The Assessment of Social Anxiety Leading To An Intervention For Untolerated Denture Prostheses

& Research Portfolio

PART ONE
(Part two bound separately)

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(M.A. (Hons) Psychology)

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31ST July 2002.

ACKNOWLEDGEMENTS.

I am extremely grateful to everyone who participated in my research study for their time and effort. I am also indebted to the staff of Waterow Dental Surgery for their assistance with this project especially Sharon and Russell for allowing me to conduct this research at their surgery with all that this involved.

I would like to especially thank my Research Supervisor, Professor Keith Millar, for his encouragement, advice on drafts and support, which went well beyond the call of duty.

Thanks are also due to Professor Stan Lindsay of The Institute of Psychiatry and Dr. Michael Frazer for their advice on this research.

Particular thanks and appreciation is due to Dr. Louise Gallacher, my best friend, for not only assisting in the design and implication of this study (right down to starring in the video) but for her continuous friendship and support.

I would also like to thank Heather and Katherine, my classmates and study group, for their help over the last three years

Finally, but by no means least, I would like to thank my family who support and encourage me always.

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CHAPTER ONE:

SMALL-SCALE SERVICE RELATED RESEARCH PROJECT

The Pattern Of Referrals To A Community Mental Health Team.

Prepared in accordance with requirements for submission to
Clinical Psychology Forum
(See Appendix 1.1 for contributor's notes)

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The Pattern of Referrals to a Community Mental Health Team.

Introduction.

The core of severe and enduring mental health has changed over the last thirty years. Institutionalisation has been replaced with an ethos of community care. Community mental health services have highlighted the needs of the severely mentally ill and have made their needs a priority. The reasons for targeting this group are numerous. They are the group who are most at risk from suicide and homelessness, although the least able to demand appropriate services. Good management of services can make a major difference to the lives of these patients and community mental health teams (CMHT) were developed to deliver this.

A local CMHT has been located in a purpose built centre for three years. The team psychology service is provided to four catchment areas within a large city in Scotland. This is an area of a population of 80,000 people. At present the total provision of clinical psychology within the team is six sessions per week (Had been previously five sessions from 1997 to Oct 1999). Clinical activity includes the assessment and treatment of a wide range of patients with severe and enduring mental health problems. Clients are seen predominately on a one-to-one basis. The referrals come from GPs in the locality, other medical specialists and internally from other team members. The psychologists attend weekly assessment clinics where multidisciplinary discussion and allocation follows first time meetings with new patients. Currently the other members of this team include four psychiatrists and fifteen community psychiatric nurses (CPNs). With CMHTs still in their infancy, service evaluations and audits are important to ensure clinical effectiveness. Recently there have been studies looking at the multidisciplinary roles within a CMHT. Morrall (1995) looked at four CMHTs and found that there was great confusion about team member's roles (in particular the role of the community mental health nurse). The way in which clinical psychology is viewed has also been considered. Chadd and Svanberg (1994) looked at how GPs perceive clinical psychology in relation to other mental health disciplines. They found that clinical psychologists were viewed very favourably, more so than psychotherapists, social workers and counsellors. However,

clinical psychology was rated poorly in relation to accessibility, and may not be requested for an urgent referral.

Referral pattern has also been examined to investigate the belief of some that particular disciplines deal with certain problem categories better than others. Burton and Ramsden (1994) examined GP referral patterns and found that diagnosis appeared to influence the choice of discipline referred to. Psychosis and major depression were most frequently referred to the CPNs and least frequently to clinical psychology. The majority of referrals to psychology were for anxiety disorders, psychosomatic problems and anger management. However, once again waiting times were an important factor for referral decisions. This finding that anxiety problems are most frequently referred to clinical psychology when psychosis is least likely to be referred, had been found previously (Krasnic et al. 1992; Gater and Goldberg, 1991). Hughes et al. (1996) found, in their investigation into the referral and allocation process within a CMHT, that there are many factors that could influence the allocation process. Surprisingly, skills and interest were rarely influential factors.

This study intends to examine the referral pattern of a CMHT over the past three years including the allocation procedure in practice there. This will involve looking at two levels of the service.

Study Questions:

1. **Referrals to the CMHT:**

a. *How many referrals were received by the CMHT per year for the past three years? Have there been any changes in the number of referrals over the three years as the service has developed?*

b. *An audit of the allocation of these referrals to the different disciplines within this CMHT.*

2. **The Role of Clinical Psychology within this team.**

a. *How many referrals were allocated to clinical psychology over the three years as the service developed?*

b. *A description of the kinds/ types of referrals allocated to clinical psychology over this three year period.*

Method.

Data regarding numbers and types of referrals to the CMHT at a local resource centre over the last three years (January 1997-December 1999) were collected from databases held by the resource centre and the allocation of these referrals was analysed. As these data hold confidential information all care was taken to protect this information. Data specifically regarding the role of clinical psychology in this team was collected from completed monthly statistic forms. The number of referrals allocated to the different disciplines was analysed in relation to each discipline's whole time equivalent (wte). These data were analysed using descriptive statistics and SPSS 9.0 for Windows statistical software package.

Results.

Question 1a.

How many referrals were received by the CMHT per year, for the past three years?

Have there been any changes in the number of referrals over the three years as the service developed?

In 1997 the total number of referrals received by Riverside CMHT was 1108 with a mean of 92.3 referrals per month. In 1998 the total number of referrals was 1155 with the mean number of referrals per month being 96.25. Finally in 1999 the total number of referrals received by this CMHT was 1000 referrals with a mean of 90.6 referrals per month.

Therefore, the number of referrals to this CMHT increased in 1998 and then decreased in 1999.

Question 1.b. An audit of the allocation of these referrals to the different disciplines within this community mental health team.

[Insert Figure 1 Here]

These data were analysed in terms of the ratio of each disciplines whole time equivalent value to the number of referrals allocated to them. Due to the fact that up until Oct 1999 the whole

time equivalent value for psychology was 0.5 (increasing to 0.6 after this date) this will be taken as psychology's wte value.

[Insert Table 1 here]

As illustrated here, the number of referrals allocated to clinical psychology has increased steadily over the three years from 90 (mean=7.5 referrals per month; standard deviation=4.68) in 1997 to 95 (mean=7.9 referrals per month; standard deviation=3.5) in 1998 to 100 (mean=8.3 referrals per month; standard deviation=2.84) in 1999.Over the three years this is a total number of referrals of 285.

In 1997 the community psychiatric nurses (CPNs) involved in this team were allocated 666 referrals (mean=55.5 patients per month; standard deviation= 18.57) which made up the majority of patients referred to the team. This figure decreased to 478 patients in 1998 (mean=39.8 patients per month; standard deviation=9.77) and then increased in 1999 to 482 patients (mean=40.17 patients per month; standard deviation=12.6). This was a total of 1626 referrals allocated by the team to the CPNs over the 3 years.

Psychiatry was allocated 324 referrals (mean=27 referrals per month; standard deviation=15.64) in 1997 which increased to 438(mean=36.5 referrals; standard deviation=5.66) referrals in 1998 and then decreased to 290 referrals (mean=24.17; standard deviation=10.11) in 1999. This amounted to 1052 referrals allocated to psychiatry in this CMHT over the three years of it's existence.

The total number of patients who were initially referred to the CMHT but later referred on to appropriate services increased dramatically from 1997 to 1998 from 26 patients (mean=26 per month; Std. Deviation=1.4) to 145 patients (mean=12.08 per month; Std. Dev.=9.85) respectively. In 1999 the number of patients referred on was 138 (mean11.5 per month; Std.

Dev. 9.7). This amounted to a total number of referrals of 309 patients, who were referred on after assessment to other services for treatment over the three years.

2.The Role of the Clinical Psychologist Within this Team.

a. How many referrals were allocated to psychology over the three years that the service has developed?

As discussed in answer to the previous question the number of referrals allocated to clinical psychology has gradually increased over the three years, from 90 referrals in 1997 to 100 in 1999. This was from 180 referrals for 1 whole time equivalent in 1997 to 200 referrals per 1 whole time equivalent in 1999.

Study Question 2b.

A description of the kinds/types of referrals allocated to clinical psychology over these three years.

The referrals allocated to clinical psychology within this CMHT from 1997-1999 were examined and classified into the following types of problems and/or intervention required: anxiety, depression, obsessive-compulsive disorder (OCD), post traumatic stress disorder (PTSD), cognitive assessment, schizophrenia, personality disorder, multiple problems, addiction, anger, sexual abuse, eating disorders, bereavement and insomnia. Anxiety problems included agoraphobia, specific phobia, social phobia, panic disorder and patients with anxiety and depression where anxiety was the primary diagnosis. The depression category included depression and depression and anxiety problems where depression was the primary diagnosis.

[Insert Figure 2 here]

Overall the majority of referrals to clinical psychology within this CMHT were for the assessment and treatment of anxiety disorders and depression with the least number of referrals for schizophrenia and personality disorders. The number of referrals to clinical psychology for the

treatment of depression has gradually increased over these three years, as has the number of referrals for anger problems and eating disorders. Referrals seeking an intervention for bereavement, sexual abuse and addiction have all decreased over these three years as have the number of requests for cognitive assessments. Referrals for the treatment of the other disorders (anxiety, obsessive-compulsive disorder, post-traumatic stress disorder, schizophrenia, personality disorders and insomnia) to clinical psychology have remained relatively stable over the last three years. The trends reported here refer only to these three years and therefore no statistically significant conclusions can be drawn. The implications of these and all findings will be discussed.

Discussion.

The main findings of this audit were as follows:

- The number of referrals to this CMHT increased from 1997-1998 and then decreased in 1999.

There could be many reasons for this including the fact that during 1998-1999 the policy of referring patients on to other appropriate services was introduced. The CMHT is specifically for enduring mental health problems and many of these referrals were better placed within the Primary care setting. Many of these patients also required specialist services or were from the wrong catchment area. Therefore, by 1999 although the number of referrals to this CMHT had decreased, it is suggested that more patients with appropriate problems were being seen.

- Psychiatry was allocated the highest number of referrals within this CMHT in terms of the ratio of number of referrals allocated to 1 whole time equivalent. Clinical psychology was allocated the next highest number and the CPNs were allocated the least number of referrals per whole time equivalent.
- Although the number of referrals allocated to clinical psychology increased gradually over the three years the number of referrals to CPNs decreased in 1998.

There was a large difference found between the number of referrals allocated to the CPNs per wte and the number of referrals allocated to psychiatry and clinical psychology per wte. There could be many reasons for this difference. One suggestion would be that CPNs may work with clients for longer periods of time and therefore are not able to take on as many new patients as psychiatry and clinical psychology.

As stated earlier, the policy of referring on which was introduced between 1997 and 1998 has had an effect on the number of referrals allocated to some of these disciplines. In particular though, the number of referrals allocated to the CPNs fell in 1998 from 44.4 referrals per 1 whole time equivalent to 31.86 referrals per 1wte and has stabilised in 1999 at 32.13 referrals per 1 wte. Clinical psychology is the only discipline whose yearly number of allocated referrals has not decreased during this time. In fact, the number of referrals allocated to

clinical psychology has gradually increased over this time. This may be partly due to increase of clinical psychology sessions in 1999 from 5 to 6 sessions per week in response to the increasing need for clinical psychology input. With consideration to the remaining length of clinical psychology waiting lists these sessions should perhaps be increased more to enable patients to utilise clinical psychology interventions. Hughes et al. (1996) found that other members of the CMHT do not regard clinical psychologists as "fully integrated team members" partly due to the fact that clinical psychologists work fewer hours within the team than other members. Perhaps by increasing the number of sessions devoted to clinical psychology this attitude would change.

- The majority of the referrals allocated to clinical psychology were for the assessment and treatment of anxiety problems and depression and this trend has not changed in the three years. The least number of referrals to clinical psychology were for schizophrenia, personality disorders, addictions and insomnia.

This findings fit with those of Hughes et al. (1996) who also found that anxiety was most frequently referred to clinical psychologists within a CMHT. There may be various explanations as to why personality disorders, insomnia, addictions and schizophrenia were the least likely to be referred to clinical psychology and some are suggested here. The finding that personality disorders were the least likely problem referred to clinical psychology is probably more representative of the lack of people presenting with these difficulties. Insomnia can also be a symptom of other disorders such as depression and it is unlikely that there were many people presenting with "pure" insomnia. In response to the finding that addictions were also rarely referred to clinical psychology it should be remembered that in this city there is an addiction specialist service and any patients referred to this team with addiction problems were referred on to this service. This will explain why the clinical psychologists within this CMHT rarely saw addictions. Unfortunately however, Burton and Ramsden's (1994) finding that patients with schizophrenia were also among those rarely seen by clinical psychology was also found in this present study. It has been suggested that this result is connected to clinical psychology's waiting list. These patients often present when they are urgently in need

of help and previous studies have suggested that GPs do not refer patients with schizophrenia to clinical psychology because their waiting lists are too long (See, for example, Burton and Ramsden .1994). This is unfortunate considering the recent evidence of the effectiveness of clinical psychology intervention with this client group (See for example, Birchwood & Tarrier, 1994). This would perhaps suggest the need to employ more clinical psychologists to work in CMHTs to help meet this demand.

Recommendations For Service Provision.

On a practical level, there was no completed or consistent database held by this CMHT. Instead, data was held individually by disciplines and in written mode. In consideration of the reliability of this and future service evaluations it may be important to construct a centrally held database that is updated regularly.

It was found in this present study that certain problem types are being referred rarely to clinical psychology in spite of the increasing body of evidence supporting the effectiveness of psychological interventions with these client groups. An investigation into why this might be would be useful to help develop services for clients with these difficulties.

Recommendations For Future Research.

This audit specifically looked at the CMHT. It would be interesting to look outside the team, at a service user level, to investigate how those who use it perceive this team. This may include looking at GPs' perceptions of different aspects of the CMHT as well as looking at the level of patient satisfaction with the treatment they receive.

Figure 1:
Figure 1. Allocations of Referrals 1997-1999.

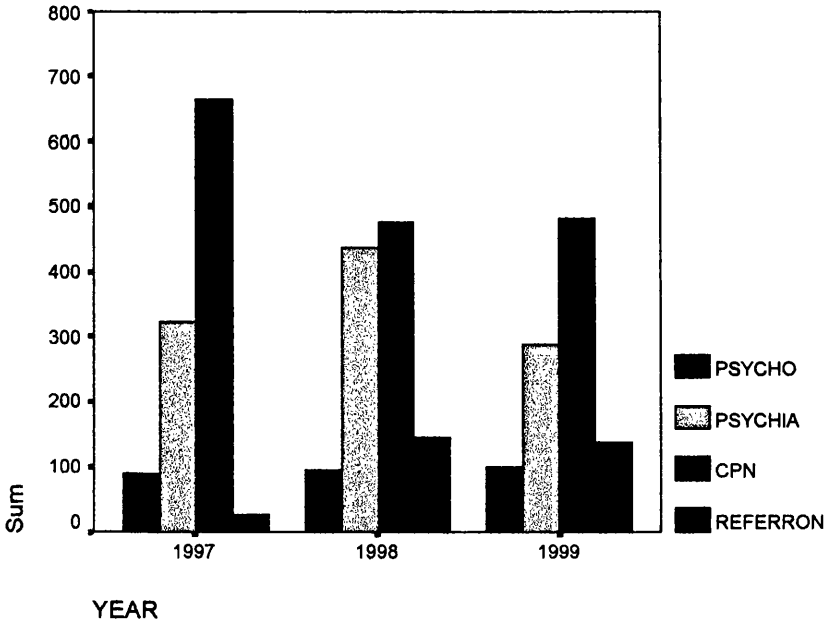


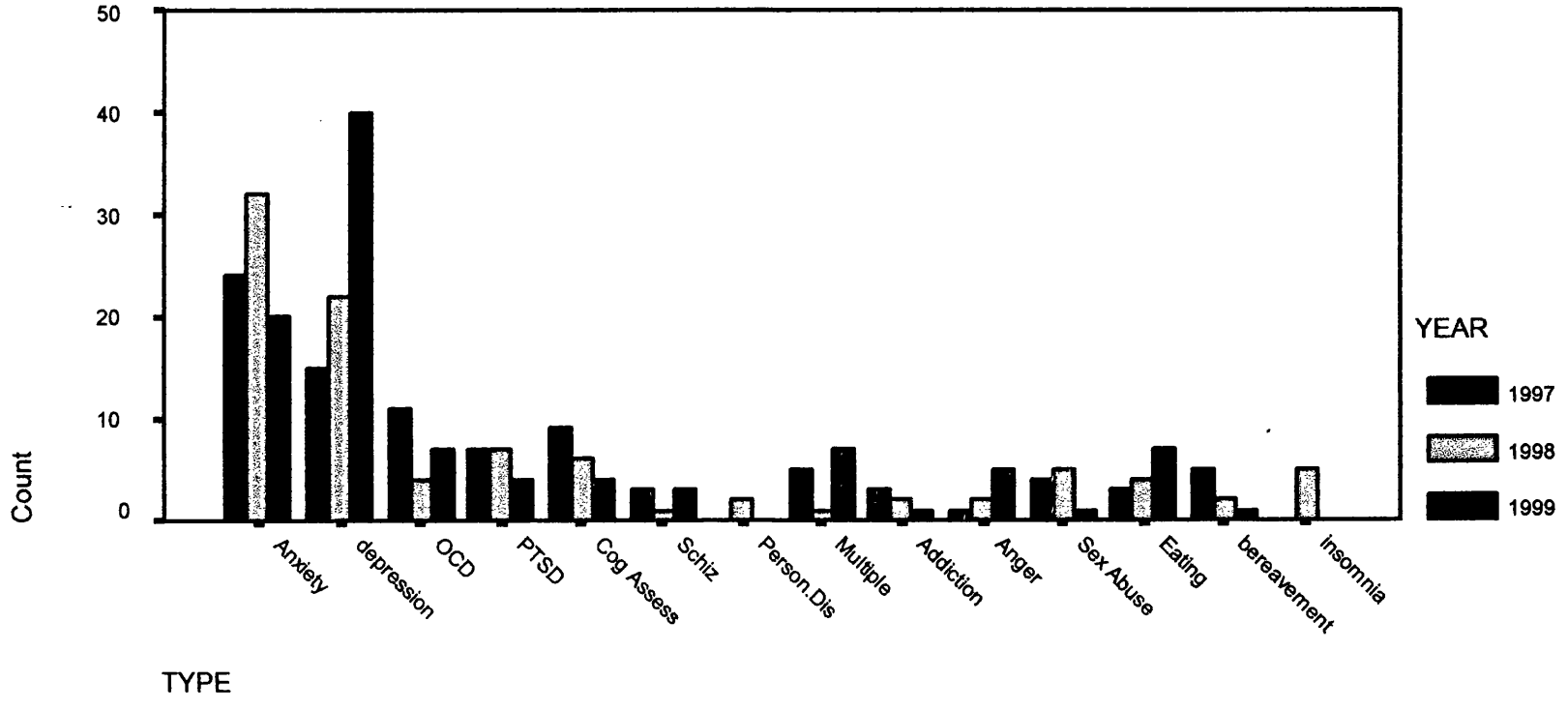
Table 1.

