RPD prosthodontics in the areas of treatment planning, design and clinical procedure according to the type of practice in which they worked.

TABLE 7.3 FAILURE OF UNDERGRADUATE EDUCATION TO INFLUENCE RPD PRACTICES

REASON	ALL RESPONDENTS	DECADE OF GRADUATION			LOCATION OF PRACTICE		TYPE OF PRACTICE	
		1950s	1960s	1970s	ADELAIDE	RURAL	SOLO	PARTNER
Insufficient time allocated in curriculum	14	33	4	12	14	17	15	12
Insufficient experience at graduation	38	67	26	32	37	50	27	40
Procedure taught unsuitable for private practice	17	29	11	16	17	25	8	19
Unsatisfactory teaching	15	14	4	18	17	8	8	19

Figures represent the percentage of respondents who responded to each factor.

cited lack of clinical experience (20%), but a few persons indicated that the personalities of tutors were responsible (8%) and a smaller number felt that tutors were inadequate teachers (5%).

The four factors cited by respondents which caused them to believe that their undergraduate courses had not influenced their practice of RPD prosthodontics were analyzed according to the decade of graduation, the type of practice in which they worked and the location of their practice. It was shown previously (Figure 7.1) that more dentists who graduated in the 1950s compared with those who graduated in later decades, believed that their undergraduate studies had less influence on their subsequent practice of partial denture prosthodontics and this was reflected in the results of the present analysis (Table 7.3). Lack of experience at graduation was cited by graduates from all decades as the major reason for this belief. More persons from the 1950s relative to the other two decades felt that insufficient time was allocated in the curriculum and that the procedures taught were unsuitable.

As indicated previously, the responses of graduates in rural practices indicate that, in the areas of design and clinical procedures, they did not believe that their undergraduate course was as important as other characteristics in shaping their practice of RPD prosthodontics. The majority attributed this to insufficient experience at graduation and procedures which were not suitable for private practice (Table 7.3).

Fewer dentists in a "partnership" arrangement included the influence of their undergraduate education as being a significant

factor influencing their prosthodontics, when compared with those in "solo" practice. The results in Table 7.3 indicate that the main reason for this was lack of experience at graduation.

DISCUSSION

In this aspect of the survey, dental practitioners were asked to indicate which educational factors influenced three aspects of their practice of RPD prosthodontics, namely, treatment planning, design of dentures and clinical procedures. In regard to treatment planning, nearly three-quarters of the respondents considered that their "undergraduate course" was one of the most important influences, which is perhaps not surprising as one might expect that foundations are laid during this basic training which can be expanded subsequently. However, analysis of the responses from dentists according to the decade in which they graduated might suggest that, with the passage of time the importance of undergraduate education is diminished, so that dentists who graduated in the 1950s placed less importance on the influence of their primary education than on continuing education, associations with other dentists and reading of the literature.

Attendance at continuing education courses was nominated as the second most important factor influencing respondents' concepts of treatment planning. However, the perceived importance of these courses was influenced considerably by the length of time since graduation. More than three-quarters of those dentists who graduated in the 1950s agreed that this aspect of education was of

importance, whereas less than one-third of those who graduated in the most recent decade included it among the three most important factors influencing their concepts of treatment planning. Whilst there was little difference between the relative importance placed on continuing education by those in partnership-type practices compared with those in solo practices, a much higher percentage of those persons in rural, compared to Adelaide, practices included continuing education as one of their priorities. Thus it was apparent that continuing education courses were perceived as being important factors influencing the treatment planning for patients who require RPDs, especially for those dentists who graduated prior to 1960 and for those who practise in rural areas of South Australia. It should be noted that continuing education courses in South Australia are usually conducted by the Postgraduate Committee in Dentistry, which is a committee of the Council of the University of Adelaide. Courses are mostly run in Adelaide, but some are held in the major rural areas of the State each year, and vary in length from half-day seminars to extension courses of 50 or more hours.

Associations with other dentists were perceived by almost half of the respondents as being one of the three most important influences on treatment planning. Younger graduates and those in rural-based and partnership-type practices placed more emphasis on these associations than others, particularly those who graduated in the 1960s or those in solo practices. However, it must be recalled that graduates from the 1960s were more likely to be in solo practices than those who graduated in the other two decades

examined, when attempting to draw conclusions about the relationships between the 1960s' graduates, those in solo practice and the relevance of inter-dentist relationships. Nevertheless, it is interesting to speculate about a possible relationship between practitioners who work alone and their perceptions of inter-dentist associations. Perhaps the present findings also support a contention expressed earlier (p 4.11) that rural-based practitioners have closer relationships with fellow professionals than those in city or near-city areas.

Forty percent of dentists included reading of the literature among the three most important educational factors influencing treatment planning for patients who needed partial dentures. None of the variables tested, namely decade of graduation and site or type of practice, influenced the level of response obtained.

Membership of study groups and associations with dental technicians seemed to be less important factors influencing treatment planning, although the level of importance varied when analysed according to the decade of graduation, and site and type of practice in which a respondent worked. Thus graduates from the 1950s were more likely to include both factors as being important than younger graduates, and while no person in rural-based or solo practices included membership of study groups, country practitioners were more likely to include their association with dental technicians than those in Adelaide. These results again highlight (a) the significance of inter-personal relationships for these dentists in rural practices and those with partnership/associateship

arrangements, and (b) the importance of factors other than the undergraduate course in influencing the concepts and practice of those who graduated prior to 1960. The failure of those practitioners in country areas to place importance on study groups possibly related to the conduct and activities of these groups, which probably meet at less convenient times and places and which are more restricted in nature and membership than the continuing education courses.

There were many similarities between the responses of dentists concerning the importance of the various educational factors which they believed influenced their concepts of designing partial dentures and their attitudes to treatment planning. The most striking difference was the perceived relevance of associations with dental technicians, which was now second only in importance to the undergraduate course. Most of the characteristics relating to the decade in which dentists graduated were similar to those discussed in relation to treatment planning. Thus graduates from the 1970s stressed the importance of their undergraduate course and associations with dentists, while those from the 1950s stressed continuing education courses. The importance of many of these factors, as perceived by dentists who graduated in the 1960s, was similar to that of their younger colleagues and at other times similar to that of their older colleagues. Thus this group of dentists stressed the importance of the undergraduate course and included continuing education courses and associations with dental technicians as the next most important factors.

As less than half the country practitioners nominated their undergraduate course among the three most significant influences on their concepts of partial denture designs, it is apparent that they considered other factors to be more important than their city colleagues. Associations with dentists and technicians, continuing education courses and reading of the literature were all nominated ahead of the importance of the undergraduate curriculum. This latter factor was stressed by the largest number of Adelaide dentists, who placed less emphasis than the country practitioners on associations with other dentists, continuing education courses and reading of the literature. These results further highlight the significance of professional relationships, personal study and continuing education for those practitioners situated away from the city area. Similarly the characteristics of persons in solo practice vis a vis partners/associates discussed previously (p 7.8) tended to be reinforced by the results of the study relating to designing RPDs.

Finally, in considering the factors which influenced the clinical procedures adopted by practitioners in the area of partial denture prosthodontics, it was apparent that most people felt that their undergraduate course and associations with other dentists were of prime importance. In comparison to that aspect of the study concerned with the educational factors influencing treatment planning, the present results differ mainly in that more respondents (35%) included associations with other dentists than previously. Although this increase was noted for each of the decades of graduation, it was greatest for the graduates from

the 1960s (69%) and 1970s(35%). The contribution of technicians to the clinical procedures adopted by dentists was less important than with either of the other two aspects of prosthodontics, especially for dentists who graduated in the 1950s. Apart from some minor differences, the effects of the decade in which respondents graduated on the other educational factors were similar to those discussed in relation to treatment planning.

Despite the small number of rural dentists who participated in the survey, it would appear that their concepts of the factors which had moulded the clinical procedures they use were similar to those which influenced their concepts of treatment planning. With one exception, the proportion of rural-based dentists who included each of the factors influencing their clinical procedures was similar to that of those practising in Adelaide; the exception was that 45% more Adelaide practitioners included their associations with other dentists.

Analyses of the educational factors influencing clinical procedures in relation to the type of practice in which respondents worked further strengthened the possibility that those persons who practised with one or more colleagues were influenced more by other dentists than those who worked alone. While both groups placed a high priority on the importance of their undergraduate education, relatively more (42%) dentists in solo practices included this factor as one of their responses and apparently more were influenced by reading the literature.

Following a survey of recent graduates, Smales (1977) commented that "most graduates thought that they were incapable of working alone after completing the undergraduate course". As first year graduates in Smales' study indicated that they had had problems with, among other aspects of practice, full and partial dentures, it was not surprising that 38% of respondents in the present survey indicated that they believed that they were insufficiently experienced at graduation. Graduates from the 1950s, who were least likely to believe that their undergraduate education was an important influence on their practice of RPD prosthodontics also indicated greatest dissatisfaction with (a) the amount of time allocated to this aspect of dentistry in the undergraduate curriculum, (b) their experience before graduation and (c) the suitability of the procedures taught.

Irrespective of the type or location of dentists' practices it was apparent that the main reason respondents believed that the undergraduate curriculum had not "significantly influenced" their practice of prosthodontics was insufficient experience, although why considerably fewer persons believed that this was not a consequence of insufficient time could not be determined.

In summary, although many practitioners believed that they did not have sufficient experience when they graduated, it was apparent that the undergraduate curriculum was seen by most graduates as being important in the development of their concepts and practice of removable partial denture prosthodontics. However, those who graduated prior to 1960 placed much less importance on this aspect

than on the value of continuing education courses and to a lesser extent their associations with other dentists and reading of the literature. More rural-based dentists tended to emphasise the importance of associations with other dentists and continuing education courses and fewer the importance of the undergraduate curriculum. Other features of this study were the importance of dental technicians in influencing the designs for RPDs, the importance of continuing education courses as opposed to the lack of importance of study groups and the impact of the nature of the practice on the relative importance of the educational factors. In this latter regard, the responses support a hypothesis that rural-based practitioners and those in partnership/associateship type practices relate more closely to other professionals than those in metropolitan and solo practices.