TABLE 1. Ratio Of Whole Time Equivalent To Number of Referrals Allocated.

Discipline	Whole Time Equivalent (wte).	Number of Referrals allocated.	Ratio of wte: number of referrals allocated.
Psychology	0.5	1997 90	1:180
		1998 95	1:190
		1999 100	1:200
CPN	15	1997 666	1:44.4
		1998 478	1:31.9
		1999 482	1:32.1
Psychiatry	1.6	1997 324	1:202
		1998 438	1:273.8
		1999 290	1:181.3

Figure 2:

Figure: 2 Types of Referrals Allocated to Clinical Psychology from 1997-1999.



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Chapter Two:

Systematic Review

'What is the evidence that psychological factors can predict psychological distress, including dissatisfaction, following the fitting of dentures ?'

Systematic Review Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

Prepared in accordance with requirements for submission to
Journal of Prosthetic Dentistry.
(See Appendix 2.1 for contributor's notes)

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Question: What is the evidence that psychological factors can predict psychological distress, including dissatisfaction, following the fitting of dentures.

Objectives: To review and assess the evidence that psychological factors can predict dissatisfaction and psychological distress following the fitting of dentures.

Search Strategy: Electronic searching of MEDLINE; EMBASE; PSYCINFO; Core Biological Collection; Hand search of references from previous articles published in this area.

Selection Criteria: The inclusion criteria for all studies was that they should focus on:
persons who have had full or partial dentures fitted,
the overall satisfaction reported by these people with their dentures and
the relationship between psychological factors (as measured by standardised tests) and reported satisfaction levels.

Data Collection and Analysis: 19 studies, which met the inclusion criteria, were included in this review.

Reviewer's Conclusion:
No concrete finding that any of the psychological factors examined can predict psychological distress following the fitting of dentures can be reported from this review. Studies investigating the relationship between participants' personality, Locus of Control, mental health/emotional problems and demographic information and subsequent satisfaction/dissatisfaction with dentures have yielded very different results which are confounded by methodological weaknesses. Of note, not one study reviewed reported a power calculation to determine reliable sample size. This may also be partly responsible for the varied results in this research area. Further research, which addresses the criticisms included in this review, is required to answer the above question.

INTRODUCTION.

Neglect of dental care is a common problem afflicting the West of Scotland. The result is often rampant dental disease for which the only treatment is partial or complete dental clearance (extraction of teeth) and the fitting of prosthetic dentures. It has been reported that only 4% of dentate adults up to the age of 64 years have not experienced tooth loss from their permanent dentition (Todd & Lader. 1991[1]). Whilst the prostheses are very carefully prepared and appear from objective measurements by expert dental clinicians to be technically perfect, many patients complain of functional problems with eating and speech (Steele et al.1997[2]), oral discomfort and dissatisfaction with their facial appearance (Berg, 1993[3]). This general dissatisfaction is often associated with emotional distress measured by semi-structured interviews which elicit issues associated with distress, and by social withdrawal which may require psychological intervention (Fiske et al.1998[4]). The oral region is an area of great emotional and symbolic significance to man. It is responsible for many important aspects of human life and interaction including nutrition and communication, both verbal and emotional. When one considers the great imposition that dentures have on such a vulnerable area, adjustment difficulties to dentures may not be surprising. This intolerance to prosthetic dentures, however, does make increasing demands on the time and resources of clinical, dental and psychological services.

Previous research has attempted to understand the factors associated with untolerated dentures and psychological distress particularly whether there are factors which predict dissatisfaction. There have been many suggestions as to the nature of these predictor variables which broadly speaking, fall under two headings: technical aspects of the denture and patient-related psychological variables. Unfortunately, a problem with research completed in both these areas is with the definition of 'dissatisfaction' and 'psychological distress'. There are few studies which examine the assessment and definition of dissatisfaction and psychological distress in patients with untolerated dentures. Studies that have attempted this classification tend to draw participants from waiting lists of patients awaiting dental implants.

These implants have been developed to replace removable dentures and are usually primarily available to patients who display chronic intolerance to their false teeth. How representative this sample is to the average 'dissatisfied denture patient' is, however, questionable. Firstly, the surgery and recovery involved in this implant procedure is substantial as well as the waiting times involved. In addition, this is a relatively new procedure and evidence that the implants actually improve psychological well-being is limited (Lindsay et al. 2000[5]). For the above reasons many dissatisfied denture patients may reject this option entirely. Therefore, the group of patients who do opt for this option and present themselves at implant clinics may not be representative of patients who are dissatisfied with their dentures, many of whom attend only their general practitioners with their complaints.

A further difficulty in research into the definition and measurement of psychological distress and dissatisfaction associated with dentures is with the measures used and with the timing of these measures. Not only is there great variability in measures used between studies but also some of these measures become invalid tools when examining the psychological distress and dissatisfaction involved with untolerated dentures. An example of this is the studies by Kent and Johns (1991[6],1993[7]) which addressed distress associated with untolerated dentures by using the General Health Questionnaire (GHQ) after dentures had been fitted, and whilst patients were anticipating surgery to replace the removable prostheses with permanent implants. These studies not only failed to take account of pre-existing distress (i.e. prior to dental clearance and fitting of dentures), but also further confounded the assessment by adding the known distress of anticipating surgery (Millar et al.1995[8]). For the distress caused by dentures to be measured without the contamination of fear of surgery, the measures should have been taken before the implant surgery was confirmed. Furthermore, the GHQ was designed specifically to measure distress of recent onset and therefore would be insensitive to chronic distress such as associated with long-term dissatisfaction with dentures. The question structure in the GHQ requires patients to describe changes in symptoms "over the past few weeks" and therefore patients who are chronically distressed are likely to check responses

such as "no more worried than usual" hence leading to a misleading score (Lindsay et al.2000[5]). Therefore, further research into the definition of 'psychological distress' associated with intolerated dentures is required which draws a more representative sample and utilises valid and reliable measurement tools.

Objectives.

To review and assess the evidence that psychological factors can predict dissatisfaction and psychological distress following the fitting of dentures

Criteria For Considering Studies For This Review.

Types of Participants.

Participants (of both sexes) included in the review were edentulous patients who wear partial or full dentures.

Types of Assessment Measures.

Acceptance or satisfaction with dentures: measured by questionnaires which examined different components of satisfaction including the fit, appearance, function etc.

Psychological factors: Personality. Locus of Control, demographics and mental health problems were measured by a variety of means from standardised assessment tools to questionnaires and measurement procedures designed specifically for the studies.

Types of Studies.

Cross-sectional and longitudinal studies will be included in this review.

Search Strategy.

A number of sources were used to identify studies for possible inclusion in this review. These included:

Electronic Bibliographic Databases

MEDLINE (1966-July2001) was searched using the following strategy for Win SPIRS:

DENTURES

PSYCHOLOGY

COMBINED I & II

PERSONALITY (searched as keyword)

COMBINED I AND IV.

DENTAL PROSTHETIC (Searched as key words)

COMBINED II & VI

COMBINED IV & VI

LOCUS OF CONTROL (searched as key words)

COMBINED IX & I

COMBINED IX & VI

MENTAL HEALTH (searched as key words)

COMBINED XII & I

DEPRESSION (searched as key word)

COMBINED XIV & I

COMBINED XIV & VI

EMBASE (1980-2001) was searched using the above strategy.

PsychINFO (1974-July 2001) was searched using the above search strategy.

CORE BIOMEDICAL COLLECTION

2. References.

Reference lists of potentially relevant papers obtained by the above methods were searched for further relevant references.

3. Hand Search of Journals

Journal of Prosthetic Dentistry

Reasons for Excluding Journals.

Due to the small number of studies in this area all studies examining a relationship between psychological factors and satisfaction with dentures were included. Studies which only examined the technical quality of the dentures and its relationship with satisfaction were excluded.

Methods of the Review.

The reviewer decided whether each potential study fulfilled inclusion criteria. The reviewer was not blind to the name of the author, institutions, journal of publication, and results when the inclusion criteria was applied.

Abstracts of studies identified in the above search were examined. The full article was obtained for any publication, which was considered relevant. Studies under consideration were assessed for their appropriateness of inclusion criteria and methodological quality without regard to their results.

Assessment of Methodological Quality.

Studies that met the inclusion criteria were then assessed according to the criteria below, studies were allocated into three quality categories:

A (High quality-all or most of the criteria have been fulfilled); B (moderate quality-an adequate number of the criteria have been fulfilled); C (low quality-some /very few of the criteria have been fulfilled). The following quality criteria were used: -

- Sample: includes participants who are representative of the 'average denture wearer' or 'average dissatisfied denture wearer'.
- Participants' previous denture experiences are taken as dependent variable.
- General factors which may affect satisfaction with dentures including satisfaction with life, depression, anxiety and general health are measured and included in analysis.
- Psychological factors examined in studies are measured by standardised assessment tools.
- Psychological factors are measured before first-time experience with dentures as well as after dentures are fitted to establish direction of causality.

- Satisfaction with dentures is measured reliably and include all obvious satisfaction variables-comfort, ability to eat, taste, fit, appearance, speech and general satisfaction.
- Satisfaction is measured following an appropriate adjustment phase and on more than one occasion to ensure reliability.

Data Extraction.

Full data extraction will be performed on studies fulfilling the inclusion criteria.

Description of Studies.

Table of included studies.

Table 1:

Studies examining Personality and denture acceptance.

Studies examining Locus of Control and denture acceptance

Studies examining Mental Health/ emotional problems and denture acceptance.

Studies examining demographic information and denture acceptance.

Excluded Studies.

Studies which only examined the technical quality of the study and its relationship with denture acceptance.

Included Studies.

19 studies were included in this review.

Methodological Qualities of Included Studies.

Personality and Denture Acceptance.

8 studies reviewed.

5 studies received a B quality rating:	Guckes et al. (1978);
	Vervoorn et al. (1991);
	Reeve et al. (1984)
	Van Waas (1990)
	Moltzer et al. (1996)
3 studies received a C quality rating:	Seifeit et al. (1962)
	Smith (1976)

Wright (1980)

Locus of Control and Denture Satisfaction.

4 studies reviewed

3 studies received a B quality rating: Van Waas (1990)

Hogenius et al. (1992)

Moltzer et al. (1996)

1 study received a C quality rating: Baer et al. (1992).

Mental Health/Emotional Problems and Denture Satisfaction.

8 studies reviewed

3 studies received a B quality rating: Bolender et al. (1969)

Nairn and Brunello. (1971)

Guckes et al. (1978)

5 studies received a C quality rating: Silverman et al. (1976)

Hogenius et al.(1992)

Diehl et al.(1996)

Golebiewska et al.(1998)

Brunelo and Mandikos.(1998)

Demographic Information and Denture Satisfaction.

13 studies reviewed

6 studies received a B rating: Guckes et al. (1978)

Berg (1984)

Van Waas (1990)

Beck et al. (1993)

Moltzer et al. (1996)

Diehl et al.(1996)

7 studies received a C quality rating: Langer et al.(1960)

Bolender et al. (1969)

Silverman et al. (1976)

Hogenius et al.(1992)

Baer et al. (1992).

Brunelo and Mandikos.(1998)

Golebiewska et al.(1998)

Review.

As stated earlier, a large proportion of the research conducted in the area of dissatisfaction and psychological distress caused by dentures has focused on identifying predictor variables for this distress. One area this research has examined is whether the technical quality of the denture alone can account for dissatisfaction and the psychological distress which is often reported. Beck et al. (1993)[9] examined this issue and found that poor technical quality of dentures can be related to the patient's complaint in some cases. However, they were unable to establish one or more factors which identify the "dissatisfied denture patient". Brunello and Mandikos (1998)[10] also investigated denture construction faults as well as age, gender and health as predictor variables to dissatisfaction with dentures and found that "the dissatisfied complete denture patient in most instances experiences difficulties with his or her denture due to an identifiable cause". However, this link was only found between inadequate retention and improper intermaxillary relationships and patient complaints of looseness and difficulties eating respectively. No link was found between the technical quality of the denture and patients complaints of pain (which 75% of the sample reported), food difficulties (which 17% of the sample reported) or speech difficulties (which 16% of the sample reported). In addition, a large number of this sample had multiple complaints that the authors were unable to explain in terms of technical factors.

Although the research in this area has highlighted the importance of evaluating the technical quality of the denture as a reason for dissatisfaction, the technical quality of the denture alone is insufficient to explain all of the psychological distress and dissatisfaction associated with intolerated dentures. In very early studies De Van (1963)[11] and Millar (1960)[12] have suggested that the technical quality accounts for less than half of the total success of the dentures.

Therefore, patient-related factors, including many psychological measures have been examined to determine whether they can predict psychological distress including dissatisfaction following the fitting of dentures.

A disconcerting pattern with this research, however, is that the number of studies published in this area appears to have dwindled in the mid-late 1990s. This may be connected to the introduction of permanent implants which became popular around this time. These permanent implants were expected to replace the need for dentures and dramatically reduce the psychological distress associated with losing one's teeth. While the researchers in this area may have believed that further research into dissatisfaction and psychological distress associated with removable dentures would be redundant, the reality is that the average edentulous person continues to opt for removable dentures and only a small number of people have permanent implants. Therefore, further research into the procedure and consequences (including psychological) of removable dentures is still needed today.

Previous psychological research has attempted to understand the patient-related factors associated with untolerated dentures and distress. As it is known that neuroticism is associated with greater complaints of pain and discomfort after general surgery (Wallace, 1985)[13], personality factors have been studied on the assumption that they may have a causal relationship with dissatisfaction and psychological distress. Unfortunately, controlled studies into this area are relatively few and many of these have methodological problems which make it hard to draw conclusions. A methodological problem with all studies in this area is that personality was assessed only once, after the dentures had been fitted. This decision was presumably made on the implicit assumption that personality would be an invariant feature of the patient and that the post-denture state was no different to that prior to the procedure. While constructs such as neuroticism tend to be enduring traits, neuroticism has been shown to decline with improvement in distress (Lindsay et al.2000)[5]. There is, therefore, the possibility that patients manifest more neurotic behaviour as a consequence of distress of their

intolerated dentures. The only way to assess that hypothesis would be to assess neuroticism (and other measures of anxiety) prior to the provision of dentures.

One of the earliest studies conducted into the relationship between personality and patients' satisfaction with dentures was by Seifeit et al.(1962)[14]. This study exemplifies many of the methodological errors found in the research in this area. This study involved a sample of 131 geriatric patients who were living in an institutionalised setting. Although older clients are the most common people to wear dentures this sample is by no means representative of the 'average denture wearer'. Many younger people require removable dentures and there may be an argument that it is this younger group who are more concerned with appearance and are therefore more likely to be dissatisfied. In addition, the fact that all subjects lived in an institutionalised setting further confounds the results of this study. The authors also made many assumptions regarding the participants general well-being, which may have affected how satisfied they were with their dentures, concluding that all lived in a "happy and favourable physical and emotional environment" although no definition or measure of this was taken. Problems with the sample were not the only methodological difficulties with this study.

The study examined whether the participants' personalities, the dentist/patient relationship, the participants' intelligence or the participants' previous experience with dentures affected their satisfaction with their new dentures. Unfortunately, the measures used to assess these variables were invalid and therefore unreliable. For example, participants' personality was assessed by the Director of the home and a psychologist but no standardised assessment tool was used. Instead these two assessors categorised participants into "positive", "negative" or "disturbed" personality based on how well they believed each participant had adjusted to living in the institution. The manner in which people adjust to living in an old persons home is dependent on many factors unrelated to personality and is most probably greatly influenced by the quality of the home itself. Whether participants were satisfied or dissatisfied with their

dentures was also inaccurately measured (as was intelligence) and utilised a questionnaire which was specifically designed for this study but which failed to consider pain or retention variables as part of satisfaction. There were also problems with measuring the patient/dentist relationship as the dentist in question was, and continued to be, responsible for the home where the participant lived. Therefore, participants may have been reluctant to answer honestly if their responses were in any way negative. Due to these methodological weaknesses the authors' conclusion that personality was correlated with denture satisfaction should be taken with caution.

Guckes et al. (1978)[15], Vervoorn et al (1991)[16] and Moltzer et al. (1996)[17] also found significant evidence that personality is linked to how satisfied people are with their dentures. Unlike the previous study however, they measured personality by means of valid and reliable measurement tools such as the EPI although these tools were only administered once before new dentures were inserted and for reasons previously discussed this may not be the most accurate measure of one's personality. In addition, some of the participants in these studies had different previous denture experiences including the number of previously-worn dentures. As discussed later, these varied histories may be independent variables which may affect the outcome in terms of satisfaction.

Reeve et al. (1984)[18] employed the 16-PF personality inventory and reported that dissatisfied patients were more 'insecure' and 'tense' than satisfied patients. However, multiple comparisons were conducted without correcting to avoid Type-1 error. When such an adjustment was made the differences are completely non-significant (Lindsay et al.2000)[5].

Smith (1976)[19] also failed to find a significant relationship between patients' personalities and dissatisfaction with dentures. This study examined the effect of personality, as measured by the MMPI-Short Form, on patient satisfaction with dentures as measured by a thorough assessment tool which also included a question on general satisfaction as well as comfort,

speech, ability to eat, pain and retention. This measure was given six weeks after dentures were inserted to measure participants' adjustment. Although this adjustment period may be appropriately timed, satisfaction should be measured more than once to ensure the reliability of results. This study also examined the contribution of the technical quality of the denture to satisfaction. The results found that there was no relationship between personality and the degree of patient satisfaction at the 95% confidence level. However, this study also failed to find a relationship between the overall technical quality of the dentures and the patients satisfaction with their new dentures.

While the results of Smith (1976)[19] are interesting, the sample was recruited from subjects awaiting new dentures. No note is made as to whether these were first time denture wearers waiting for their first ever denture or whether this was a new denture being given because of chronic dissatisfaction with old dentures. The number of previous unsatisfactory dentures would obviously be a further dependent variable on satisfaction. Participants who have had a long history of dissatisfaction with numerous dentures may react to the new denture in relation to this history. This may mean that the participant may still not be satisfied with their new denture but with this history in mind, may not expect any better and therefore report satisfaction and 'make-do'. Van Waas (1990)[20] identified previous denture experience including number of previous dentures and subsequent attitude towards dentures as important variables on satisfaction with further dentures. Ideally, studies should recruit people who are going through their first denture experience ever as these people have no previous denture experience. The above were not the only difficulties with Smith's (1976)[19] sample. All elderly and physically disabled subjects were excluded. Once again this would not be representative of the 'average denture wearer' a large majority of whom are older and are also therefore more likely to have physical difficulties. These sample problems highlight the need to interpret the results from this study with caution although it should be noted that this study set out and succeeded in measuring personality appropriately which many later studies failed to do.

Wright (1980)[21] also failed to find a link between personality and dissatisfaction with dentures. This study examined 'retchers' and assumed that retching was a symptom of dental dissatisfaction. However, out of the 53 subjects in this group only 12 'retchers' had dentures. To further confound matters the control group included subjects who had had chronic difficulties with their dentures and this chronicicity of difficulties may have increased their levels of neuroticism. Therefore, it is not surprising that no personality differences were found between these two groups.

The final study to be discussed examining personality and dissatisfaction with dentures was by Van Waas et at (1990)[22,23] which examined patient-related factors including personality as measured by the Wilde 'neurotic lability' scale. This scale represents the extent to which individuals react neurotically to stressful situations. This scale was, again, administered only once before new dentures were fitted. This study also failed to find a relationship between personality and dissatisfaction with dentures. In addition, when taken together, all the variables examined only managed to explain 33% of the variance in satisfaction hence leading the authors to conclude that these factors were limited in their ability to explain dissatisfaction with new dentures. Instead they suggest that the patients' attitude towards dentures and the patients' denture history would be more predictive of dissatisfaction.

Therefore, of the eight studies reviewed no paper was given an A quality criteria rating as no study included met most or all of the criteria outlined. Chronically dissatisfied patients were employed in all the studies reviewed and this chronic dissatisfaction may have had an effect on both personality and satisfaction with dentures measurement tools. Of the eight papers reviewed, five studies (Guckes et al. (1978); Vervoorn et al. (1991); Reeve et al. (1984); Van Waas (1990) and Moltzer et al.(1996)) received a B quality criteria rating because they had met an adequate number of the criteria outlined. Three of these studies found a significant relationship between participants' personalities and satisfaction with dentures and two of

these B-rated studies failed to find an effect. Of the remaining three C-rated studies, two studies found no significant relationship between participants' personalities and satisfaction with dentures and one C-rated study found a significant effect.

There were no studies within this area of research that examined patients undergoing their first-ever denture experience which would have been a much stronger design. Along with this serious methodological error, the studies reviewed also had problems with the measurement tools used and sample problems which would also have had an effect on results. Due to the variable findings of these studies and the afore mentioned design faults, it is impossible to reach a conclusion on the question of whether the participants' personalities had an effect on their satisfaction with dentures. Future studies in this area must be designed without the methodological problems outlined before the answer to this question will be found. Generally, however, it is fair to conclude that personality has been implicated as a potential predictor to dissatisfaction with dentures and as such warrants future investigation.

The patients' locus of control has also been considered as a predictor of the level of distress experienced by denture wearers. The Health Locus of Control Scale is designed to predict health-related behaviours. It is derived from social learning theory and represents the extent to which, in a variety of health situations, individuals believe that they have personal control over what happens to them. The scale uses two dimensions 'external' and 'internal' where an external orientation indicates the individual's belief that their health is related to external control e.g. of others, fate and chance. An internal orientation indicates that the individual feels in control of his or her own health.

Studies examining the relationship between the patients' locus of control and satisfaction with their dentures also have methodological difficulties which confound results. As with studies examining the relationship between personality factors and satisfaction, the majority of these difficulties involve the sample selected and design faults. Hogenius et al. (1992)[24] found that a

group of long-term dissatisfied denture wearers were more depressed than controls and were more likely to have an external locus of control. The results support previous studies comparing Swedish to American populations (Berggren et al.1984)[25] and the study by Moltzer et al. (1996) who also found that higher dissatisfaction was associated with higher external locus of control.

Unfortunately, however, Hogenius et al. (1992) recruited subjects from permanent implant waiting lists which, as discussed, is not representative of the average 'dissatisfied denture wearer' and also implies that these participants have varied histories of chronic dissatisfaction with their dentures which were not taken into consideration in this study. In addition, the Health Locus of Control Questionnaire, which is a valid and reliable assessment tool, was only administered once before implants were given. Therefore, the finding that these chronically dissatisfied denture wearers were more externally orientated might reflect an effect of dissatisfaction rather than a cognitive orientation. i.e. participants who have had many years of dissatisfaction with numerous dentures may have become externally orientated because of this experience rather than being externally orientated before their denture experiences began. In addition, the Moltzer et al. (1996) study whose sample limitations have already been discussed, utilised the Locus of Control Scale rather than the Health Locus of Control Scale, which given the subject pool (which included many elderly participants presenting in a health situation), may have been a more appropriate measure.

Other studies in this field have failed to find a link between locus of control and satisfaction with dentures. Baer et al. (1996)[26] and Van Waas et al. (1990) found no relationship between locus of control and satisfaction, however, both of these studies only administered the measurement tool once after long histories of dissatisfaction. The Baer et al. study also employed a crude measure of satisfaction which included only five questions regarding satisfaction. These questions failed to measure difficulties with food and avoidant behaviour which, for some, are at the core of their dissatisfaction. There was also no measure of general

satisfaction in this study which would have been useful as, although people may report difficulties in one or more area, they may consider themselves overall satisfied.

Of the four studies reviewed, no study received an A quality criteria rating as no study fulfilled most or all of the criteria outlined. No study examining the relationship between the participants' Locus of Control and satisfaction with dentures considered the effect chronic dissatisfaction with previous dentures would have on participants' Locus of Control. Therefore, the direction of causality between participants' Locus of Control and satisfaction with dentures cannot be established from these studies. However, three studies (Van Waas, (1990); Hogenius et al (1992) and Moltzer et al. (1996)) received a B quality criteria as they fulfilled an adequate number of the criteria outlined. Two of these B-rated studies (Van Waas (1990); Hogenius et al. (1992) and Moltzer et al. (1996)) found that dissatisfied denture wearers were more externally orientated than satisfied denture patients. The other B-rated study (Van Waas (1990)) and the C-rated study (Baer et al. (1992)) found no difference in Locus of Control orientation between satisfied and dissatisfied denture wearers.

Therefore, once again it is very difficult to establish a conclusion regarding whether there is a relationship between patient' satisfaction with their dentures and their locus of control orientation. Along with the fact that there are very few studies examining this issue, within these few studies there are serious methodological problems which make it hard to draw conclusions.

Within this area of research it has also been suggested that people with mental illness and/or emotional difficulties may be more likely to be dissatisfied with their dentures that those without such difficulties. With all the studies reviewed examining the effect these mental health difficulties have on the participants satisfaction with dentures, the direction of causality cannot be established as no measure of these mental health/ emotional difficulties are taken before the participants first denture experience. Therefore, if higher dissatisfaction is found to

be associated with emotional difficulties it could be argued that the chronic dissatisfaction these people have suffered with because of dentures has in fact caused the emotional/mental health problems measured. As with the participants' personality and locus of control, mental health and emotional difficulties must be measured before the participants first, ever denture experience if we are to discover the nature of the causal relationship.

One study which did find a relationship between emotional problems and satisfaction highlights some evidence to support the two-way causal relationship. Nairn and Brunello (1971)[27] investigated whether emotional problems as measured by the Cornell Medical Index (CMI) M>R score has an effect of denture satisfaction. The Cornell Medical Index (CMI) is a well-established aid, used by primarily the medical profession, in taking a medical history. The CMI is designed so that only the 'yes' response is significant, in that it suggests the presence of a problem. The last page of the CMI beginning with section M to section R is essentially designed to evaluate the emotional status of the patient. The technical quality of the participants' dentures were carefully analysed and any technical faults were noted. Participants' complaints regarding their denture were then also recorded. Participants were then placed into one of three groups:

Group 1: Complaints < faults;

Group 2: Complaints = faults;

Group 3: Complaints > faults or complaints were unrelated to design faults.

It was this last group that the authors hypothesised would have higher CMI M>R scores i.e. more emotional problems than the other two groups. As hypothesised this group did have higher CMI M>R scores than published norms, the sample as a whole and the other two groups. This finding was in contrast to that of Guckes et al (1978) where they found no significant relationship between CMI scores and satisfaction with dentures. However, Nairn and Brunello (1971) also found that their sample as a whole, who were referred following chronic dissatisfaction with previous dentures, had a higher CMI M>R score than the published norms for this assessment tool. This finding lends support to the suggestion that

chronic dissatisfaction with dentures may contribute, to higher CMI M>R scores. The authors' conclusion that people with higher CMI scores are more likely to be dissatisfied denture wearers cannot be confirmed by this study. In addition, this study has further methodological errors which further confound results including an unrepresentative sample and participants with mixed previous denture histories.

The finding by the previous authors of a significant relationship between participants' emotional problems and dissatisfaction with dentures has also been reported by the majority of studies in this area. Bolender et al. (1969)[28] and Diehl et al. (1996)[29] also found a significant relationship between mental health/emotional problems and satisfaction with new dentures. Both of these studies, however, chose unrepresentative samples. Both had a much higher ratio of women to men and the latter study described their specific sample as 'older, lower income, rural dwelling, and white, females'. This obviously limits the significance of their results.

Different authors in this field have examined more specific areas of emotional difficulties and their relationship to denture satisfaction. Silverman et al. (1976)[30] examined self-image and its relationship with denture satisfaction. In this study self-image was measured by three assessment tools:

a. Focussed Interview: which included questions measuring morale and self image.
b. The Embedded Figures Test: which differentiates field-independent and field-dependent orientations which were assumed to relate to high and low self image respectively and
c. Projective Figures Drawings: where a high score was taken to reflect a field-independent orientation.

The authors results found that field dependent participants, hence low self-image, had a higher number of complaints regarding their dentures than those who were found to be field-independent and that these complaints referred more to a lack of acceptance rather than to

technical faults. The authors also found that low morale and low satisfaction with life as measured by the focussed interview also affected denture satisfaction significantly. However, once again the direction of causality cannot be established. Finally it was found that men and participants who were currently employed were more satisfied with their dentures that women and the unemployed. This result may well be explained by the fact that there were many more women than men involved in this study and that the measure of satisfaction involved in this study included the number of return visits to the hospital which may well be influenced by whether someone is in full-time employment or not.

Hogenius et al. (1992) looked specifically at mood and its relationship with denture satisfaction. They utilised the Mood Adjective Checklist and The Self Rating Depression Scale as assessment tools and found a significant relationship between mood and satisfaction with lower mood resulting in lower satisfaction with dentures. The results are confounded by the methodological problems already discussed with reference to this study and participants' locus of control. Gelebiewska et al. (1998)[31] examined affective state, in relation to mood, and its relationship to denture satisfaction. To measure affective state the authors used a semi-structured interview which measured participants' irritability, boredom, anger, loneliness, helplessness, joy/happiness, peace and usefulness. The authors grouped participants' into upper and lower denture wearers (but not full vs partial denture groups) and then grouped them into denture-tolerant based on the number of complaints and whether complaints were linked to technical faults. The results showed that with the upper denture group there was a significant relationship between satisfaction and participants' levels of irritability, anger and peace. Within the lower denture group there was a significant relationship between denture satisfaction and anger and helplessness. This is an important finding because it perhaps illustrates that within 'emotional problems' there are different components which have a different weighting on denture satisfaction and therefore 'emotional problems' as a variable is not sensitive enough to measure any relationship accurately. However, this study selected a sample from the older population and as well as being unrepresentative, the ageing process

may complicate many of the variables measured. In addition, the assessment tools for affective state and satisfaction were not standardised assessment tools, the participants previous denture experience was not controlled, satisfaction was measured only once and the direction of causality is also impossible to establish.

In conclusion, although the majority of studies examining the relationship between mental health/ emotional problems and denture satisfaction have found significant relationships between these two variables, the direction of causality has never been established. In addition, studies in this area, as with personality and locus of control, have serious methodological problems including basic errors such as not utilising representative samples and standardised, valid assessment tools which are used reliably. Of the eight studies reviewed, six of which found a significant relationship between mental health/emotional problems and satisfaction with dentures, no study received an A quality rating grade. Of the three studies that received a quality criteria rating of B, two studies (Bolender et al.1969; Nairn and Brunello, 1971) found a significant relationship between mental health/emotional problems and satisfaction with dentures and one study (Guckes et al.1978) failed to find such a relationship. Of the remaining five studies that received a quality rating of C, four studies found a significant relationship between variables and 1 failed to find such a relationship. Within the studies reviewed mental health/emotional problems covered a wide range of disorders and difficulties. This was illustrated in the many measures used. To establish whether the above variables do have a relationship with satisfaction with dentures, patients must be followed from before their first denture experience and well defined, specific difficulties should be measured, using appropriate tools before and after first- time dentures have been fitted.

Finally, a further area of patient-related variables which may also affect satisfaction with dentures is socio-demographic variables. These variables include gender, age, occupation and marital status although between studies there is great variability as to which of these variables are investigated. Once again, there are no prospective studies investigating this relationship

resulting in participants having uncontrolled, variable previous denture experience. As discussed earlier, this varied previous denture experience may affect outcome satisfaction with dentures.

Of the thirteen studies reviewed in this area, only one study found a statistically significant relationship between demographic variables and satisfaction with dentures. Silverman et al. (1976). found that subjects who were employed had higher satisfaction with dentures than unemployed participants. In addition, the same study found that men had higher self-image and hence higher satisfaction with dentures than the women included in this study. Satisfaction was only assessed once and included the number of return visits participants made to the surgery regarding their denture. Many factors may affect the number of return visits a person makes to the dentist, in particular whether the participant is in full-time employment and has less opportunity to leave work. Therefore, the finding that unemployed participants were less satisfied with their dentures may reflect the fact that unemployed participants had more time and opportunity to return to the dentist to complain. Unfortunately, no other study included in this review investigated the relationship between employment status and satisfaction. Therefore, it is impossible to compare results. In relation to the finding that men were more satisfied with their dentures than female participants, there were many more females involved in this study than males which may have affected the results.

Only one other study included in this review found a relationship between satisfaction with dentures and gender and age of participants. Baer et al. (1992) found that post placement ratings of satisfaction with dentures tended to be lower for females and older clients however, this relationship was not statistically significant. Other studies investigating gender and age variables on satisfaction with dentures, which have included much larger sample sizes and wider satisfaction criteria, have failed to find any significant relationship between these variables (Berg, 1984[32]; 1986 [33] Moltzer et al.1996).