CHAPTER 8

GENERAL DISCUSSION

CHAPTER 8

Walker (1972) stated that

> "An important objective of dental education must be to provide the graduate with the ability to practise safely and to a satisfactory standard, as judged by the needs of the community, qualified by social, economic and political factors which affect the demands. Technical and scientific advances can be anticipated which are likely to influence the incidence of disease and ability of the profession to deal with it. It is no longer sufficient to continue to practise dentistry according to the knowledge of methods acquired as an undergraduate. Dental education of the future must be regarded as a form of continuing education for all members of the dental team."

In order to meet the aforementioned aims, it is necessary for a dental school to design a suitable dental curriculum based on environmental and academic factors. The former is influenced by the goals of general dental practice, demand for services, prevailing dental diseases, feed-back from graduates, the manpower and economics of education, and the latter determined by current concepts of dentistry (Fish, 1964; Cowan, 1972; Weill, 1972). Dentists, then, have a responsibility to maintain appropriate philosophies and standards of practice. Weill (1972) believes that "the individual practitioner must remain personally responsible for his further education and activity, for the teacher is ignorant of the future and can only prepare the student, intellectually and morally, to assume his destiny".

In the survey reported in this report, attempts were made to define the principles and practices of dentists in regard to various aspects of RPD prosthodontics and to determine whether factors could be identified which modified such concepts. The responses of practitioners were compared with the concepts presently taught undergraduate students in an endeavour to determine whether there were similarities between what is taught and what is practised. It is readily acknowledged that many of the philosophies presently taught have changed in recent years and, hence, the study does not purport to determine whether what students were taught during the last three decades is being used by them in their practices today. However, as dental science and technology change, practitioners need to re-evaluate their own concepts and perhaps modify their approaches to various problems and it is important that dentists and educators are aware of differences which exist between their concepts. Perhaps an indication of the significance of undergraduate education on the life of a dentist was best revealed by the dental interests of respondents in the three decades. Those who graduated in the 1950s were more likely to be interested in complete or partial denture prosthodontics than graduates from the other decades and less likely to be interested in conservative dentistry or crown and bridge prosthodontics. Those who graduated in the 1960s were interested mostly in conservative dentistry, while the most recent graduates were interested in crown and bridge prosthodontics and endodontics, in addition to conservative dentistry. It is interesting to speculate that these characteristics reflect the changes in emphasis in dental education in the University

of Adelaide during the three decades. If this is true, then it would appear that undergraduate education is a powerful determinant of the interests of dentists in general practice. The study revealed that practitioners themselves felt that their undergraduate education was an important factor moulding their professional lives, although it was evident that dentists who graduated prior to 1960 saw various other elements as being at least as important.

Analysis of the data provided by those 98 dentists who responded to the questionnaire and who complied with the criteria established for the survey, presented a number of complications. For example, no attempt was made to mail questionnaires to equal numbers of graduates from each of the three decades, so that as the percentage of graduates from the 1970s represents in the order of 70% of the Dentists' Register, there was a preponderance of responses from dentists in this decade relative to the other two. As the number of dentists involved in the study was relatively small, comparisons between groups were not always meaningful and multivariant analyses were not attempted. A further complication which emerged related to the establishment of groups of questions or profiles, in which the number of persons who complied with the profiles was very small as a consequence of the cumulative effect of negative or missing answers to each question. Some practitioners failed to recognize that all questions required an answer, so that, for example, persons who responded that they 'always' or 'usually' constructed wrought clasps in cobalt-chromium or similar alloy did not always respond 'never' or 'sometimes' to the questions relating to the formation of wrought clasps in 'gold alloy' or 'stainless

steel'. A solution to this problem would have been to alter the data bank where possible, but as it was decided to store data as provided, percentage responses were calculated according to the number of replies recorded. However, except where indicated in the text, the number of 'missing answers' was very small and did not affect the results presented.

Aside from the emphasis on sound clinical procedures, the main thrusts of the teaching policies in Removable Partial Denture Prosthodontics are to ensure that students have a proper understanding of treatment planning and the data required to formulate adequately integrated plans, the significance of the biological system in which treatment is to be performed, especially in regard to dental plaque and its relationship to dental disease and the labile nature of the oral tissues, the principles of designing partial dentures which are thought to be compatible with the biological system and the importance of developing rapport with patients. When rendering a service to patients, many authors have indicated that it is at least as important to insist that patients maintain a high standard of oral hygiene as it is to meticulously design partial dentures (Derry and Bertram, 1970; Carlsson et al, 1976; Addy and Bates, 1979). This change in emphasis has resulted in various modifications to the teaching philosophies in Removable Prosthodontics in the University of Adelaide, including a re-appraisal of the designs recommended for partial dentures.