In conclusion, one study, out of the thirteen studies reviewed, found a significant relationship between demographic information and satisfaction with dentures. However, this finding had limitations. The other 12 studies, 6 of whom received a B quality criteria rating compared with Silverman et al. (1976)'s C rating, failed to find any significant relationship between demographic information and satisfaction with dentures. Once again, however, the great variability between studies in terms of the demographic variables examined and the satisfaction criteria utilised, makes it difficult to draw concrete conclusions. Most studies have investigated the gender and age of participants and found no significant relationship with satisfaction. Further studies are required to investigate other demographic variables including marital status, education level and employment status and their relationship with satisfaction with dentures.

Conclusion/Discussion:

Few, if any, concrete conclusions can be reached by this review. Studies which examined personality with dentures failed to control for the effect of chronic dissatisfaction on neuroticism. The appropriate approach would have been to follow first time denture wearers through the denture experience, measuring personality before and after this first experience with dentures. Between the studies reviewed in this area, the great variablility in measures used and in the methodological standard of the study has made any conclusion hard to reach. Personality has certainly been implicated as a causal factor in dissatisfaction with dentures and studies included in this review have certainly confirmed this implication however, further, better-controlled studies are needed.

In this review it was also very difficult to conclude that the participants' locus of control has an effect on their satisfaction with dentures. There are very few studies in this area and of the 4 included in this review 2 studies found a significant relationship between these variables and 2 studies failed to find such a relationship. Once again, methodological problems confound the few studies in this area and therefore, more research is required to investigate this potential relationship.

Finally, the studies included in this review give further evidence that the participants' mental health/emotional problems may predict denture dissatisfaction as the majority of the studies investigating this found a significant relationship. However, once again methodological weaknesses make it impossible to confirm this relationship. Further controlled research is needed to investigate and assess psychological predictors to denture dissatisfaction and distress.

[Insert Table 1 here]

Table 1: Review of Included Studies.

Study	Sample	Dependent variable	Dependent Variables	Modulating variables And interactions with satisfaction/Psychological distress etc.	comments	Quality Criteria
Seifeit et al (1962)	N=131	Personality: Positive/negative /disturbed	1.Satisfaction 2.Patient/dentist relationship 3.Intelligence 4.Previous denture experience	Some correlation between personality and satisfaction (c=0.327) Strongest correlation between satisfaction and patient dentist relationship	**Sample**: all geriatric and institutionalised. Well-being assessed questionably **Personality**: categorised based on adjustment to home does not equal personality. **Satisfaction**: Q did not include pain or retention variables Only assessed once **Patient/dentist relationship**: Dentist was known to patients before and after study. **Results**: correlation weak? Direction of causality not established.	C
Smith (1976)	N=63	Personality: Minisota Multiphasic Personality Inventory-short form	1.Satisfaction 2.Evaluation of technical quality:	No relationship found between personality factors and satisfaction or technical quality and satisfaction.	**Sample:** Elderly and physically disabled excluded. No note of denture experience. **Personality**: only assessed once **Satisfaction**: Only assessed once Direction of causality not established.	C
Guckes et al .(1978)	N=81	Personality:EPI	1.CMI 2.Educational package 3.Satisfaction: Patient Denture satisfaction questionnaire	High neuroticism=less satisfaction High neuroticism benefited more from educational package	**Sample**: All part. Had built up really close relationship with student which authors agree had affected results. All had varied previous denture experience. **Personality**: Only assessed once/ Direction of causality not established. **Satisfaction**: Only assessed once	B
Wright (1980)	N=53 retchers 53 control	Personality: EPQ		No evidence that personality and retching are related. Slightly higher N score in retchers group but not sig.	**Sample**: Only 12 retchers were retching due to dentures and control group included dissatisfied denture wearers-omparing like for like **Personality**: Only assessed once Direction of causality not established.	C

Study	Sample	Independent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress ect.	Comments	Quality Criteria
Vervoorn et al (1991)	N=125	Personality: 1. Hopkins Symptom Checklist 2. Dutch Personality Inventory	1.Satisfaction 2.Functional component of maxillary denture 3.Functional component of mandibular denture 4. Vague denture complaints 5.Aesthetic complaints: Hollow 6. Aesthetic complaints: Bulbous	1. Vague denture complaints linked to high neuroticism. 2. Aesthetic complaints: too bulbous linked to high neuroticism 3.Functional complaints: mandibular and hollow face complaints linked to high extraversion	**Sample**: No history of denture experience given. **Personality**: Only assessed once **Satisfaction**: Only assessed once **Results**: Correlations are not strong Direction of causality not established.	**B**
Reeve et al. (1984)	N=96	Personality Cattell's 16 PFQ Form c.	1. Clinical assessment of personality 2.Patient satisfaction 3.Technical quality	1.Personality did affect outcome on satisfaction but not significant due to uncorrected multiple comparisons.	**Sample:** All patients were dissatisfied with their old dentures although no denture history was taken. **Personality:** Only assessed once prior to insertion appt. which followed long period of chronic dissatisfaction. **Patient satisfaction:** assessed by Q designed specifically for this study. Direction of causality not established.	**B**

Study	Sample	Independent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc..	Comments	Quality Criteria
Van Waas (1990)	N=130	Personality: Wilde 'neurotic lability' scale	1. Quality of new denture 2.The 'oral'condition 3.Patient/dentist relationship 4.Attitude towards dentures 5.HLOC 6.Socio-Economic factors 7.Expectation towards denture 8.Satisfaction with denture	1.Quality of denture and functional aspects of dentures are the most important variables on satisfaction. 2. No correlation found between satisfaction and personality	**Sample:** All patients had varied histories of dissatisfaction with dentures. **Personality**: Assessed only once. **Satisfaction**: Only measured once Direction of causality not established.	**B**
Moltzer et al.1996.	N=97	Personality: The Dutch Personality Inventory	1.Referred to special care-yes/no 2. Referred to psychology yes/no 3.Sociodemographic info 4. Sociodental info 5.Loc	1. Denture patients referred to special care were more neurotic and more externally orientated 2. Denture patients referred to psychology differed on almost all of the psychological variables significantly	**Sample:** All patients had a mixed background of dissatisfaction with dentures but this was not taken as a variable. **Personality**: Inventory only administered once Direction of causality not established.	**B**

Study	Sample	Dependent Variable	Other Dependent Variables	Modualting variables and interactions with satisfaction /Psychological Distress	Comments	Quality Criteria
Van Waas 1990	N=130	HLOC	1. Quality of new denture 2.The 'oral'condition 3.Patient/dentist relationship 4.Attitude towards dentures 5. Personality: Wilde 'neurotic lability' scale 6.Socio-Economic factors 7.Expectation towards denture 8.Satisfactin with denture	1. No relationship between HLOC and dissatisfaction.	**Sample:** All patients had varied histories of dissatisfaction with dentures. **LoC:** Assessed once **Satisfaction**: Only measured once Direction of causality not established.	**B**
Hogenius Et al. 1992	N=315	HLOC	1. Clinical examination and odontological history 2. Demographic Questionnaire 3.Satisfaction 4.Mood	1.Dissatisfied group were more externally orientated 2. Dissatisfied group were more depressed	**Sample**: All subjects were awaiting implants due to chronic dissatisfaction with dentures. Not representative and mixed denture histories **HLOC:** administered once prior to implants **Satisfaction:** Does not give details of what functional, personal or social factors were measured. Gives only 1 example of each. **Results:** External HLOC may reflect effect of chronic dissatisfaction rather that orientation.	**B**
Baer et al. 1992	N=29	Nowicke-Strictland Locus of Control Scale	1.Q: measuring perceptions, expectations and prior experience 2.Satisfaction-5questions referring to fit, comfort, speech, chew ability and appearance	1. No relationship between Locus of Control and satisfaction	**Sample:** All were awaiting new complete dentures following mixed histories of chronic dissatisfaction **LOC:** Loc scale used rather than Health locus of control which would be more appropriate? Loc scale administered only once. **Satisfaction**: 5Qs crude measures of satisfaction. No general measure of satisfaction and no measure of food difficulties and avoidance Direction of causality not established.	**C**

Study	Sample	Independent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Moltzer et al.1996.	N=97	Locus of Control Scale	1.Referred to special care-yes/no 2. Referred to psychology yes/no 3.Sociodemographic info 4. Sociodental info 5. Personality: The Dutch Personality Inventory	1. Denture patients referred to special care were more neurotic and more externally orientated 2. Denture patients referred to psychology differed on almost all of the psychological variables significantly	**Sample:** All patients had a mixed background of dissatisfaction with dentures but this was not taken as a variable. **LOC:** Locus of control scale used rather than health locus of control which would have been more appropriate Direction of causality not established.	**B**

Study	Sample	Dependent Variable	Other Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Bolender Et al. 1969	N=402	Emotional Problems-CMI Total Score and Last Page Score	1. Demographics 2.Denture History 3.No. of return visits 4.Satisfaction	1.higher CMI score= less satisfaction with dentures. 3.A group was highlighted before study as having potential emotional problems. This group was then informed about the relationship between emotional problems and acceptance. This group appears to have reacted better to new dentures than expected indicating that education into the relationship between satisfaction with dentures and emotional problems may reduce complaints.	1. Direction of causality not established. **Sample**: Not representative-mostly elderly And more women than men **DV**: Assessed once **Satisfaction**: Q designed specifically for This study=not valid	B
Nairn and Brunello. 1971	N=73	Emotional Problems-CMI M>R score	1. Quality of dentures-faults 2.Satisfaction: GP 1=complaints<faults GP 2=complaints=faults GP3=complaints>faults and complaints unrelated to faults.	1.Sample as a whole had higher CMI score than published norms. 2. Complaints>Faults had higher CMI scores than norms, other 2 groups and group as a whole.	**Sample**: Dental hospital setting=not rep. Mixed previous experience with dentures but not taken as D.V. **CMI**-assessed once Faults were assessed by one person =subjective. Direction of causality not established. Even the other two gps had higher than norm CMI scores so this may lend support to the assumption that chronic dissatisfaction with dentures causes high CMI scores. Association is not strong. Emotional problems does not = neuroticism. May be period of reactive depression rather than personality enduring trait,	**B**

Study	Sample	Dependent Variable	Other Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Silverman Et al. 1976	N=50	Self Image: 1.Focussed Interview 2.embedded Figures Test 3.Projective Figures Drawing	1.Demographics 2. Satisfaction: Denture Acceptance Questionnaire and no. of return visits.	1.Field dependent had higher no. of complaints and complaints referred more to lack of acceptance. 2. Low morale (measured by focussed interview had the most sig relationship with satisfaction. 3. Low morale and primitive drawing=more aesthetic complaints. 4. Satisfaction with life affected satisfaction with dentures sig.	**Sample**: Unrepresentative: All elderly, more men than women and dental hospital only setting. All had mixed previous histories of dentures **Self-Image**: Focussed Interview was by one person=subjective and was designed specifically for this study. Also this was assessed once following chronic dissatisfaction with dentures. **Satisfaction:** Was assessed once and included no. of return visits. The no. of return visits may have been affected by external variables including jobs and children. **Results**: Self Image (and each of its components) may be result of chronic dissatisfaction with dentures therefore direction of causality not established	**C**
Guckes Et al. 1978	N=81	Emotional Problems: CMI SCORE>25 AND >2=high CMI score	1. EPI 2. Satisfaction 3Educational package/no educational package.	No significant relationship between CMI score and satisfaction with new dentures.	**Sample** All participants had built up really close relationship with student which authors agree had affected results. All had varied previous denture experience. **Emotional Problems**: Only assessed once **Satisfaction**: Only assessed once	**B**

Study	Sample	Independent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress ect.	Comments	Quality Criteria
Hogenius et al. 1992	N=315	Mood: 1. The Mood Adjective Checklist Score 2.The Self-Rating Depression Scale	1. Clinical examination and odontological history 2. Demographic Questionnaire 3.Satisfaction 4. HLOC	1. Found mood had sig. relationship with dissatisfaction. Low mood=dissatisfaction. 2. Found quite high levels of depression in dissatisfied group	**Sample**: All subjects were awaiting implants due to chronic dissatisfaction with dentures. Not representative and mixed denture histories **Mood Assessment:** administered once prior to implants **Satisfaction:** Does not give details of what functional, personal or social factors were measured. Gives only 1 example of each. Designed specifically for this study. **Results:** Direction of causality not established. Could be chronic dissatisfaction with dentures which has made subjects depressed.	C
Diehl et al. 1996	N=60	Mental Health: Rand Mental Health Inventory	1. Demographic Info 2:General Health-Self evaluation 3.Expectations towards dentures 4.Satisfaction:Dental Rating Scale 5. Denture problems experienced 6.Satisfaction with dental services 7. Evaluation of existing denture	1. Found that mental health problems did affect satisfaction and adjustment to dentures.	**Sample:** Unrepresentative: university based population, older, lower income rural dwelling white females. Mixed previous experience of dentures but this was not taken as a DV. **Mental Health:** Measured more than once but not preceding 1st ever denture experience. Direction of causality not established.	C

Study	Sample	Independent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Golebie-wska et al. 1998	N=141	Affective State: Semi structured Interview included: 1.Irritability 2. Boredom 3. Anger 4. Loneliness 5.Helplessness 6.Joy-Happiness 7.Peace Usefulness	1. Demographic Info 2. Examination of mouth 3. Technical Quality of dentures 4. Satisfaction: Grouped into a. Denture Tolerant b. Denture Intolerant	1. No sig relationship between gender/age and satisfaction with dentures. 2.Upper denture group: Sig relationship between denture satisfaction and a. Irritability b. Anger c. Peace 3. Lower denture group: Sig relationship between denture satisfaction and a. Anger b. Helplessness **N.B**. Only anger had a significant relationship with satisfaction in both groups.	**Sample**: Not representative- All elderly Whether subject had full or partial denture was not taken as a DV. Previous experience and no of previous dentures were not taken as DVs. **Affective State**: Not a standardised, validated tool. Many of the variables assessed are complicated by aging. Q designed specifically for this study. Only assessed once –may only reflect how subjects were feeling that day. **Satisfaction:** Not standardised assessment tool and was only measured once.	**C**
Brunelo and Mandikos 1998	N=100	Chronic Illness: including psychological problems. Based on case notes and medical files	1.,. Chronic Pain 2. Satisfaction: Appearance problems were not assessed. 3.Adequacy of denture base 4. Technical Quality of denture.	1. No relationship was found between chronic illness and satisfaction with dentures: no and type of complaints.	Sample: Not representative: More females and older population. Mixed previous denture history but not taken as a d.v. **Chronic Illness**: No note how many of these had psychological problems. No note if these problems were still evident or what chronic means. No note of whether the psychological problems preceded denture experience. **Satisfaction**: No measure of aesthetic difficulties. This was administered once =may reflect that day. **Results**: Direction of causality not established.	C

Study	Sample	Dependent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Langer et al. 1960	N=127	Demographic Info: Gender	Satisfaction	1.No significant relationship between gender and satisfaction was found.	**Sample**: all geriatric and institutionalised. Well-being assessed questionably **Satisfaction**: Q did not include pain or retention variables Only assessed once	**C**
Bolender et al. 1969	N=97	Demographic Info: Gender	1. Emotional Problems-CMI Total Score and Last Page Score 2.Denture History 3.No. of return visits 4.Satisfaction	1.No difference was found between gender and post insertion satisfaction.	**Sample**: Not representative-mostly elderly And more women than men **Satisfaction**: Q designed specifically for This study=not valid	**C**
Silverman et al. 1976.	N=50	Demographic Info: Gender, age, marital status and occupation	1. Self Image: a).Focussed Interview b).embedded Figures Test c).Projective Figures Drawing 2. Satisfaction: Denture Acceptance Questionnaire and no. of return visits	1. Subjects who were employed had higher self image and hence higher satisfaction 2. Men had higher self-image and hence higher satisfaction than women.	**Sample**: Unrepresentative: All elderly, more men than women and dental hospital only setting. All had mixed previous histories of dentures **Satisfaction:** Was assessed once and included no. of return visits. The no. of return visits may have been affected by external variables including jobs and children. **Results**: There were many more women in the sample and only a small no. of men. This may have produced gender result. People who are unemployed may be more available to make return visits , which was used to measure satisfaction, and this may explain why employed people were more satisfied.	**C**

Study	Sample	Dependent Variable	Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Guckes et al. 1978	N=81	Demographic Info: Gender and age	1.Emotional Problems: CMI 2.EPI 3. Satisfaction 4.Educational package/no educational package.	1.No gender or age differences were found between the counselled and the non-counselled groups.	**Sample** All participants had built up really close relationship with student which authors agree had affected results. All had varied previous denture experience. **Satisfaction**: Only assessed once	**B**
Berg. 1984	N=74	Demographic Info: Gender and age	1.Satisfaction 2.Clinical Variables	1.No significant age or gender effect	Sample: All had varied previous denture experience. Satisfaction: Only assessed once	**B**
Van Waas (1990)	N=130	Demographic Info: Age and educational background	1. Quality of new denture 2.The 'oral'condition 3.Patient/dentist relationship 4.Attitude towards dentures 5. Personality: Wilde 'neurotic lability' scale 6.HLOC 7.Expectation towards denture 8.Satisfaction with denture	1. No relationship between age or educational level and satisfaction with dentures.	**Sample:** All patients had varied histories of dissatisfaction with dentures. **Satisfaction**: Only measured once Direction of causality not established.	**B**
Hogenius et al. 1992	N=315	Demographic Info: gender	1.Mood: a)The Mood Adjective Checklist Score b).The Self-Rating Depression Scale 2. Clinical examination and odontological history 3.Satisfaction 4. HLOC	1.No significant relationship found between gender and satisfaction with dentures.	**Sample**: All subjects were awaiting implants due to chronic dissatisfaction with dentures. Not representative and mixed denture histories **Satisfaction:** Does not give details of what functional, personal or social factors were measured. Gives only 1 example of each. Designed specifically for this study.	**C**