Generally, the concepts of practitioners in regard to the history, examination and treatment planning phases of RPD prosthodontics were similar to those presently taught students in this Dental School. Although few people satisfied the criteria of the profiles involved, most agreed about the importance of assessing patients' attitudes, and oral hygiene habits and most aspects of the masticatory system. Most also agreed about the importance of radiographs, discussing proposed treatment plans with patients, completing mouth preparation before recording master impressions and providing a recall service. However, there were some important aspects about which the majority of dentists did not appear to place sufficient importance, such as, consulting with patients' physicians, assessing bone resorption and existing dentures, the non-use of dentures at night, the recording of written treatment plans and the articulation of surveyed study casts. Responses to these questions raise doubts about the adequacy of the partial denture service being offered patients. Further, as dentists who graduated prior to 1970 were less likely to stress the importance of almost all aspects of the treatment planning and associated phases it would appear that factors other than undergraduate education are not effectively modifying the concepts of dentists in private practice.

As indicated in Chapter 1, Frantz (1973, 1975) found that there were great variations in the designs suggested by various dentists for a specified upper RPD; a similar observation was reported by Basker and Davenport (1978) in their study. These authors concluded that the teaching of partial denture design

should be enforced at both undergraduate and postgraduate levels and suggested that it would be helpful to provide education courses with the participation of both clinicians and technicians, as this would cultivate better communication and understanding between the two groups to the benefit of patients. In their study, Trainor et al (1972) evaluated the RPD designs provided by dentists before and after graduate level training and concluded that upon completion of the course of instruction, the group of dentists involved improved every design feature being examined, including instructions to the dental technician.

In view of previous studies, such as those of Frantz referred to above, it was not surprising that many of the characteristics presently taught undergraduate students in regard to RPD designs were not followed by those practitioners who responded to this survey. Younger graduates did not provide designs which were closer to those which it was believed represented the current teaching and, although most of them felt that their undergraduate education was an important determinant of the designs they used for metal partial dentures, it is suggested that influences other than primary dental education were important. Associations with dental technicians and other dentists were two factors which appeared to influence the designs selected. Although it was difficult to analyze the substantial amount of information provided in relation to the design aspect of the survey, it is suggested that many practitioners do not have a proper understanding of basic concepts of support and retention and the need to simplify the forms of partial dentures.

Apart from undergraduate education, associations with other dentists and technicians, attendance at continuing education courses and reading of the literature were the most frequently cited factors which respondents felt influenced their practice of RPD prosthodontics. Newer graduates obviously felt the impact of their associations with other dentists more than those who graduated prior to 1970, which highlights the responsibility placed on practitioners for providing 'pastoral care' for their younger colleagues. Why younger graduates were less likely to nominate continuing education courses and study groups was not determined in the survey, but it is to be hoped that these aspects of continuing education will assume greater importance for them in future years. Although this study was not longitudinal in nature, its findings support the view that this will, in fact, occur.

Persons in solo-type practices provided responses which suggested that they were less influenced by relationships with other dentists than those with partners or associates. No attempt has been made to determine whether those who worked alone were more introverted and less flexible persons, per se, than those practitioners with partners, but this survey points to some interesting behavioural studies which could be undertaken. There was also some evidence which could be interpreted as highlighting the significance of inter-personal and inter-professional relationships for country practitioners. In either event, it is not clear whether these characteristics reflect the inherent nature of persons with 'dental partners' or those in country practices or whether they are environmental in origin.

This survey has provided information about the attitudes and practices of general dental practitioners to many aspects of RPD prosthodontics and has pointed to differences between the concepts of various groups of dentists. The most important of these appeared to be the decade in which the dentist graduated, but attitudes and practices were also influenced by the location and type of practice in which the respondent worked. Apart from their undergraduate studies, the most frequently cited educational factors which practitioners felt had influenced their practice of RPD prosthodontics were associations with other dentists and continuing education courses.

In conclusion, several of the failings of this type of survey have been highlighted, but the findings serve as a useful basis for further investigations, such as field studies in which observers monitor the practices of dentists (a) within their own surgeries, and (b) through the work submitted to dental laboratories.

REMOVABLE PARTIAL DENTURE PROSTHODONTICS IN DENTAL PRACTICE

A SURVEY

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I N S T R U C T I O N S

The questionnaire seeks information on several topics relevant to the survey and is divided into nine parts:

A: Personal data
B: Patient examination and history
C: Impressions and casts
D: Treatment planning
E: Preparation of abutment teeth
F: Laboratory procedures and materials
G: Denture insertion and recall
H: Design of removable partial dentures
I: Dental education

Please use a ball point pen when responding to the questions.

Please indicate your answer by either ticking (✓) the appropriate space, or where appropriate, circling the number corresponding to your choice.