Study	Sample	Dependent Variable	Other Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Baer et al.1992	N=29	Demographic Info: gender and age	1.Q: measuring perceptions, expectations and prior experience 2.Satisfaction-5questions referring to fit, comfort, speech, chew ability and appearance 3. Nowicke-Strictland Locus of Control Scale	1.Gender and age were not significantly correlated with post treatment ratings of satisfaction. However, post placement ratings of satisfaction tended to be lower for females and older clients.	**Sample:** All were awaiting new complete dentures following mixed histories of chronic dissatisfaction. **Satisfaction**: 5Qs crude measures of satisfaction. No general measure of satisfaction and no measure of food difficulties and avoidance	**C**
Beck et al. 1993	N=196. Split into problem and normal denture wearers.	Demographic Info: Age and Living situation	1. Nature of complaint 2.Technical adequacy of denture	1.No age or living situation differences found between groups	**Sample**: All elderly clients who had mixed histories of dissatisfaction with dentures. More females than males. Unrepresentative sample. **Satisfaction**: Participants were placed into normal or problem denture wearers group based on no.of return visits with complaints regarding previous dentures. There is no note to whether these previous dentures had technical problems which would explain these previous complaints.	**B**
Moltzer et al. 1996	N=97	Socio-demographic Info: Age, gender, marital status and education	1.Referred to special care-yes/no 2. Referred to psychology yes/no 3. Locus of Control Scale 4. Sociodental info 5. Personality: The Dutch Personality Inventory	1.Subjects referred to special care did not differ statistically significantly from subjects referred to regular care with respect to the socio-demographic variables. 2.The same conclusion applies to subjects referred to psychology and those who were not.	**Sample:** All patients had a mixed background of dissatisfaction with dentures but this was not taken as a variable.	**B**

Study	Sample	Dependent Variable	Other Dependent variables	Modulating variables and Interactions with satisfaction /psychological distress etc.	Comments	Quality Criteria
Diehl et al. 1996	N= 60	Demographic Information: Age, race, gender, educational level, marital status and income	1. Mental Health: Rand Mental Health Inventory 2.General Health-Self evaluation 3.Expectations towards dentures 4.Satisfaction:Dental Rating Scale 5. Denture problems experienced 6.Satisfaction with dental services 7. Evaluation of existing denture	1.No significant relationship was found between demographic information and satisfaction with dentures.	**Sample:** Unrepresentative: university based population, older, lower income rural dwelling white females. Mixed previous experience of dentures but this was not taken as a DV.	**B**
Brunello and Mandikos.1998	N=100	Demographic Info: Gender and age	1.,. Chronic Pain 2. Satisfaction: Appearance problems were not assessed. 3.Adequacy of denture base 4. Technical Quality of denture. 5. Chronic Illness: including psychological problems. Based on case notes and medical files	1.No relationship between type of complaint and gender. 2.No relationship between no. of complaints and gender or age.	Sample: Not representative: More females and older population. Mixed previous denture history but not taken as a d.v. **Satisfaction**: No measure of aesthetic difficulties. This was administered once =may reflect that day.	**C**
Golebiewska et al. 1998	N=141	Demographic Info: Age and gender	1. Affective State: Semi structured Interview 2. Examination of mouth 3. Technical Quality of dentures 4. Satisfaction: Grouped into c. Denture Tolerant Denture Intolerant	1.No relationship between age and denture intolerance. 2.No relationship between gender and denture intolerance	**Sample**: Not representative- All elderly Whether subject had full or partial denture was not taken as a dependent variables. Previous experience and no of previous dentures were not taken as dependent variables.. **Satisfaction:** Not standardised assessment tool and was only measured once.	**C**

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Chapter Three:

Major Research Proposal

'The Assessment of Social Anxiety and Other Psychological Factors Leading to an Intervention For Untolerated Denture Prostheses'

Major Research Proposal submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

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Title:

"The Assessment of Social Anxiety and Other Psychological Factors leading to an Intervention for Untolerated Denture Prosthesis."

Summary:

It has been claimed that there are serious psychological and emotional consequences for patients who have had their natural teeth removed and replaced by dentures. Research has attempted to establish predictors of this psychological distress by measuring the patients' personality, level of dental functioning after the dentures have been fitted, and psychological factors such as locus of control. Unfortunately the studies in this area suffer from serious methodological errors that confound results and make it difficult to conclude whether any of the above factors are linked with psychological and emotional distress occurring after the fitting of dentures. This study intends to examine the questions raised in previous studies and investigate what predictors there are to denture dissatisfaction. It also proposes an educational intervention designed to reduce dissatisfaction, and the psychological and emotional distress involved with the procedure.

Introduction:

Neglect of dental care is a common problem afflicting adult health in the West of Scotland. The result is often rampant dental disease for which the only treatment is partial or complete dental clearance (extraction of teeth) and the fitting of prosthetic dentures. Whilst the prostheses are very carefully prepared and appear from objective measurements by expert dental clinicians to be technically perfect, many patients complain of functional problems with eating and speech (Steele et al.1997), oral discomfort, and dissatisfaction with their facial appearance (Berg, 1993). Their general dissatisfaction is often associated with emotional distress measured by semi-structured interviews which elicit issues of distress, and by social withdrawal which may require psychological intervention (Fiske et al. 1998). Thus, intolerance of prosthetic dentures may make demands on the time and resources of both clinical dental and psychological services.

Previous psychological research has attempted to understand the factors associated with untolerated dentures and distress. As it is known that Neuroticism is associated with greater complaints of pain and discomfort after general surgery (Wallace, 1985), personality factors have been studied on the assumption that they may have a causal relationship with dissatisfaction and distress (Van Waas, 1990). Moltzer et al (1996) reported high levels of Neuroticism and social inadequacy amongst patients who were dissatisfied with their dentures. The result contrasted with the earlier studies by Wright (1980) and Nairne and Brunello (1971) who found no differences in Neuroticism between patients who complained of retching caused by their false teeth when compared both with non-complainers and a representative sample of the adult population. Reeve et al. (1984) employed the 16-PF personality inventory and reported that dissatisfied patients were more "insecure" and "tense" than satisfied patients. However, multiple comparisons were conducted without correcting to avoid Type-1 error. When such adjustment is made, the differences are completely non-significant (Lindsay et al, 2000).

Methodological difficulties afflict those few studies which have assessed levels of psychological distress in patients with untolerated dentures. Kent and Johns (1991, 1993) and Hogenius et al. (1992) assessed distress with the General Health Questionnaire (GHQ) after dentures had been fitted, and whilst patients were anticipating surgery to replace the removable prostheses with permanent implants. These studies not only failed to take account of pre-existing distress (i.e. prior to dental clearance and fitting of dentures), but also further confounded the assessment by adding the known distress of anticipating surgery (Millar et al.1995). Furthermore, the GHQ is insensitive to distress because of its question structure which requires patients to describe change in symptoms "over the past few weeks". Patients who are chronically distressed are likely to check responses such as "no more worried than usual", hence leading to a misleadingly low score (Lindsay et al., 2000).

The patients' Locus of Control has also been considered as a predictor of the level of distress experienced by denture wearers (Hogenius et al, 1992). The Health Locus of Control Scale is designed to predict health related behaviours. It is derived from social learning theory and represents "the extent to which, in a variety of health situations, individuals believe that they have personal control over what happens to them." The scale uses two dimensions "external" and "internal" where an external orientation indicates the belief of the individual that his health is related to external control e.g. of others, fate and chance. An internal orientation indicates that the individual feels in control of his or her own health. Hogenius et al. (1992) found that a group of long- term dissatisfied denture wearers were more depressed than average and had an external locus of control. The results support previous studies comparing

Swedish to American populations (Berggren et al. 1984) and the study by Moltzer et al. (1996) who also found that higher dissatisfaction was associated with higher external locus of control. However, other studies have failed to find a connection between Locus of Control and satisfaction with dentures. Manne and Mehra (1983) and Van Waas et al (1990) found no relationship between Locus of Control and satisfaction with dentures. Marinus et al. did, however, find that the patients' expectations of the procedure were an important factor in their ultimate satisfaction with the dentures. Davis et al. (1986) found that denture wearers have an unrealistically high expectation of the functioning and appearance of their dentures and that this optimism might be an important factor in future satisfaction. These unrealistic expectations may affect the control people perceive they have over the denture experience and may therefore affect how well these patients adjust to their dentures. Hence there is a possible value in introducing an educational intervention for this group.

A further important criticism of previous research has been the neglect of the possible influence of the inherent mechanical limitations of dentures upon mood and behaviour which, in turn, may lead to dissatisfaction and intolerance. Dentures are designed to be easily removed for cleaning in order to facilitate hygiene around the sensitive oral tissues. They are therefore only weakly secured within the mouth, either by clips to remaining teeth, or by suction to the oral tissues. The consequence is that the prostheses are unstable and may be dislodged when eating hard foods, sneezing, coughing, or may simply come lose spontaneously. Steele et al. (1997) found that as the patients' number of natural teeth decline and hence the level of prostheses increase, the higher the level of aesthetic dissatisfaction and eating problems.

For the denture wearer patient, the consequences of denture instability are variable in terms of avoidance of certain foods, avoidance of social situations and interactions that may create a risk of dislodging the prostheses, and self-consciousness when smiling or talking lest the prostheses be obvious to an observer. Ettinger & Jakobsen, (1997) found that the best predictor of patient satisfaction with denture wearing was the patients' perception of retention and appearance illustrating how socially conscious this group are. Plausibly, the issue of social anxiety may then become relevant. A recent study by Obrez & Grussing, (1999) examined factors responsible for successful adaptation to chewing with complete dentures and did indeed find that denture wearers avoided certain 'difficult food' and reported high levels of worry regarding the stability and retention of dentures while eating. Patients who are already socially anxious may have the condition exacerbated by the fitting of dentures. Others may become socially anxious after the fitting when the inherent limitations of the prosthesis

are discovered. In both cases, a pattern of social consciousness may be present which becomes part of the syndrome of intolerance.

An important factor which affects people's expectations about surgical procedures is the amount of realistic information they are given about the procedure prior to the surgery by the professional involved. It is well known that giving patients information regarding surgical procedures, and the likely physical consequences of such procedures decreases the likelihood of post-operative psychological distress. Therefore, before many types of surgery, especially those where functioning and appearance may be altered, patients are given information and are encouraged to ask questions. Remarkably, however, no such preparatory information is given to patients before their teeth are removed and dentures are fitted. In fact, it is not normal practice with this procedure to give any routine information to patients at all.

The review has shown that previous research to address the distress and dissatisfaction following dental clearance and provision of dentures leaves several issues to be resolved. The nature and degree of distress suffered by patients is difficult to establish because assessments with the GHQ have been inappropriate. The failure to assess psychological state prior to the dental procedure also creates uncertainty in determining whether dissatisfaction and distress are caused by the procedures, or are consequences of personality traits and emotional difficulties. The routine failure to provide patients with any information prior to the procedure may plausibly permit unrealistic expectations (and anxieties) to develop and which may influence subsequent reactions.

The issues above require investigation in a prospective study which will assess psychological state, and other salient variables, prior to clearance and fitting of dentures. The Symptom Checklist-90 provides a comprehensive assessment of emotional distress (and important features including hypochondriasis and somatic concern) which is superior to the GHQ. The extent to which such variables predict subsequent distress and dissatisfaction will be examined in regression analysis. As information-giving has been shown beneficial to recovery after general surgical and other medical procedures, its potential benefit will also be examined.

A pilot study, examining the subject pool that I intend to investigate during this research, will also be undertaken. This would involve looking at known dissatisfied denture wearers and known satisfied denture wearers and assessing them on the level of any psychological distress and social anxiety that they report experiencing and any other psychological factors which may differ between these two groups. This will allow me to examine these groups to

investigate whether it is possible to establish psychological factors which distinguish these two groups. As this is a cross-sectional design I will not be looking at any causal relationships. This will be addressed in my research study. However, differences which are observed between satisfied and unsatisfied denture wearers should inform me as to the desired effect of the intervention proposed for my research study. In addition the pilot study aims to evaluate the usability and validity of the assessment tools to inform the methodology of the main research study.

Aims and Hypothesis:

Pilot Study

Aims.

1. To investigate the validity and usability of the proposed assessment tools, to inform the methodology of the main research study.
2. To gain an initial impression as to whether psychological factors can distinguish satisfied and dissatisfied denture wearers.

Research

Aims.

1. To investigate psychological consequences for patients undergoing the denture procedure. This will include examining emotional state, somatic complaints and life satisfaction.
2. To investigate whether pre-denture denture and/or psychological variables predict denture dissatisfaction experienced by patients after the fitting of dentures..
3. To evaluate the effects of an information package in reducing distress and dissatisfaction after denture treatment.

Hypotheses.

1. Neuroticism and pre-existing emotional distress will predict higher levels of dissatisfaction and distress after fitting of dentures.
2. By supplying the patient with realistic information regarding the denture procedure and its consequences the level of post-denture distress and dissatisfaction will be decreased.

Plan of Investigation:

Pilot Study.

Participants.

The dentist involved with the study will group patients into satisfied denture wearer (Group Ai) or dissatisfied denture wearer (Group Bi). This clinical judgement will be based on case-note behavioural evidence (i.e. how often they returned with complaints of their dentures) and on their own personal knowledge of these patients. The groups will be matched as far as possible on demographic information, the extent of dentures and the location of their dentures. Both groups will be sent questionnaires examining how they have adjusted to wearing dentures.

Measures:

1. Demographic Data
2. Symptom Checklist-90-R : (Derogatis, 1994)
3. Satisfaction with Life Scale (SLS): Diener (1985)
4. Hospital Anxiety and Depression Scale (HADS) : (Snaith & Zigmond, 1983).
5. The Health Locus of Control Scale : (Wallston, 1978)
6. Eysenck Personality Questionnaire Revised –Short Scale (Eysenck & Eysenck, 1991)
7. Dental Functioning Questionnaire
8. Dental Appearance Questionnaire (Frazer & Lindsay, 2001)
9. Measure of Expectation of Prostheses (Davis et al. 1986)
10. Dentist's rating of Prostheses
11. Social Phobia Rating Scale (Wells, 1997)

Design and Procedure

Cross-sectional, between groups, the variables listed will serve as independent variables.

Procedure.

All participants will be contacted with an information letter explaining the purpose of testing. They will be told that the concern is how people react to new dentures and they will be asked for their consent to participate. Participants in both groups will be asked to complete the questionnaires as soon as possible and return them to the researcher. All data will then be collected and analysed.

Research Study.

Participants

Participants will be recruited from patients undergoing first-time full or partial clearances of their teeth followed by the fitting of dentures. Recruitment will be from a dental practice in Glasgow to which the researcher has been informed that she will have access. Participants will be randomly allocated to one of two groups which will receive an information intervention (Group A), or no information intervention (Group B) prior to denture treatment. A power calculation will be performed to predict how many participants will be needed in either group for statistical significance. This power calculation will be based on data collected in the Pilot study.

Measures For Main Research

1. Demographic Data
2. Symptom Checklist-90-R
3. Life Satisfaction Scale
4. Hospital Anxiety and Depression Scale.
5. The Health Locus of Control Scale
6. Eysenck Personality Questionnaire –Short Scale
7. Dental Functioning Questionnaire
8. Denture Appearance Questionnaire
9. Measure of Expectation of Prostheses
10. Dentist's rating of Prostheses.
11. Social Phobia Rating Scale

Design and Procedure

Within groups, the variables listed above will serve as independent variables to predict dissatisfaction and distress.

Procedure

Each participant will be given the same information regarding the purpose of this experiment. They will be told that the concern is how people react to new dentures and they will be asked for their consent to participate. It will be clearly explained that the researcher will follow them throughout their procedure. Both Groups of participants will fill out the above questionnaires before dentures are fitted for the first time. Group A will then receive an information intervention. This will include realistic information regarding how the dentures will function, and the drawbacks involved. Group B will receive no such information intervention. No written information at all will be given to this group. After the dentures are fitted both groups will complete the above questionnaires again at their denture follow-up and any changes in response noted. The follow-up typically occurs some two to three weeks after the dentures are fitted. A further questionnaire will be sent to these patients 6 weeks after the dentures have been fitted. This will measure longer-term effects.

Settings and Equipment

A quiet office room within the dental practice will be used for this study.

Data Analysis

Data from the above questionnaires will be collected and analysed using SPSS statistical software. All participant information will be kept in the strictest confidence.

Descriptive: Demographic data and Pre- and post- denture levels of distress and dissatisfaction.

Predictive: Analysis of independent measures to determine whether they predict the dependent measures of distress and dissatisfaction.

Comparative: Between-groups analysis to determine whether pre-denture information is associated with lower distress and dissatisfaction in the post- denture period.