For example: YES ✓
NO

EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
1	(2)	3	4	5

Note: (1) R.P.D. refers to removable partial denture.

(2) If you wish to make additional comments, please use the spaces provided.

PART A: PERSONAL DATA

1. YOUR QUALIFICATIONS

B.D.S. (Adelaide) ☐
F.R.A.C.D.S. ☐
M.D.S. (Adelaide) ☐
Other (please specify) _____ ☐

If you have completed additional dental qualification(s) please indicate the main field(s) of study: (e.g. Crown and Bridge)

(1) _____

(2) _____

(3) _____

Year in which undergraduate course was completed: 19 ☐☐

2. PRACTICE

Are you in: General practice ☐
Specialist/restricted practice ☐

If in specialist/restricted practice, please indicate special field:

_____

Location of practice:

Adelaide (city) ☐
Adelaide (suburban and near rural - 08 telephone zone) ☐
South Australia (rural - outside 08 telephone zone) ☐

Type of practice where most time is spent:

Private ☐
Government ☐
University ☐
Armed Service ☐
Retired ☐
Other (please specify) _____ ☐

If in private practice, please indicate type where most time has been spent in last 2 years:

Solo ☐
Partnership/associateship ☐
Principal with assistant ☐
with you as principal / assistant (delete one)
Other (please specify) _____ ☐

Please indicate major field(s) of special interest in dental practice (if any).
Tick (✓) one (1) or two (2) boxes only.

Conservative dentistry	☐	Crown and bridge prosthodontics	☐
Complete denture prosthodontics	☐	Removable partial denture prosthodontics	☐
Endodontics	☐	Oral surgery	☐
Orthodontics	☐	Paedodontics	☐
Preventive dentistry	☐	Periodontics	☐
Other (please specify) _____			☐

If you have tutored removable prosthodontics at a dental school please indicate:

Name of School: _____

Most recent year of appointment: 19 ☐☐

Do you include removable partial denture prosthodontics in your practice?

YES ☐
NO ☐

If you answered "NO", please indicate why:

IF THE ANSWER TO THE PREVIOUS QUESTION IS "NO", YOU NEED NOT ANSWER ANY FURTHER QUESTIONS.
THANK YOU FOR YOUR INTEREST.
PLEASE RETURN THE QUESTIONNAIRE BY NOVEMBER 2, 1981 TO:

DR N.H. CHEUNG,
Dept. of Restorative Dentistry,
The University of Adelaide,
G.P.O. Box 498,
ADELAIDE, S.A., 5001

A stamped, addressed envelope is provided for your use.

PART B: PATIENT EXAMINATION AND HISTORY

1. Please indicate the extent to which you believe the following are important in the treatment of a patient who requires a R.P.D. Circle the number on the scale which most closely corresponds with your view.

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
Written summary of medical history (by dentist)	1	2	3	4	5
Summary of social and family history	1	2	3	4	5
Consultation with physician if patient has medical problem	1	2	3	4	5
Assessment of patient's oral hygiene habits	1	2	3	4	5
Assessment of patient's dietary habits	1	2	3	4	5
Assessment of patient's attitude to retention of remaining natural teeth	1	2	3	4	5
Assessment of patient's attitude to dentures	1	2	3	4	5
Assessment of periodontal status	1	2	3	4	5
Assessment of pulpal status of remaining teeth	1	2	3	4	5
Analysis of occlusion	1	2	3	4	5
Assessment of bone resorption in edentulous areas	1	2	3	4	5
Assessment of old prosthesis if present	1	2	3	4	5
Radiographic records	1	2	3	4	5

2. Please indicate the type(s) of radiograph(s) you usually require for a patient who requires a R.P.D.
Tick (✓) the appropriate box(es).

Orthopantomograph	☐
Full mouth survey	☐
Regional periapicals	☐
Bitewings	☐
Other (please specify) _____	☐

Additional comments (if any).

PART C: IMPRESSIONS AND CASTS

1. Please indicate the extent to which you believe the following are important in the treatment of a patient who requires a R.P.D. Circle the number on the scale which most closely corresponds with your view.

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
Study casts	1	2	3	4	5
Articulation of study casts	1	2	3	4	5
Survey of study casts	1	2	3	4	5
Special (custom) impression trays for secondary impressions	1	2	3	4	5

2. Please place a tick (✓) in the appropriate box for each of the following questions:

When using an articulator during the construction of a R.P.D., which model do you use most frequently?

Plane line ☐
Mean value, e.g. Freeplane, EPF ☐
Adjustable, e.g. Dentatus ☐

Do you possess or have access to a surveyor?

YES ☐
NO ☐

When casts are surveyed, do you require the casts to be oriented:

	ALWAYS	USUALLY	SOMETIMES	NEVER
With occlusal plane parallel to the base of surveyor				
So that the base of the surveyor is at right angles to the axes which bisect the axial inclinations of the abutment teeth				
Other (please describe briefly)				

Which material do you use most frequently for master (final) impressions?