Principle Applications

1. The results from this study could have major service implications. As stated, the high level of psychological distress experienced by these patients is well known. The initial psychological distress can ultimately develop into well-known psychological conditions eg. Social phobia, depression and anxiety disorders. If, by giving the patient realistic information this distress is reduced, then this quick and easy intervention could be used routinely to prevent the development of psychological disorders and therefore reduced referrals to clinical psychology.
2. By understanding what pre-existing psychological factors predict distress after denture fitting, the information given to patients could be designed specifically with these predictors in mind.
3. By understanding the nature of the psychological distress experienced after the denture procedure, and by understanding the predictors of such distress, one may be in the position to design a precise intervention for use with specific patients.

Time Scales

Jan-March: Develop proposal,

March-July: Approach dental practices and seek permission and complete ethic forms.

July-Oct: Literature review and begin testing

Oct-July Testing of participants, collection and analysis of data. Write up of study.

Ethical Approval.

The dental practice I will be using primarily is a greater Glasgow NHS practice in Govan. I will therefore request ethical permission for Greater Glasgow NHS Trust. Ethical approval will also be sought from the Dental Hospital in Glasgow who have their own ethics committee. I will also seek permission from the Partners and Associate at this practice. The above will apply to the other practices I may have to use to meet patients. Permission from either the Trust responsible for that practice and The Partners in this practice will be collected or just from the Partners in the practice if the practice is a private one.

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Chapter Four:

Major Research Paper

'The Assessment of Social Anxiety and Other Psychological Factors Leading To An Intervention For Untolerated Denture Prostheses'

Major Research Paper Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

Prepared in accordance with requirements for submission to
Journal of Prosthetic Dentistry.
(See Appendix for contributor's notes)

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Abstract.

Many patients report dissatisfaction and psychological distress following the fitting of dentures even though expert, clinical opinion judges the dentures to be technically perfect. Many pre-denture predictor variables, including neuroticism and Locus of Control, have been examined in relation to denture dissatisfaction. In addition to these pre-denture predictor variables, unrealistic expectations towards dentures have also been cited as a potential cause of post-denture dissatisfaction. This study investigates the dissatisfaction and psychological distress associated with dentures and, in a prospective design, examines whether pre-denture predictor variables can explain the denture dissatisfaction experienced. In addition, an information intervention is described and evaluated in relation to post-denture dissatisfaction and psychological distress. Twenty-two patients were recruited for each group and each participant was followed through their first denture experience. Measures were collected prior to dentures being fitted and then again at 2 and 6 week follow-up. One group received an information intervention prior to the fitting of dentures and the other group received no information intervention. Changes over time illustrate that the no-intervention group experienced significant increases in denture dissatisfaction and psychological distress following the fitting of dentures at both 2 and 6 weeks follow-up. In contrast, the group that received the information intervention reported significant decreases in denture dissatisfaction and psychological distress following the fitting of dentures. Between-group comparisons at 2 and 6 weeks follow-up illustrated that the group who did not receive the information intervention reported significantly more denture dissatisfaction and psychological distress than those who received the intervention. It was found that the intervention group's post-denture measures of denture dissatisfaction were partly predicted by their pre-denture Satisfaction With Life score. No other pre-denture denture or psychological variable was found to significantly predict denture dissatisfaction. The no-intervention group's denture dissatisfaction measures collected at 2 weeks were partly predicted by their pre-denture expectancies towards dentures and the type of denture they had fitted. By 6 weeks the no-intervention group's denture dissatisfaction scores were partly predicted by their pre-denture social anxiety ratings. No other pre-denture predictor variable was found to significantly predict denture dissatisfaction at 2 or 6 weeks follow-up. Results are discussed in reference to future research and in the context of past results and clinical implications.

Keywords: Denture dissatisfaction; Psychological Distress; Predictor Variables

1. Introduction.

Neglect of dental care is a common problem afflicting the West of Scotland. The result is often rampant dental disease for which the only treatment is partial or complete dental clearance (extraction of teeth) and the fitting of prosthetic dentures. Whilst the prostheses are very carefully prepared and appear from objective measurements by expert dental clinicians to be technically perfect, many patients complain of functional problems with eating and speech (Steele et al.1997[1]), oral discomfort and dissatisfaction with their facial appearance (Berg, 1988[2]). This general dissatisfaction is often associated with emotional distress measured by semi-structured interviews which elicit issues associated with distress, and by social withdrawal which may require psychological intervention (Fiske et al.1998[3]). Hence, this intolerance to prosthetic dentures makes increasing demands on the time and resources of clinical, dental and psychological services.

Previous research has attempted to understand the factors associated with untolerated dentures and psychological distress and particularly whether there are factors which predict dissatisfaction. A difficulty in the research into the definition and measurement of psychological distress and dissatisfaction associated with dentures is with the measures used and with the timing of these measures. Not only is there great variability in measures used between studies but also some of these measures become invalid tools when examining the psychological distress and dissatisfaction involved with untolerated dentures. An example of this is the studies by Kent and Johns (1991[4],1993[5]) which addressed distress associated with untolerated dentures by using the General Health Questionnaire (GHQ) after dentures had been fitted, and whilst patients were anticipating surgery to replace the removable prostheses with permanent implants. These studies not only failed to take account of pre-existing distress (i.e. prior to dental clearance and fitting of dentures), but also further confounded the assessment by adding the known distress of anticipating surgery (Millar et al.1995[6]).

Furthermore, the GHQ was designed specifically to measure distress of recent onset and therefore would be insensitive to chronic distress such as associated with long-term dissatisfaction with dentures.

As already stated, a large proportion of the research conducted in the area of dissatisfaction and psychological distress caused by dentures has focused on identifying predictor variables for this denture dissatisfaction. As it is known that neuroticism is associated with greater complaints of pain and discomfort after general surgery (Wallace, 1986[7]), personality factors have been studied on the assumption that they may have a causal relationship with denture dissatisfaction. Guckes et al. (1978[8]), Vervoorn et al (1991[9]) and Moltzer et al. (1996[10]) found significant evidence that personality is linked to how satisfied people are with their dentures and measured personality by means of valid and reliable measurement tools such as the EPI. However, some of the participants in these studies had different previous denture experiences including the number of previously worn dentures and the degree of previous denture dissatisfaction. These varied histories may also have been independent variables which may affect the outcome in terms of current denture satisfaction.

Reeve et al. (1984[11]) employed the 16-PF personality inventory and reported that dissatisfied patients were more 'insecure' and 'tense' than satisfied patients. However, multiple comparisons were conducted without correcting to avoid Type-1 error. When such an adjustment was made the differences are completely non-significant (Lindsay et al.2000[12]). Smith (1976[13]) also failed to find a significant relationship between patients' personalities and dissatisfaction with dentures although once again serious methodological problems confound results.

The patients' locus of control has also been considered as a predictor of denture dissatisfaction. The Health Locus of Control Scale is designed to predict health-related behaviours. It is derived from social learning theory and represents the extent to which, in a

variety of health situations, individuals believe that they have personal control over what happens to them. Studies examining the relationship between the patients' locus of control and satisfaction with their dentures also have methodological difficulties which confound results. Hogenius et al. (1992[14]) found that a group of long-term dissatisfied denture wearers were more depressed than controls and were more likely to have an external locus of control. The results support previous studies comparing Swedish to American populations (Berggren et al.1984[15]) and the study by Moltzer et al. (1996) who also found that higher dissatisfaction was associated with higher external locus of control. However, other studies in this field have failed to find a link between locus of control and satisfaction with dentures. Baer et al. (1996[16]) and Van Waas et al. (1990[17, 18]) found no relationship between locus of control and satisfaction.

Within this area of research it has also been suggested that people with mental illness and/or emotional difficulties may be more likely to be dissatisfied with their dentures than those without such difficulties. (e.g. Hogenius et al. 1992; Diehl et al. 1996[19]; Golebiewska et al. 1998[20]). With all the studies reviewed examining the effect these mental health difficulties have on the participants' satisfaction with dentures, the direction of causality cannot be established as no measure of these mental health/ emotional difficulties are taken before the participants' first denture experience.

A further important criticism of previous research has been the neglect of the possible influence of the inherent mechanical limitations of dentures upon mood and behaviour which, in turn, may lead to dissatisfaction and intolerance. As dentures are designed to be easily removed for cleaning in order to facilitate hygiene around the sensitive oral tissues, they are only weakly secured within the mouth, either by clips to remaining teeth, or by suction to the oral tissues. The consequence is that the prostheses are unstable and may be dislodged when eating hard foods, sneezing, coughing, or may simply come lose spontaneously. For the denture wearer patient, the consequences of denture instability are variable in terms of

avoidance of certain foods, avoidance of social situations and interactions that may create a risk of dislodging the prostheses, and self-consciousness when smiling or talking lest the prostheses be obvious to an observer. Ettinger & Jakobsen, (1997[21]) found that the best predictor of patient satisfaction with denture wearing was the patients' perception of retention and appearance illustrating how socially conscious this group are. Plausibly, the issue of social anxiety may then become relevant.

Davis et al. (1986[22]) found that denture wearers have an unrealistically high expectation of the functioning and appearance of their dentures and that this optimism might be an important factor in future satisfaction. These unrealistic expectations may affect the control people perceive they have over the denture experience and may therefore affect how well these patients adjust to their dentures. An important factor which affects people's expectations about surgical procedures is the amount of realistic information they are given about the procedure prior to the surgery by the professional involved. It is well known that giving patients information regarding surgical procedures, and the likely physical consequences of such procedures decreases the likelihood of post-operative psychological distress (Wallace,1985). Therefore, before many types of surgery, especially those where functioning and appearance may be altered, patients are given information and are encouraged to ask questions. Remarkably, however, no such preparatory information is routinely given to patients before their teeth are removed and dentures are fitted. This may lead to unrealistic expectations on the part of the patient which may affect subsequent denture satisfaction. A prospective study is therefore required to investigate the effect of an information intervention on patients' satisfaction with dentures and any psychological distress associated with dentures.

The review has shown that previous research to address the distress and dissatisfaction following dental clearance and provision of dentures leaves several issues to be resolved. The nature and degree of distress suffered by patients is difficult to establish because assessments

with the GHQ have been inappropriate. The failure to assess psychological state prior to the dental procedure also creates uncertainty in determining whether denture dissatisfaction is caused by the procedures, or is a consequence of personality traits and emotional difficulties. The routine failure to provide patients with any information prior to the procedure may plausibly permit unrealistic expectations (and anxieties) to develop and which may influence subsequent reactions.

The issues above require investigation in a prospective study which will assess psychological state, and other salient variables, prior to clearance and fitting of dentures. The Symptom Checklist-90 provides a comprehensive assessment of emotional distress (and important features including hypochondriasis and somatic concern) which is superior to the GHQ. The extent to which such variables predict subsequent dissatisfaction with dentures will be examined in regression analysis. As information-giving has been shown beneficial to recovery after general surgical and other medical procedures, its potential benefit will also be examined.

The present study involves a pilot study and main research study. The pilot study will investigate satisfied and dissatisfied denture wearers. As this is a cross-sectional design, it is not possible to investigate causal relationships. This will be addressed in the main research study. The function of the pilot study is two-fold. Firstly, to ensure that the method and assessment tools, intended to be used in the research study, are valid and acceptable to the participants and for the purpose of this research and secondly, to gain an initial impression of whether psychological factors can distinguish satisfied and dissatisfied denture wearers. The main research study will use the information gained from the pilot study to inform its methodology in a prospective intervention study to decrease dissatisfaction with dentures. The Aims, Method and Results of the pilot study will be discussed firstly before those of the main research study.

Pilot Study

Aims.

1. To investigate the validity and usability of the proposed assessment tools, to inform the methodology of the main research study.
2. To gain an initial impression as to whether psychological factors can distinguish satisfied and dissatisfied denture wearers.

2. Method

Participants.

The dentist involved with the study grouped patients into satisfied denture wearers (Group Ai) or dissatisfied denture wearers (Group Bi). This clinical judgement was based on case-note behavioural evidence (i.e. how often they returned with complaints of their dentures) and on the dentist's own personal knowledge of these patients. The groups were matched as far as possible on demographic information, the extent of dentures and the location of their dentures. Both groups were sent questionnaires examining how they have adjusted to wearing dentures. Twenty participants in total were recruited for the pilot study this involved ten satisfied and ten dissatisfied denture wearers.

Measures:

12. Demographic Data
13. Symptom Checklist-90-R (SCL-90-R): (Derogatis, 1994[23])
14. Satisfaction with Life Scale (SWL): Diener (1985[24])
15. Hospital Anxiety and Depression Scale (HADS) : (Snaith & Zigmond, 1983[25]).
16. The Health Locus of Control Scale (HLOC): (Wallston, 1978[26])
17. Eysenck Personality Questionnaire Revised –Short Scale(EPI) (Eysenck & Eysenck, 1991[27])
18. Dental Functioning Questionnaire (DFQ)
19. Dental Appearance Questionnaire (DAQ)(Frazer & Lindsay, 2001[28])
20. Measure of Expectation of Prostheses (Davis et al. 1986)
21. Dentist's rating of Prostheses

22. Social Phobia Rating Scale (Wells, 1997[29])

Design and Procedure

Cross-sectional, between groups, the variables listed will serve as independent variables.

Procedure.

All patients were contacted with an information letter explaining the purpose of testing. Patients in both groups were asked to complete the questionnaires as soon as possible and return them to the researcher. All data were then collected and analysed.

Pilot Study Results

Results illustrate that it was possible to distinguish satisfied and dissatisfied denture wearers based on some of the psychological variables measured (Figure 1A). Dissatisfied denture wearers reported significantly higher levels of anxiety ($U=13.5$; $p=0.004$) and depression ($U=10$, $p=0.002$) and had higher Total scores ($U=7$, $p=0.000$) than satisfied denture wearers as measured by the Hospital Anxiety and Depression Scale. The Symptom Checklist-90-R (SCL-90-R) also highlighted statistically significant differences between satisfied and dissatisfied denture wearers. Statistical analysis was conducted using the Mann Whitney U Test to investigate whether the observed differences in standardised scores on the above global indices between the groups were significantly significant. Results show that on all 3 global indices there are statistically significant differences between satisfied and dissatisfied denture wearers' standardised scores. Dissatisfied denture wearers had significantly higher Global Severity Index ($U=7.5$), $p=0.00$), Positive Symptom Distress Index ($U=12$, $p=0.003$) and Positive Symptom Total scores ($U=12$,$p=0.003$) than satisfied denture wearers on the SCL-90-R indicating more distress. Satisfied denture wearers also had significantly higher Satisfaction with Life scores than the dissatisfied group ($U=9.0$; $p=0.001$).

[Insert Figure 1A Here]

No significant differences were found between satisfied and dissatisfied denture wearers on personality, denture expectancies or health locus of control measures. However, participants'

responses on the social anxiety questions also highlighted differences between satisfied and dissatisfied denture wearers. This is of particular importance considering social anxiety is rarely measured in this patient group. Dissatisfied denture wearers reported significantly more distressing social anxiety than satisfied denture wearers (U=10.5,p=0.002). Dissatisfied denture wearers also reported significantly higher levels of avoidant behaviour due to social anxiety than satisfied denture wearers (U=22.5, p=0.035). However, there was no significant difference in responses to question 3, which specifically measured self-consciousness in social situations, for satisfied and dissatisfied denture wearers.

A significant difference was also found between satisfied and dissatisfied denture wearers' Dental Function Questionnaire scores (U=19.5; p=0.019). This difference is illustrated in Table 1A and indicates that the dissatisfied group scored significantly higher in the DFQ indicating more denture dissatisfaction.

In addition, the pilot study confirmed that the questionnaires utilised were understandable and acceptable to the participants as no usability difficulties were reported.

[Insert Table 1A Here]

Research Study

Aims.

1. To investigate psychological consequences for patients undergoing the denture procedure. This will include examining emotional state, somatic complaints and life satisfaction.
2. To investigate whether pre-denture denture and/or psychological variables predict denture dissatisfaction experienced by patients after the fitting of dentures.
3. To evaluate the effects of an information package in reducing distress and dissatisfaction after denture treatment.

Hypotheses.

1. Neuroticism and pre-existing emotional distress will predict higher levels of denture dissatisfaction after fitting of dentures.
2. By supplying the patient with realistic information regarding the denture procedure and its consequences the level of post-denture distress and dissatisfaction will be decreased.

Method.

Participants.

A Power calculation was conducted to calculate sample size. This involved examining the pilot study's DFQ data which reflects the participants' subjective impression of the functioning of their dentures. If the intervention had no effect then it would be fair to assume that the video and no-video groups' DFQ scores to be similar to the overall mean in the pilot study. If the intervention is effective, an effect which reduced the typical score of a dissatisfied denture patient to the mid-point between the mean of fully satisfied patients and the overall mean of all patients would be clinically useful. On this basis, using Altman's power tables, a sample size of 24 in each group would be sufficient to detect a change of that size with a power of 0.80 and an alpha of 0.05. A one standard deviation reduction in DFQ scores would require a sample size of 15 at the same power and alpha. A sample size between 15 and 24 participants was therefore proposed. Twenty-two participants (ten males and twelve females) were finally recruited for each group. Participants were recruited from patients undergoing first-time full or partial dental clearances followed by the fitting of dentures. Recruitment was from a NHS dental practice in Glasgow. Participants were randomly allocated to one of two groups. One group viewed an information video and received an information leaflet to read later (Group A), and the other group received no such information intervention but the standard treatment by the dental practitioner(Group B) prior to denture treatment. All participants were native speakers of English whose ages ranged between 25 and 72 years and 25 and 68 years for the video and no-video group respectively. Both groups' pre-denture measures were analysed to investigate any pre-intervention differences.