- Alginate only ☐
- Composition with alginate wash ☐
- Mercaptan rubber base, e.g. Permalastic ☐
- Silicone ☐
- Polyether, e.g. Impregum ☐
- Other (please specify) _____ ☐

Which of the following factors influence your choice of impression materials?
Please tick (✓) one (1) or more factors.

- Cost ☐
- Easy to use ☐
- Time saving ☐
- Superior properties ☐
- Patient comfort ☐
- Oral conditions ☐
- Other (please specify) _____ ☐

How soon are your master (final) impressions cast after removal from the mouth?

- Within 15 minutes ☐
- Within 1 hour ☐
- Within 6 hours ☐
- Longer than 6 hours ☐

Are master (final) impressions cast in:

- Plaster of paris ☐
- Stone (HYDROCAL) ☐
- Diestone (DENSITE) ☐

Do you review master casts for accuracy and deficiencies?

ALWAYS	USUALLY	SOMETIMES	NEVER

Additional comments (if any).

PART D: TREATMENT PLANNING

1. Please indicate the extent to which you believe the following are important in the treatment of a patient who requires a R.P.D. Circle the number on the scale which most closely corresponds with your view.

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
Written treatment plan	1	2	3	4	5
Discussion of the treatment plan with the patient	1	2	3	4	5
Detailed diagram of the R.P.D. design	1	2	3	4	5
Provision of a temporary R.P.D. if treatment to be prolonged	1	2	3	4	5
Stabilization of healthy periodontal condition before construction of R.P.D.	1	2	3	4	5
Endodontic treatment (if necessary) of abutment teeth before construction of R.P.D.	1	2	3	4	5
Completion of all restorations before construction of R.P.D.	1	2	3	4	5
Completion of only those restorations related to the R.P.D. before its construction	1	2	3	4	5
Instruction in oral hygiene	1	2	3	4	5
Denture to be left out of mouth at night	1	2	3	4	5
Instructions should be:					
Verbal	1	2	3	4	5
Audio-Visual	1	2	3	4	5
Practical, e.g. toothbrushing	1	2	3	4	5
Printed leaflet	1	2	3	4	5
Other (please specify)	1	2	3	4	5

Additional comments (if any).

PART E: PREPARATION OF ABUTMENT TEETH

1. Please indicate the extent to which you believe the following are important in the treatment of a patient who requires a R.P.D. Circle the number on the scale which most closely corresponds with your view.

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
Seats should be prepared to receive rests incorporated in R.P.D.	1	2	3	4	5
Seats prepared in tooth structure should be treated with topical fluoride	1	2	3	4	5
Shape of abutment teeth should be modified to provide easier insertion or better retention of R.P.D.	1	2	3	4	5

Additional comments (if any).

PART F: LABORATORY PROCEDURES AND MATERIALS

1. Please tick (√) the appropriate box for each question.

Do you:	ALWAYS	USUALLY	SOMETIMES	NEVER
Employ a technician in your practice				
Use a commercial laboratory for all R.P.D. requirements				
Use a commercial laboratory only for preparation of metal frame				

Do you:	ALWAYS	USUALLY	SOMETIMES	NEVER
Personally design R.P.D.s				
Request the laboratory to design R.P.D.s				
Review design if proposed by laboratory				

When using the service of a laboratory for the construction of a R.P.D. do you submit the following items:

	ALWAYS	USUALLY	SOMETIMES	NEVER
Written presciption of requirements				
Verbal instruction only				
Diagram of design				
Design outlined on cast				
Occlusal records				
Temporary base with articulated teeth				

What percentage (approximately) of your R.P.D.s are constructed using:

	0%	1-20%	21-40%	41-60%	61-80%	81-100%
Cobalt-chromium alloy						
Gold alloy						
Acrylic resin only						

Please indicate the two (2) major reasons why you would use acrylic resin for major connectors.
Tick (✓) the appropriate boxes.

Cost	☐
Superior properties	☐
Esthetics	☐
Temporary R.P.D. only	☐
Patient comfort	☐
Better oral health	☐
Other (please specify) _____	☐

Which material do you usually use for artificial teeth on R.P.D.s which:

	ANTERIOR TEETH		POSTERIOR TEETH	
	ACRYLIC	PORCELAIN	ACRYLIC	PORCELAIN
oppose natural teeth				
oppose porcelain teeth				
oppose acrylic resin teeth				

Additional comments (if any).

PART G: DENTURE INSERTION AND RECALL

1. Please indicate the extent to which you believe the following are important in the treatment of a patient who requires a R.P.D. Circle the number on the scale which most closely corresponds with your view.