[Insert Table 1 Here]

Due to the non-Gaussian distribution of the data non-parametric statistical tests were employed. The above results were analysed to establish whether any observed differences between the groups' pre-denture measures were statistically significant. Bonferroni Correction was used to avoid Type-1 error during comparisons and significance was indicated when $p<0.003$. Mann Whitney U test results illustrated a significant difference between the video and no-video groups' pre-denture Extroversion scores, as measured by the EPQ-Short Scale ($U= 109.0$; $p<0.002$) and Positive Symptom Total scores ($U= 102.5$; $p=0.001$), as measured by the SCL-90-R. No other significant difference was found between groups on pre-denture measures.

Measures:

1. Demographic Data
2. Symptom Checklist-90-R : (Derogatis, 1994)
3. Satisfaction with Life Scale (SLS): Diener (1985)
4. Hospital Anxiety and Depression Scale (HADS) : (Snaith & Zigmond, 1983).
5. The Health Locus of Control Scale : (Wallston. 1978)
6. Eysenck Personality Questionnaire Revised –Short Scale (Eysenck & Eysenck (1991)
7. Dental Functioning Questionnaire
8. Dental Appearance Questionnaire (Frazer and Lindsay, 2001)
9. Measure of Expectation of Prostheses (Davis et al. 1987)
10. Dentist's rating of Prostheses
11. Social Phobia Rating Scale (Wells, 1997)

Procedure

Both groups of participants completed the questionnaires before their dentures were fitted for the first time. Group A was then shown a denture information video and given information

leaflets to read later. This information involved realistic information regarding the procedure and function of dentures. Group B received no such educational pack and no written information at all was given to this group. They received the standard information given by the dentist during consultation. After the dentures were fitted both groups completed the above questionnaires again at their denture follow-up and any changes in response were noted. The follow-up typically occurred some two to three weeks after the dentures were fitted. A further questionnaire was completed by participants 6-7 weeks after their dentures had been fitted.

Data Analysis.

Data were collected and analysed using SPSS statistical software version 9.0.

Research Study–Results.

Participants' responses were analysed over time to investigate any changes in measures following the fitting of dentures. These changes are illustrated in Tables 2 and 3 and Figures 1-4)

[Insert Table 2]

Changes in Distress From Baseline, 2 weeks and 6 weeks follow up.

The non-parametric Friedman test was conducted, examining changes in both groups HADS total scores, Symptom Checklist-90-R GSI, PSDI and PST scores, Satisfaction With Life scores and social anxiety ratings, over time. It was found that over time the video group's distress decreased significantly as measured by HADS Total scores ($\chi^2_{df=2\ F}$=18.33 p<.001), SCL-90-R, GSI scores ($\chi 2_{F\ df=2}$ = 15.51; p<0.001), PSDI scores ($\chi^2_{F\ df=2}$ = 13.6; p=0.001), PST scores ($\chi^2_{F\ df=2}$= 13.6; p=0.001) and Social anxiety ratings of distress ($\chi^2_{F\ df=2}$= 7.4; p=0.025) and avoidance ($\chi^2_{F\ df=2}$=10.68; p=0.05). In addition the video group's Satisfaction With Life scores increased significantly over the 6 weeks indicating a decrease in distress ($\chi^2_{F\ df=2}$ =8.72;p= 0.13).

In contrast, Friedman Test results found that over time, the no-video group's distress increased significantly as measured by the HADS total score ($\chi^2_{F\ df=2}$= 6.861; p=0.032), SCL-90-R GSI ($\chi^2_{F\ df=2}$ =8.951; p=0.011), PSDI ($\chi^2_{F\ df=2}$= 17.2; p=0.000) and PST ($\chi^2_{F\ df=2}$ =13.52; p=0.001) scores and social anxiety ratings of distress ($\chi^2_{F\ df=2}$=16.61; p<0.001), avoidance ($\chi^2_{F\ df=2}$=14.15; p=0.001) and self-consciousness ($\chi^2_{F\ df=2}$= 12.9; p=0.002). The no-video group's Satisfaction With Life scores decreased over time although this finding was not significant ($\chi^2_{F\ df=2}$=5.104; p=0.078).

The video and no-video group's dissatisfaction with dentures also changed over time. This was analysed using the Wilcoxon test. Results for within-group comparisons show that the video group's dissatisfaction with dentures decreased significantly from the 2 to the 6 week measure (Z= -2.967; p=0.003). The no-video group's dissatisfaction with dentures, as measured by the DFQ, increased over this time, although this change was not found to be significant (Z= -1.614; p=0.107)

Of note, six weeks following the fitting of dentures, seven participants from the video group were 'cases' for anxiety and 3 participants were 'cases' for depression according to HADS anxiety and depression norms. Within the no video-group, six weeks following the fitting of dentures, 17 participants were anxiety 'cases' and 9 were 'cases' for depression according to HADS norms.

[Insert Figures 1-4 here]

Between Group Differences at 2 and 6 weeks

Between-group differences were further analysed with the Mann-Whitney U Test with significance stated at $p<0.004$ by Bonferroni Correction. Two weeks following the fitting of dentures the no video group reported significantly higher dissatisfaction with dentures, as measured by the Dental Function Questionnaire, than those who received the information intervention package ($U=119.5$; $p=0.004$). In addition, 2 weeks following the fitting of dentures, the no-video group reported significantly higher anxiety ($U=104.5$; $p=0.001$) and significantly higher Global Symptom Total ($U=68.0$; $p<0.001$), Positive Symptom Distress Index ($U=91.5$; $p<0.001$) and Positive Symptom Total ($U=67.5$; $p<0.001$) scores, as measured by the Symptom Checklist-90-R, than the video group. No significant difference was found between groups on measures of social anxiety or Satisfaction With Life taken 2 weeks following the fitting of dentures. These group differences are illustrated in Figure 5.

[Insert Figure 5 Here]

Differences between groups on measures of denture dissatisfaction and psychological distress taken at 6 weeks (Figure 6) were also analysed for significant results. Significance was stated at $p<0.004$ by Bonferroni Correction. Six weeks following the fitting of dentures, the no-video group reported significantly more denture dissatisfaction ($U= 85.0$; $p<0.001$), as measured by the Dental Functioning Questionnaire, than the group who received the video. The no-video group also displayed more distress than the video group scoring significantly higher on HADS, anxiety ($U=111.5$; $p=0.002$) and Total ($U=113.5$; $p=0.002$) scores and Global Severity Index ($U=58.0$; $p<0.001$), Positive Symptom Distress Index ($U=62.0$; $p<0.001$) and Positive Symptom Total ($U=60.0$; $p<0.001$) scores, as measured by the Symptom Checklist-90-R. A significant difference was also found between the video and no-video groups' Social anxiety distress ($U=111.0$; $p=0.002$) and self-consciousness ($U=109.5$;

p=0.001) ratings. This difference illustrated that the no-video group experienced significantly higher levels of social anxiety than the video group, 6 weeks following the fitting of dentures.

[Insert Figure 6 Here]

To investigate to what extent any of the patient-related, predictor variables, measured before dentures were fitted, could predict denture dissatisfaction both at 2 and 6 weeks, stepwise, multiple regression analyses were conducted. This included first of all, completing correlation analysis to examine any association between predictor variables and denture dissatisfaction. Multiple regression analysis was then completed and included firstly, examining the denture variables (Type, Grading and Expectancies) effect on denture dissatisfaction both at 2 and 6 weeks (Table 4 and 5). Secondly, multiple regression analysis was completed on pre-denture psychological variables (HADS Total scores, SCL-90-R, GSI scores, EPQ-Short Scale neuroticism scores, Satisfaction with Life scores and social anxiety ratings) and denture dissatisfaction at 2 and 6 weeks (Table 6 and 7) and finally both sets of variables outlined above were combined in a stepwise, multiple regression analysis examining their cumulative predictive effect of denture dissatisfaction both at 2 and 6 weeks, as measured by the DFQ (Table 8 and 9).

Multiple Regression analysis found that for the video group, at 2 weeks, denture Type, Grading or patient expectancies towards dentures did not significantly predict denture dissatisfaction. However, for the no-video group, denture expectancies towards dentures and Type of denture were found partly to predict denture dissatisfaction (R=0.641; R=0.803 respectively). It was found that 60.7% of the variance in the no-video group's DFQ scores could be explained by the participants' pre-denture expectancies towards dentures and denture type.

At six weeks the results were similar. Denture variables were not found to significantly predict denture dissatisfaction for the video group but the no-video group's pre-denture expectancies towards dentures and Type of denture fitted partly predicted denture

dissatisfaction at 6 weeks (R=0.551 and R=0.720 respectively) and explained 46.8% of the variance in DFQ scores.

[Insert Tables 4 and 5 here.]

Pre-denture psychological variables were then examined to investigate their predictive effect of denture dissatisfaction both at 2 and 6 weeks. At 2 weeks it was found that the video group's DFQ scores could be partly predicted by their pre-denture Satisfaction With Life scores (R=0.639), explaining 37.8% of the variance in DFQ scores. At 2 weeks the no-video group's DFQ scores could be partly predicted by their pre-denture social anxiety self-consciousness rating (R=0.611), explaining 34.2% of the variance in DFQ scores.

At 6 weeks the video group's DFQ scores could be once again, partly predicted by their pre-denture Satisfaction With Life scores (R=0.725) explaining 50.2% of the variance in DFQ scores. At 6 weeks the no video group's DFQ scores could be partly predicted by their pre-denture social anxiety self-consciousness rating (R=0.698) and social anxiety distress rating (R=0.764). These variables explained 54% of the variance in DFQ scores measured at 6 weeks.

[Insert Tables 6 and 7 here.]

All denture and psychological predictor variables were then combined in a stepwise multiple regression analysis to investigate their predictive effect on denture dissatisfaction at 2 and 6 weeks. Statistical analysis found that 2 weeks following the fitting of dentures, the video group's DFQ score could be partly predicted by their pre-denture Satisfaction With Life Score (R=0.639). It was found that 37.8 % of the variance in the video groups' DFQ scores could be explained by their pre-denture Satisfaction With Life score. No other predictor variable including denture variables, neuroticism or Health Locus of Control were found to significantly contribute to this variance. The no-video group's DFQ scores, measured at 2 weeks, were partly predicted by their pre-denture Expectancies towards dentures (R=0.641)

and the Type of denture(R=0.803) they had fitted. Sixty-one percent of the no-video group's DFQ scores could be explained by these variables

The video group's pre-denture Satisfaction With Life scores also partly predicted their dissatisfaction with dentures at 6 weeks (R=0.725) as measured by the DFQ. By 6 weeks 50.2% of the variance in DFQ scores was explained by these pre-denture scores. For the no-video group, denture satisfaction measures taken at 6 weeks could be partly predicted by pre-denture Social Anxiety self-consciousness (R=0.698) and distress (R=0.764) ratings. Fifty-four percent of the variance in DFQ scores, measured at 6 weeks could be explained by these variables.

[Insert Tables 8 and 9 here]

Discussion.

The psychological consequences following the fitting of first time dentures appear, for some people, to depend on the information given by clinicians. Participants in this study, who did not receive the information intervention, reported a significant increase in psychological distress, as measured by the HADS and the SCL-90-R, and denture dissatisfaction at 2 and 6 weeks following the fitting of dentures. In contrast, the participants who received the information intervention reported a significant decrease in distress and denture dissatisfaction, 2 and 6 weeks following the fitting of dentures. Social anxiety ratings also showed significant changes over time, for both groups. The no-video group's social anxiety appears to have been exacerbated by the fitting of dentures. Significant increases were observed in the latter group's social anxiety distress, avoidance and self-consciousness ratings. In contrast, the video group's social anxiety distress and avoidance ratings decreased significantly following the fitting of dentures. It should be noted, however, that the no-video group's pre-denture measures indicated higher levels of distress, in general, than the video group. Although these differences were not found to be significant, they should be noted in the interpretation of these results.

Between-group differences, over time, illustrated the effect of the information intervention. One of the study's hypotheses stated that by supplying the patient with realistic information regarding the denture procedure and its consequences, the level of post-denture dissatisfaction and distress would be decreased. The findings from the present study can confirm this hypothesis. The no-video group reported significantly higher levels of psychological distress and denture dissatisfaction than the video group, both at 2 and 6 weeks post-denture.

In an attempt to understand this intervention effect, pre-denture predictor variables were analysed with denture dissatisfaction, at 2 and 6 weeks, in a multiple regression analysis. It was found that neither neuroticism nor locus of control significantly predicted denture dissatisfaction at either 2 or 6 weeks in either group. This is in contrast to previous

suggestions that personality and locus of control are predictive of denture dissatisfaction. The video group's denture dissatisfaction score, measured at 2 weeks following the fitting of denture, could be partly predicted from their pre-denture Satisfaction With Life score. The lower the video group's Satisfaction With Life score the more dissatisfied they were with their denture at 2 weeks.. Measures of denture dissatisfaction collected from the no-video group at 2 weeks yielded different results. The type of denture fitted and pre-denture expectancies towards dentures were found to explain 60.7% of the variance in denture dissatisfaction scores. By 6 weeks however, the no-video group's denture dissatisfaction scores were significantly predicted by their pre-denture social anxiety self-consciousness and distress ratings.

To explain these findings it could be suggested that patients who undergo their first denture experience have high levels of anxiety, unrealistic expectations towards dentures and no knowledge of functional strategies to aid adjustment. If no information intervention is given then following the fitting of dentures these patients experience the inherent mechanical and functional limitations of dentures which is in conflict with their prior expectations. This is reflected in the high levels of psychological distress and denture dissatisfaction reported by the no-video group compared to those who received the intervention and in the significant increases in distress and dissatisfaction observed in this group, over time. It would also explain why following this group's fitting of dentures, their pre-denture expectancies towards dentures and Type of denture fitted, best predicted dissatisfaction with dentures at 2 weeks with those participants who had high pre-denture expectancies reporting higher dissatisfaction with their dentures. In contrast, the group who did receive the information intervention experienced similar levels of anxiety and distress prior to dentures being fitted and had similar expectations of dentures as the no-video group. The information intervention, including the extra support and time involved, gave participants realistic information, strategies to aid adjustment and exposed the participants to dentures and their limitations. Hence, this group's adjustment to dentures was aided. This was reflected in the decreases observed over time in

the video group's distress and denture dissatisfaction and in the significantly lower levels of distress and dissatisfaction this group reported compared with the no-video group. In addition, denture information, including expectancies towards dentures, was not found to significantly predict denture dissatisfaction for the video group at either 2 or 6 weeks follow-up.

This study has generated important findings which have clinical implications. Firstly, the findings of this study are in agreement with the suggestion by Davis et al. (1986) that expectations towards dentures have an important, causal relationship with denture dissatisfaction for some people. This study has shown that the routine provision of realistic information regarding dentures, including exposure to dentures and their mechanical and functional limitations, aids adjustment to dentures and reduces the psychological distress and denture dissatisfaction that is associated following the fitting of dentures. It should be noted from these results however, that some patients who did receive this information intervention still went on to experience denture dissatisfaction and distress. The best predictor in these people, for this denture dissatisfaction, was found to be their pre-denture measure of Satisfaction With Life.

Another important finding is the identification of the role of social anxiety in the adjustment to dentures. It was found that people who did not receive the information intervention and who reported pre-denture social anxiety, reported more denture dissatisfaction than those who received the information intervention or who did not report pre-denture social anxiety. In addition, the people who did not receive the information intervention experienced a significant increase in their social anxiety following the fitting of dentures, highlighting social anxiety as a potential consequence following dentures. The information intervention appears, from results, to decrease the likelihood of this consequence.

Central to the cognitive model of social phobia advanced by Clark and Wells (1995[30]) and Wells and Clark (1997[31]) is the desire to convey a favourable impression of oneself to others

which is accompanied by an insecurity about one's ability to do so. Wells and Clark (1997) report that social phobia is maintained because social phobics seldom encounter situations that are capable of providing disconfirmation of their fears. It is likely that the video, along with exposing participants to dentures, illustrated effectively that with practice and the use of strategies, dentures can be mastered. In addition, the video and information leaflet encourage patients to practice functioning with their dentures privately, at home. This practice would increase functioning ability and therefore reduce the likelihood of socially embarrassing situations occurring. In addition participants would have experience of situations where their fears i.e. dentures falling out or becoming noticeable are disconfirmed, hence breaking the maintaining, vicious circle described by Wells and Clark. This explains why participants who received the information intervention reported a significant decrease in their social anxiety ratings following the fitting of dentures. Clinicians including dentists and clinical psychologists should be aware of the important role of social anxiety in the adjustment to dentures and should perhaps include exposure techniques, which also lead to the disconfirmation of participants' denture fears, in their intervention with this patient group.

The findings of this study are limited because of some methodological considerations. Firstly, the sample included participants who all lived in the same part of Glasgow and who were all NHS patients. This may not be representative of the average denture patient and future research should attempt to recruit a larger number of participants from a wider area who are a mixture of private and NHS patients. In addition, due to time constraints a follow-up of 2 and then 6 weeks was agreed. As the data show some people had still not adjusted to their denture in this time frame, reporting continuing levels of denture dissatisfaction and psychological distress. A longer follow-up period is suggested for future studies to measure the complete pattern of adjustment to dentures. Finally, an important finding in this study was the role of social anxiety in the syndrome of adjustment to dentures. The measure of social anxiety employed in this study was in the simple form of rating scales which measured social anxiety distress, avoidance and self-consciousness. Due to the important influence of social anxiety

on adjustment it is suggested that a more sophisticated measure of social anxiety be utilised in future research

With people living to an older age with poor dentition and with the continuing popularity of dentures as a treatment method, more research is required to investigate the pattern of adjustment to dentures. Replications of this study are encouraged to confirm results especially the examination of predictor variables which have clinical implications. In addition, the information intervention utilised in this study had many components including realistic information, strategies to aid adjustment, exposure and increased time and support. Future research should examine these components to determine what intervention would be the most effective and efficient given the increasing demands on dentists today.

Figure 1A: Median HADS, SCL-90-R And Satisfaction With Life Scores for Satisfied and Dissatisfied Denture Wearers.

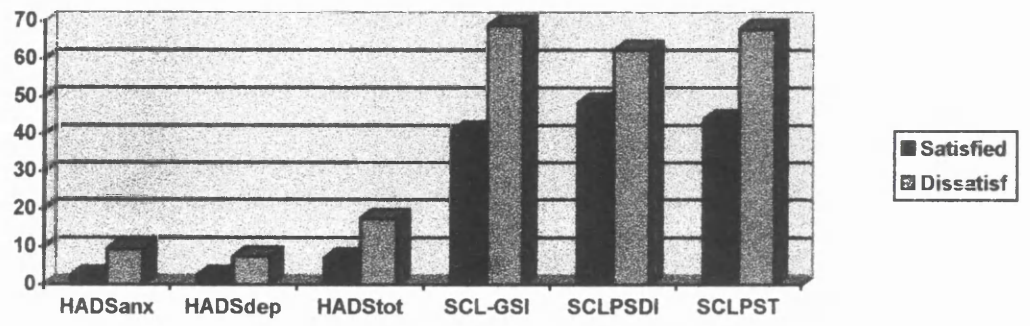


Table 1A: Median Satisfied and Dissatisfied Denture Wearer's Dental Function Questionnaire Total Scores.

GROUP	Median	Range
Satisfied	28.5000	22.00
Dissatisfied	40.5000	38.00
Total	37.0000	43.00

Table 1:Video and No-video Group's Mean Pre-denture Scores.

Group		HADS Anxiety 1	HADS Depres 1	HADS Total 1	SCL GSI 1	SCL PSDI 1	SCL PST 1	EPQ Psychot 1	EPQ Extrover 1	EPQ Neurot 1	Expect Total 1	SWL 1	HLOC 1	DAQ Total 1
Video	Median	8.0	4.0	10.0	51.0	48.0	49.0	3.0	7.5	8.0	14.0	24.0	53.5	54.0
	Mean	7.05	4.00	11.05	53.64	51.68	51.68	2.91	7.36	8.59	14.05	23.91	50.59	53.27
	N	22	22	22	22	22	22	22	22	22	22	22	22	22
	Std. Dev	3.34	2.60	5.33	9.83	8.18	9.42	1.97	1.76	1.94	1.94	6.63	18.83	9.30
No video	Median	8.5	4.0	11.0	56.0	53.5	57.0	3.0	9.5	8.5	12.0	25.0	64.0	55.5
	Mean	9.55	5.14	12.86	57.18	53.95	58.00	3.05	9.32	9.23	13.50	21.36	60.36	54.45
	N	22	22	22	22	22	22	22	22	22	22	22	22	22
	Std. Dev	4.37	3.93	4.84	6.37	5.51	5.81	1.09	1.78	1.60	2.04	8.19	11.26	12.16
Total	Median	8.0	4.0	11.0	55.0	51.5	55.0	3.0	8.0	8.0	14.0	25.0	55.0	55.0
	Mean	8.30	4.57	11.95	55.41	52.82	54.84	2.98	8.34	8.91	13.77	22.64	55.48	53.86
	N	44	44	44	44	44	44	44	44	44	44	44	44	44
	Std. Dev	4.05	3.34	5.12	8.38	6.99	8.37	1.58	2.01	1.79	1.99	7.48	16.11	10.71
Mann Whitney U		U=163.0 p=0.062	U=209.0 p=0.427	U=194.5 p=0.263	U=157.0 p=0.045	U=168.5 p=0.083	U=102.5 p=0.001 *	U=221.5 p=0.620	U=109.0 p=0.002 *	U=190.5 p=0.213	U=201.5 p=0.326	U=198.5 p=0.302	U=173.5 p=0.107	U=193.0 p=0.247

***denotes significance based on Bonferroni Equation that states significance p>0.003**

Table 2 : Group Mean Scores : Pre-denture and 2 weeks.

Group		Hads Anx 1	Hads Anx 2 wks	Hads Dep 1	Hads Dep 2 wks	Hads Total 1	Hads Total 2 wks	SCL-GSI 1	SCL-GSI 2 wks	SCL-PSDI 1	SCL-PSDI 2 wks	SCL PST 1	SCL PST 2 wks	SWL 1	SWL 2 wks	HLOC 1	HLOC 2 wks
Video	Median	8.0	4.0	4.0	3.0	10.0	8.0	51.0	47.5	48.0	48.0	49.0	49.0	24.0	25.0	53.5	59.5
	Mean	7.05	5.95	4.00	3.59	11.05	9.55	53.64	51.32	51.68	51.04	51.68	51.31	23.91	23.50	50.59	54.13
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	Std.Dev.	3.34	4.18	2.60	3.32	5.33	7.22	9.83	10.82	8.18	9.29	9.42	10.48	6.63	8.01	18.83	18.55
No Video	Median	8.5	13.0	4.0	5.5	11.5	18.0	56.0	68.0	53.5	63.0	57.0	67.0	25.0	23.5	64.0	69.0
	Mean	9.55	10.95	5.14	4.95	12.86	15.82	57.18	66.00	53.95	60.54	58.00	64.50	21.36	21.36	60.36	70.09
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	Std.Dev.	4.37	4.41	3.93	2.44	4.84	5.69	6.37	8.66	5.51	5.52	5.81	7.58	8.19	8.27	11.26	13.16
Total	Median	8.0	8.0	4.0	3.5	11.0	11.5	55.0	59.0	51.0	56.0	55.0	58.0	25.0	24.0	55.0	69.0
	Mean	8.30	8.45	4.57	4.27	11.95	12.68	55.41	58.65	52.82	55.79	54.84	57.90	22.64	22.43	55.48	62.11
	N	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
	Std.Dev.	4.05	4.94	3.34	2.94	5.12	7.17	8.38	12.20	6.99	8.95	8.37	11.23	7.48	8.11	16.11	17.83

Table 3: Group Mean Scores: Pre-denture and 6 weeks.

Group		HADS Anx 1	HADS Anx 6 wks	HADS Depres 1	HADS Depres 6 wks	HADS Total 1	HADS Total 6 wks	SCL GSI 1	SCL GSI 6 wks	SCL PSDI 1	SCL PSDI 6 wks	SCL PST 1	SCL PST 6 wks	SWL 1	SWL 6 wks	HLOC 1	HLOC 6 wks
Video	**Median**	8.0	4.0	4.0	2.5	10.0	8.0	51.0	47.5	48.0	48.0	49.0	48.0	24.0	28.0	53.5	60.0
	Mean	7.05	5.59	4.00	3.41	11.05	9.05	53.64	50.54	51.68	49.50	51.68	51.36	23.91	25.31	50.59	54.18
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	Std. Dev.	3.34	3.83	2.60	3.29	5.33	6.84	9.83	11.46	8.18	9.47	9.42	10.33	6.63	6.49	18.83	19.22
No Video	**Median**	8.5	9.0	4.0	5.5	11.5	18.0	56.0	72.5	53.5	61.0	57.0	75.0	25.0	22.5	64.0	68.0
	Mean	9.55	9.86	5.14	6.09	12.86	15.95	57.18	68.68	53.95	62.63	58.00	67.90	21.36	19.22	60.36	64.04
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	Std. Dev.	4.37	4.12	3.93	3.68	4.84	6.24	6.37	9.81	5.51	4.78	5.81	10.55	8.19	9.42	11.26	11.37
Total	**Median**	8.0	8.0	4.0	3.5	11.0	12.0	55.0	58.0	51.0	60.5	55.0	55.0	25.0	20.0	55.0	62.5
	Mean	8.30	7.73	4.57	4.75	11.95	12.50	55.41	59.61	52.82	56.06	54.84	59.63	22.64	22.27	55.48	59.11
	N	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
	Std. Dev.	4.05	4.48	3.34	3.71	5.12	7.35	8.38	13.97	6.99	9.95	8.37	13.29	7.48	8.57	16.11	16.38

Table 4: Multiple Regression Results :Dental Functioning Questionnaire(2 Weeks)and Denture variables(Type, Grading and Denture Expectancies)

Group	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
no video	1a	.641	.411	.382	6.1809
	2b	.803	.645	.607	4.9266

Dependent Variable: DFQ –2 Weeks
a Predictors: Expectancies Questionnaire Total 1
b Predictors: Expectancies Questionnaire Total 1, Type of dentures fitted.

Table 5: Multiple Regression Results :Dental Functioning Questionnaire(6 Weeks)and Denture variables(Type, Grading and Denture Expectancies)

Group	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
no video	1a	.551	.304	.269	9.6807
	2b	.720	.519	.468	8.2573

Dependent Variable: DFQ –6
Weeks
a Predictors: Type of Denture fitted
b Predictors: (Constant), Type of dentures fitted, Expectancies Total 1

Table 6: Multiple Regression Results :Dental Functioning Questionnaire(2 Weeks)and Pre-denture Psychological Variables.

GROUP	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Video	1a	.639	.408	.378	7.9369
no video	1b	.611	.373	.342	6.3753

Dependent Variable: DFQ –2 Weeks
a Predictors: (Constant), Satisfaction With Life 1
b Predictors: (Constant), Social Anxiety-Self-consciousness Rating 1

Table 7: Multiple Regression Results :Dental Functioning Questionnaire(6 Weeks)and Pre-denture Psychological Variables.

GROUP	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Video	1a	.725	.525	.502	7.2996
no video	1b	.698	.487	.461	8.3103
	2c	.764	.584	.540	7.6782

a Predictors: (Constant), Satisfaction With Life scores1
b Predictors: (Constant), Social anxiety:self-consciousness rating 1
c Predictors: (Constant), Social anxiety:self-consciousness rating 1, Social Anxiety Distress rating 1

Table 8 : Multiple Regression Results dental Functioning Questionnaire (2 weeks) and Pre-denture denture and Psychological Variables.

GROUP	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Video	1	.639	.408	.378	7.9369
no video	1	.641	.411	.382	6.1809

a. Predictors: (Constant) Satisfaction With Life sores 1
b Predictors: (Constant), Expectancies Questionnaire Total 1
c Predictors: (Constant), Expectancies Questionnaire Total 1, Type of denture fitted.

Table 9 : Multiple Regression Results dental Functioning Questionnaire (6 weeks) and Pre-denture denture and Psychological Variables.

GROUP	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Video	1	.725	.525	.502	7.2996
no video	1	.698	.487	.461	8.3103
	2	.764	.584	.540	7.6782

a Predictors: (Constant), Satisfaction With Life scores 1
b Predictors: (Constant), Social anxiety:self-consciousness rating 1
c Predictors: (Constant), Social anxiety:self-consciousness rating 1, Social Anxiety Distress rating 1

Figures 1-4 Changes in Group Distress over time.
Figure 1 Changes in Group HADS Total scores over time.

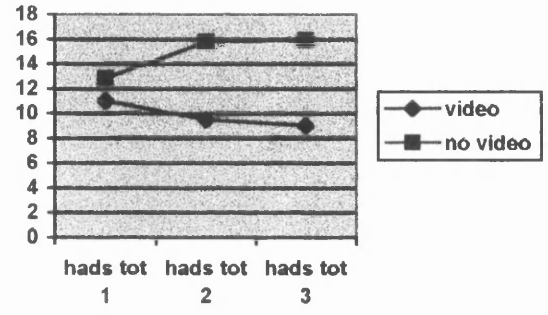


Figure 2: Changes in Group Symptom Checklist-90-R Global Severity Index scores over time.

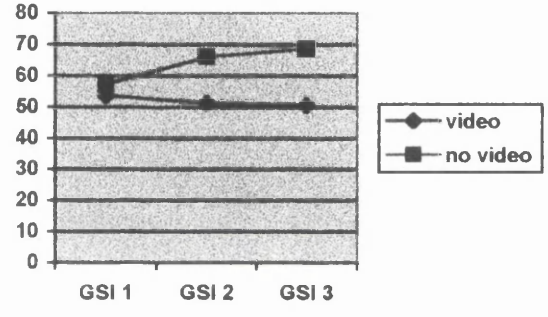


Figure 3: Changes in Group Satisfaction With Life Scores Over Time.

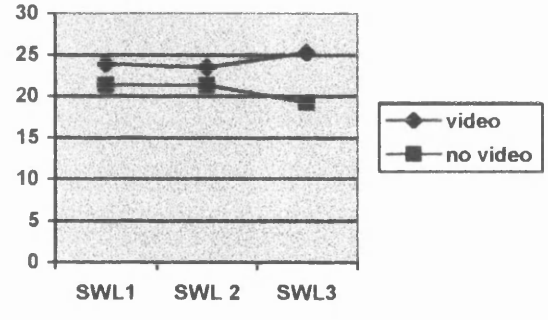


Figure 4: Changes in Group Dental Function Questionnaire Scores between 2 and 6 weeks.

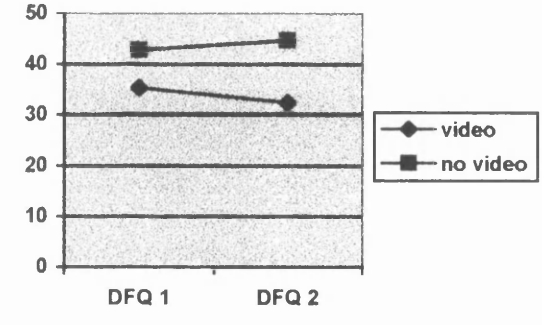


Figure 5: Video and No-Video Mean Scores on Measures of Distress and Dissatisfaction at 2 Weeks.

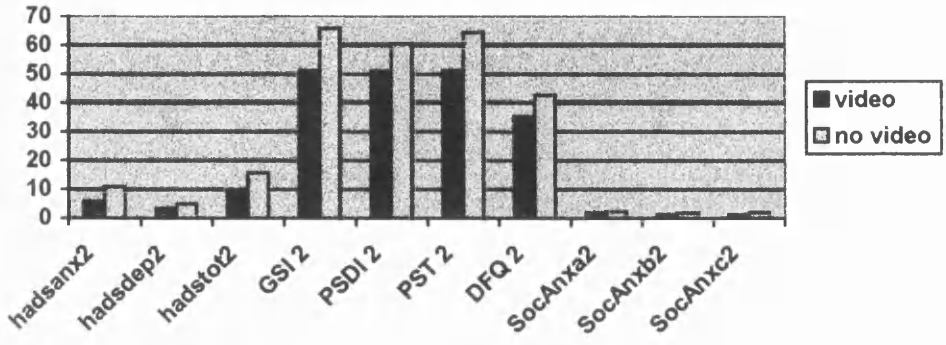
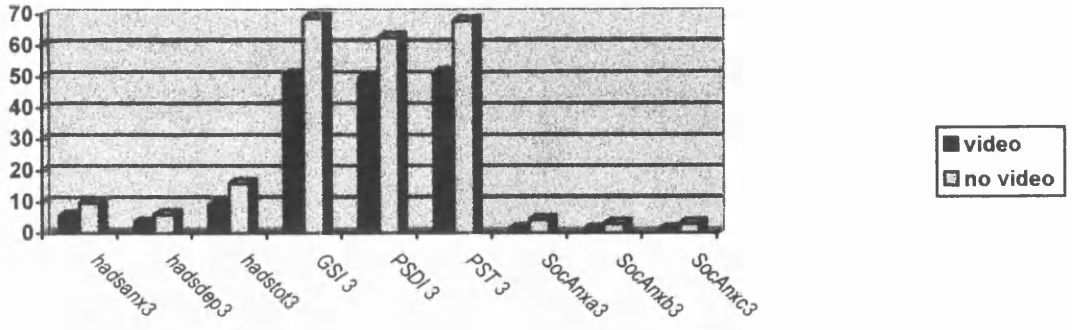


Figure 6: Video and No-Video Mean Scores on Measures of Distress and Dissatisfaction at 6 Weeks.



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Chapter 5:

Single Case Research Study: Abstract

(Full Study and appendix bound separately in volume two).

An Evaluation of the Usefulness of Cognitive Behavioural Interventions in a Patient with an Anxiety Disorder with Panic Attacks.

Single case research study submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology

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Abstract.

The cognitive model of panic disorder described by Clark (1986; 1999) highlights the role of safety-seeking behaviour and avoidance behaviour on maintaining anxiety symptoms. This study demonstrates the usefulness of different cognitive behavioural interventions in a patient with an anxiety disorder with panic attacks. The study followed an A-B_1-B_2-B_3 design involving baseline, intervention 1, intervention 2 and intervention 3. The effects on panic frequency and severity, use of safety behaviours and related beliefs was investigated. The study illustrates the efficacy of cognitive behavioural interventions for panic disorder. It supports the cognitive theorists' proposal that anxiety symptoms are maintained by safety-seeking behaviours and an effective procedure to specifically challenge beliefs is outlined.