Occlusion should be adjusted:	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
On insertion of R.P.D.	1	2	3	4	5
At subsequent appointments	1	2	3	4	5

	EXTREMELY IMPORTANT	VERY IMPORTANT	MODERATELY IMPORTANT	OF LITTLE IMPORTANCE	OF NO IMPORTANCE
Regular recall visits:	1	2	3	4	5

If you provide a regular recall service, please indicate frequency:

3 - 6 months ☐
6 - 12 months ☐
12 - 18 months ☐
Less frequently ☐

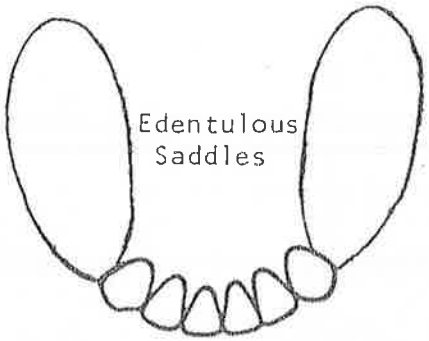
Additional comments (if any).

PART H: DESIGN OF REMOVABLE PARTIAL DENTURES

The following questions are concerned with the principles of R.P.D. design. Although many aspects of design depend on the specific requirements of a particular patient, these questions should be answered from a general point of view, assuming that all existing oral conditions, including the occlusion, are favourable for R.P.D. therapy, and will not impede your design. Unless stated otherwise, all questions refer to R.P.D.s which have cast base-metal frames (e.g. cobalt chromium alloy).

The questionnaire presents two commonly encountered clinical conditions.

1. A patient presents with a natural maxillary dentition, $\overline{3\ 2\ 1}|\overline{1\ 2\ 3}$ and well formed lower ridges as indicated in the diagram below.



LOWER ARCH

If you decide to construct a lower R.P.D., would you:

Derive support for prosthesis from:

	ALWAYS	USUALLY	SOMETIMES	NEVER
soft tissues only				
teeth only				
soft tissues and teeth				

Provide saddles with:

	ALWAYS	USUALLY	SOMETIMES	NEVER
maximal extensions				
coverage of retromolar pads				

Displace soft tissues over the saddles by using:

	ALWAYS	USUALLY	SOMETIMES	NEVER
Pressure impression technique				
Relining the completed R.P.D.				
"Split-Cast technique" to alter the relationships of the saddle to the abutment teeth				
Other (please specify) _____				

_____

Attempt not to displace the soft tissues over the saddles.	ALWAYS	USUALLY	SOMETIMES	NEVER

Not provide clasps.	ALWAYS	USUALLY	SOMETIMES	NEVER

Provide clasps on $\overline{3\|3}$:	ALWAYS	USUALLY	SOMETIMES	NEVER
With occlusal approaching form, e.g. circumferential				
With gingival approaching form, e.g. Roach 'T'				

Construct cast clasps in:	ALWAYS	USUALLY	SOMETIMES	NEVER
Cobalt-chromium or similar alloy				
Gold alloy				

Construct wrought clasps in:	ALWAYS	USUALLY	SOMETIMES	NEVER
Cobalt-chromium or similar alloy				
Gold alloy				
Stainless steel				

Reciprocate action of clasps with:	ALWAYS	USUALLY	SOMETIMES	NEVER
Lingual plate				
Lingual finger extension or arm				
Other means (please specify) _____				

_____

Provide major connector with following design:	ALWAYS	USUALLY	SOMETIMES	NEVER
Lingual plate				
Lingual bar				
Lingual bar with continuous clasp				
"Stress-breaking" action				
Other (please specify) _____				
_____				

Provide:	ALWAYS	USUALLY	SOMETIMES	NEVER
Cingulum rests				
Incisal rests				
No rests				
Other form of rest (specify)_____				
_____				

Provide indirect retention by:	ALWAYS	USUALLY	SOMETIMES	NEVER
Extending the reciprocating components				
Placing cingulum rests				
Placing incisal rests				
Using continuous clasp				
Using lingual plate				
Other means (specify) _____				
_____				

If the abutment teeth were $\frac{4}{4}$ instead of canines, would you:	ALWAYS	USUALLY	SOMETIMES	NEVER
Provide gingival approaching clasps on these abutment teeth				
Provide occlusal approaching clasps on these abutment teeth				

If you used occlusal approaching clasps, would you engage:

Disto-buccal undercuts of $\overline{4|4}$

Mesio-buccal undercuts of $\overline{4|4}$

ALWAYS	USUALLY	SOMETIMES	NEVER

If you used occlusal rests, would you place them on:

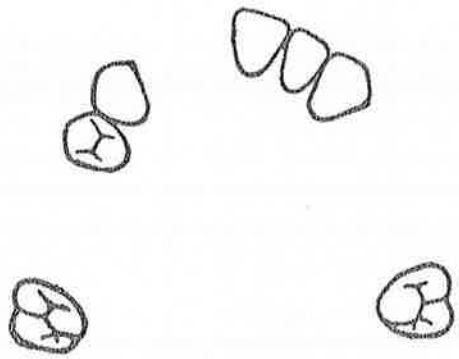
Mesial of $\overline{4|4}$

Distal of $\overline{4|4}$

ALWAYS	USUALLY	SOMETIMES	NEVER

Additional comments (if any).

2. A patient presents with a natural mandibular dentition and $\underline{7\ 4\ 3|1\ 2\ 3\ 7}$ as indicated in the diagram below.



UPPER ARCH

If you decided to construct an upper R.P.D.:

Would you derive support for the prosthesis from:

soft tissues only

teeth only

soft tissues and teeth

ALWAYS	USUALLY	SOMETIMES	NEVER

What form of clasp would you employ if the following teeth were clasped:

	ALWAYS	USUALLY	SOMETIMES	NEVER
3|3 gingival approaching				
occlusal approaching				
Other (specify)_____				
4| gingival approaching				
occlusal approaching				
Other (specify)_____				
7|7 gingival approaching				
occlusal approaching				
Other (specify)_____				
|2 gingival approaching				
occlusal approaching				
Other (specify)_____				
|1 gingival approaching				
occlusal approaching				
Other (specify)_____				

Which teeth would you prefer to clasp? (please circle)

7 4 3 | 1 2 3 7

If you used rests, where would you prefer to locate them? (please circle)

Mesial 7 4 3 | 1 2 3 7

Distal 7 4 3 | 1 2 3 7

Which major connector would you use:

	ALWAYS	USUALLY	SOMETIMES	NEVER
Palatal bar				
Palatal plate (with minimal coverage of gingivae)				
"Horse-shoe" shaped plate				
"Full-coverage" plate				
"Ring/Skeleton"				
Other (specify)_____				

Additional comments (if any).

PART I: DENTAL EDUCATION

1. Which of the following have influenced your practise of R.P.D. prosthodontics in the areas of treatment planning, design and clinical procedures.
Indicate the most important influences for each area by ticking (✓) up to three (3) boxes in each column.

	TREATMENT PLANNING	DESIGN	CLINICAL PROCEDURES
Undergraduate course	☐	☐	☐
Association with other dentists	☐	☐	☐
Memberships of Study Group(s)	☐	☐	☐
Continuing education course(s) e.g. Postgraduate Committee in Dentistry	☐	☐	☐
Reading of literature	☐	☐	☐
Preparation for Fellowship/Diploma/ Certificate	☐	☐	☐
Association with dental technician/lab.	☐	☐	☐
Other (specify)_____	☐	☐	☐

2. If you believe that your undergraduate education has not significantly influenced your practise of R.P.D. prosthodontics, please indicate why by ticking (✓) one or more of the following.

Philosphy was wrong in regard to:

- Treatment planning ☐
- Impression procedures ☐
- Design ☐

Insufficient time allocated in curriculum ☐

Insufficient experience at graduation ☐

Personal lack of interest in subject ☐

Procedures taught unsuitable for private practice ☐

Unsatisfactory teaching ☐

Other (specify) _____ ☐

3. If you believe that the undergraduate teaching was unsatisfactory please list your reasons.

4. Please make any further comments on any aspects of this questionnaire.

THANK YOU FOR RESPONDING TO THIS SURVEY.
PLEASE RETURN YOUR ANSWERS IN THE ENVELOPE PROVIDED BY NOVEMBER 2, 1981 TO:

DR N.H. CHEUNG,
Dept. of Restorative Dentistry,
The University of Adelaide,
G.P.O. Box 498,
ADELAIDE, S.A., 5001

THE UNIVERSITY OF ADELAIDE
DEPARTMENT OF RESTORATIVE DENTISTRY

Chairman:
Professor T. Brown

Telephone: 223 4333 Extn. 2438
Box 498, G.P.O.
ADELAIDE,
South Australia 5001.

APPENDIX 2

September 2, 1981

Dear Colleague,

For some time now we have been interested to ascertain what procedures are used in the practise of removable partial denture prosthodontics in general dentistry and whether various educational thrusts have influenced the practise of this aspect of dentistry.

Dr N.H. Cheung has decided to undertake such a survey as part of the requirements for the degree of Master of Dental Surgery in the University of Adelaide. The results of this survey will be analysed and eventually published and will influence the future development of the curriculum in removable partial denture prosthodontics. This is the first survey of its type to be conducted in Adelaide and I believe the first in Australia, so we are anxious to obtain the maximum response possible. Whilst the questionnaire itself is long it has been designed to minimize the time needed for response. We would be most appreciative if you would give it serious attention.

Your name has been selected at random from the Dental Register of this State after the names of "specialists" and overseas registrants were deleted. In line with standard practice for surveys of this type your name is not required on the form and the reference number is only allocated to allow us to determine which practitioners have responded. Names will not be cross referenced with responses and your reply will remain anonymous and confidential.

We would like you to return the questionnaire to Dr Cheung by 2/11/81. If we have not heard from you by then you will be contacted by phone. If you do not wish to participate please indicate same on questionnaire and return it in the envelope provided.

Thank you for your time and help with this survey.

Yours sincerely,

D.A.S. PARKER
Senior Lecturer in Prosthetic Dentistry

DASP:ls
Encl.

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